The Effects of Accounting Standards Update 2009-13 On Revenue Recognition in Multiple-Deliverable Arrangements

By
Stephanie Maeda

A THESIS

Presented to the Department of Accounting
And the Robert D. Clark Honors College
In partial fulfillment of the requirements for the degree of
Bachelor of Science

November 2013

An Abstract of the Thesis of

Stephanie Maeda for the degree of Bachelor of Science
In the Department of Accounting to be taken November 2013

Approved: _____
Kyle Peterson

The issuance of Accounting Standards Update 2009-13 in October of 2009 substantially changed the requirements for recognizing revenue in transactions consisting of multiple elements. One of the main reasons for the issuance of this update was to increase the accuracy of reported revenue figures by aligning revenue recognition with the economic reality of multiple-element transactions. The research presented here examines the extent to which the issuance of ASU 2009-13 affected reported revenue figures of companies that enter into multiple-deliverable arrangements, as well as the impact that this update had on the way in which investors interpret reported revenue figures.

Acknowledgements

I would like to express my sincerest gratitude to my primary advisor, Kyle Peterson, for his guidance, advice, generous patience, and for helping me to understand the process and nature of accounting research. I would also like to thank Xuesong Hu and Professor Louise Bishop for their willingness to serve on my Thesis Defense Committee on such short notice. I am very grateful for all of the support, understanding, and encouragement that I have received throughout this process.

Table of Contents

I. Introduction

Revenues are understandably crucial to operating a business, and revenue recognition is therefore a vital part of the accounting process. When a company sells goods or services, it collects some form of payment in exchange for the goods or services it provides. In many cases, the accounting for revenue-generating transactions is extremely straightforward. For example, when Starbucks sells a cup of coffee, the company receives the payment at the time of the sale, and the customer immediately receives a cup of coffee. The exchange of goods is clearly complete, and Starbucks recognizes (records) revenue from the sale immediately.

In some cases, however, the rules for when and how to recognize revenue are not so straightforward. Not all transactions are as simple as the one presented above. For example, some transactions involve a single payment in exchange for multiple products to be delivered over an extended period of time (magazine subscriptions, for example). Some transactions may involve a single product that is paid for in multiple installments, and some may involve a single payment in exchange for several different products and/or services. As transactions grow more complex, the rules for recognizing revenues become more complex as well. In order to accommodate the wide variety of transactions that can occur, the Financial Accounting Standards Board (FASB) occasionally changes the rules for revenue recognition. This paper focuses on one such amendment to the accounting standards, and how that change affected revenue recognition for certain companies.

II. Background

Overview of Revenue

In order to fully understand revenue recognition, it is important to understand the difference between accrual-based and cash-based accounting. Most businesses are required to use the accrual method, and the revenue recognition concepts being discussed here relate to accrual accounting. Under the cash method, revenues are recorded when cash is received. Under accrual accounting, however, revenues are recorded when they are earned. For example, if a plumber receives payment for fixing a leaky sink, he can recognize the payment as revenue only when the sink has been repaired, regardless of when the cash is actually received. The most important concept to understand here is that, under accrual accounting, revenue is often recorded at a completely different time from when payment is received. In accordance with accrual accounting, revenue should be recognized when it is:

- earned (the product has been delivered or the service has been performed), and
- realized or realizable (payment has been collected or collectibility is reasonably assured).

As outlined above, deciding when revenue has been "earned" can sometimes be complicated, especially when the earnings process takes place over a period of time or when an arrangement involves a single payment in exchange for multiple products.

Importance of Revenue

One reason that companies are eager to report higher revenue figures on their financial statements is that revenue is a good indicator of overall profit. Net income, which is often referred to as the "bottom line" of the income statement, represents a company's profit—its revenues minus its expenses. By this metric, revenue can be considered the "top line" of the income statement; reporting higher revenue figures for a given period can consequently increase a company's net income for that period. As net income is perhaps the most commonly looked-to metric for valuing a company's overall performance and financial position, reporting higher revenue figures is usually beneficial to most companies.

Multiple-Deliverable Arrangements and Separation Criteria

Some businesses deliver multiple products or services at different times in exchange for a single payment. For example, when Amazon sells a Kindle e-reader, the customer receives not only the device itself, but also wireless connectivity and periodic software upgrades. In situations involving multiple deliverables, revenue is not fully "earned" until the last element of the arrangement has been delivered, at which point the company's obligation to the customer has been completely satisfied. In many cases, this results in the postponement of revenue recognition until long after payment is actually received. However, under some circumstances, deliverables in such arrangements can be separated for accounting purposes, allowing revenues associated with each deliverable to be recognized as each obligation is performed. The ability to separate deliverables benefits companies by

allowing them to recognize revenues sooner than they would be able to without separation. In the Kindle example above, without the ability to separate deliverables, Amazon would be required to recognize revenues gradually over the estimated two year life of the product; for a $200 Kindle, $8.33 would be recognized each month for 24 months. However, with deliverable separation, Amazon can recognize revenue associated with each of the three deliverables as the customer receives them. Since most of a Kindle's sales price is related to the device itself, deliverable separation allows Amazon to recognize most of the $200 sales price upon delivery of the Kindle while delaying recognition of the remainder of the payment over the two year economic life.

In October of 2009, FASB issued an Accounting Standards Update (ASU) to amend the existing rules for revenue recognition in situations involving multiple-deliverable arrangements. Prior to the issuance of this update, the FASB Accounting Standards Codification (ASC) allowed a delivered item to be considered a separate unit of accounting only if all of the following criteria were met:

1. The delivered item(s) must have value to the customer on a standalone basis;
2. There must be objective and reliable evidence of the fair value of the undelivered item(s); and
3. If the arrangement includes a general right of return relative to the delivered item, delivery or performance of the undelivered item(s)

must be considered probable and substantially in the control of the company.

Before the issuance of ASU 2009-13, the requirement to have "objective and reliable evidence of the fair value of the undelivered items" prevented many companies from being able to separate their deliverables for accounting purposes. Returning to the Kindle example, even if Amazon were able to *estimate* a value for Kindle software updates, under previous guidance, it still would not qualify for deliverable separation. Since no market exists in which Kindle software updates are being purchased and sold, it is impossible to determine the fair market value of those updates, so revenue recognition would be delayed.

Under the previous rules, if a company were able to accurately value each separate element in its multiple-deliverable arrangements, it would use the relative fair value method to allocate the overall arrangement consideration to each element. Using this method, the company would allocate revenue from a multiple-deliverable transaction to each element in amounts proportional to each element's fair value. For example, if a company made a sale consisting of three separate deliverables for $120, and the fair value of the deliverables were found to be $20, $30, and $50, it would recognize revenue for the separate elements as $24, $36, and $60, respectively. In cases where companies had objective and reliable evidence of the fair value of undelivered items but not of delivered items, the residual method of revenue allocation was required. Under this method, arrangement consideration was first allocated to undelivered elements based on

their fair values, and the remaining portion of the overall consideration was allocated to the delivered elements.

Apple Example

Apple, Inc. is a prime example of a company that enters into multiple-deliverable arrangements with its customers, and was a heavily influential player in FASB's decision to issue ASU 2009-13. When Apple sells an iPhone, included in the arrangement are software updates to the phone's operating system. Under prior accounting guidance, since these updates were not offered for sale on a stand-alone basis and their value could not be reliably measured, the software updates were not considered to be a separate deliverable from the iPhone itself. Because the value of the software updates could not be separated from the value of the iPhone, Apple was forced to recognize revenue from iPhone sales using subscription accounting, on a straight-line basis over the useful life of the device. This meant that "Apple [had] been under-reporting earnings on its bestselling smartphone for two years—one of the factors…that kept its share price from reflecting the success of one [of the] most profitable products Apple has ever made." As Philip Elmer-DeWitt states, "at the heart of the problem for Apple is its decision to offer iPhone owners free software updates from time to time—a practice that required its accountants to spread the revenue from iPhone sales over the life of a cellphone contract, typically two years." As iPhone sales grew to be an increasingly large portion of Apple's overall revenues, the delay in revenue recognition associated with iPhone sales became an increasingly large problem for

Apple. Because a significant portion of revenue associated with each iPhone sale was being deferred until long after the actual sale took place, Apple's reported revenue figures did not reflect the success of its iPhone product line.

Apple CEO Steve Jobs addressed this problem of hidden iPhone revenues at the end of the company's 2008 fiscal year, during Apple's quarterly earnings conference call:

> Because by its nature subscription accounting spreads the impact of iPhone's contribution to Apple's overall sales, gross margin, and net income over two years, it can make it more difficult for the average Apple manager or the average investor to evaluate the company's overall performance. As long as our iPhone business was small relative to our Mac and music businesses, this didn't really matter much. But this past quarter, as you heard, our iPhone business has grown to about $4.6 billion, or 39% of Apple's total business, clearly too big for Apple management or investors to ignore. Hence our introduction today of non-GAAP financial results alongside our reported GAAP results.
>
> As you can see, the non-GAAP financial results are truly stunning. By eliminating subscription accounting, adjusted sales for the quarter were $11.68 billion, 48% higher than the reported revenue of $7.9 billion, while adjusted income was $2.44 billion, 115% higher than the reported net income of $1.14 billion. Adjusted net income that is more than double our reported income—if this isn't stunning, I don't know what is, all due to the incredible success of the iPhone 3G.

Clearly, the requirements for recognizing revenue under multiple-deliverable arrangements had a significant impact on Apple's reported revenue figures, and the company felt the need to make the extent of this impact absolutely clear to the users of its financial statements. Apple had good reason to believe that its revenue figures would affect users' behavior; according to Elmer-DeWitt, "Apple's stock

jumped 18% in after-hours trading as some traders realized that the analysts they follow had underestimated Apple's earnings by nearly $3.8 billion."

FASB Comment Letters

Apple was not the only company whose revenue figures were underrepresented due to the revenue recognition rules that were in place prior to the issuance of ASU 2009-13. Many tech companies offer arrangements to customers in which multiple elements are bundled together, and these bundled packages qualify as multiple-deliverable arrangements for accounting purposes. Apple and a number of other affected companies lobbied for a change in the accounting standards for revenue recognition under multiple-deliverable arrangements. As interest in an amendment to the Accounting Standards Codification grew, FASB's Emerging Issue Task Force (EITF) opened EITF Issue 08-1, "Revenue Arrangements with Multiple Deliverables," to public discussion and commentary. According to Marie Leone, a total of "34 companies wrote to FASB during the month-long comment period that ended in August [of 2009] to register their opinions on the accounting treatment of multiple elements." Most of these companies hoped for FASB to change the standards detailing the requirements for deliverable separation to allow deliverables to be separated more easily. Specifically, these companies wanted FASB to eliminate the requirement for companies to have vendor-specific objective evidence of the fair value of all deliverables in order to treat them as separate units of accounting. Eliminating this requirement would allow companies to separate deliverables more easily and, in

turn, recognize a larger portion of revenues associated with multiple-deliverable arrangements at the time of sale. Recording revenue at the time of sale (rather than deferring it for extended periods) is also an accurate representation of the economic reality of most transactions. When Apple sells an iPhone, the customer receives the phone at the time the sale takes place, not in 24 installments over a two-year period. Since one goal of accounting is to provide users with accurate and consistent financial information, it makes the most sense for that information to reflect the true nature of transactions as closely as possible.

The 34 companies that wrote to FASB regarding the proposed amendments to revenue recognition rules for multiple-deliverable arrangements included a number of public computer electronics and software companies as well as some private financial consulting companies (see below). Although the makeup of these companies was diverse, nearly all of the 34 companies expressed the opinion that ASU 2009-13 would improve the quality of reported revenue figures by providing a better reflection of the economic reality of multiple-deliverable transactions. A handful of companies, despite supporting the EITF's proposal to allow the use of estimates for the purposes of deliverable separation, voiced concerns about the proposed requirement to eliminate the residual method of revenue allocation. As the proposed update would require companies to allocate arrangement consideration to all deliverables at the inception of the arrangement based on the relative selling price of each deliverable, some companies that had been regularly using the residual method were concerned about potentially costly changes that they would need to make to their accounting software. Only one of the 34

comment letters—that of the Washington Society of Certified Public Accountants (WSCPA)—did not generally support the proposed changes to the accounting standards. The WSCPA's primary concern was that allowing for an increased use of estimates in revenue allocation would open doors for companies to manipulate their revenue figures. While the use of estimates for accounting purposes is generally not ideal, the general consensus among the other 33 comment letters was that allowing estimates would lead to more accuracy in reported revenue figures overall.

Table 1: Comment Letters

	Company	Support Proposed Update?	Material to Financial Position?
1	Echelon Corporation	Yes	Yes
2	Marisco Capital Management, LLC	Yes	N/A
3	TiVo Inc.	Yes	No
4	Lazard Asset Management	Yes	N/A
5	Xerox Corporation	Yes	No
6	Waddell & Reed Investment Management Company	Yes	N/A
7	FPL Group, Inc.	Yes	N/A
8	Dell Inc.	Yes	No
9	Teachers Insurance and Annuity Association and College Retirement Equities Fund	Yes	N/A
10	IBM Corporation	Yes	N/A
11	Cisco Systems, Inc.	Yes	No
12	Galleon Group	Yes	N/A
13	Jennison Associates	Yes	N/A
14	Blackbaud, Inc.	Yes	No
15	Apple, Inc.	Yes	Yes
16	BDO Seidman, LLP	Yes	N/A
17	Honeywell International, Inc.	Yes	No
18	American Institute of Certified Public Accountants - Private Companies Practice Section	Yes	N/A
19	Juniper Networks, Inc.	Yes	Yes

20	Grant Thorton LLP	Yes	N/A
21	Illinois CPA Society	Yes	N/A
22	Hewlett-Packard Company	Yes	No
23	Riverbed Technology, Inc.	Yes	No
24	Palm, Inc.	Yes	No
25	Silicon Valley Accountants	Yes	N/A
26	Private Company Financial Reporting Committee	Yes	N/A
27	Institute of Management Accountants	Yes	N/A
28	Huron Consulting Group	Yes	N/A
29	Financial Reporting Advisors, LLC	Yes	N/A
30	Verizon Communications Inc.	Yes	No
31	Florida Institute of Certified Public Accountants	Yes	N/A
32	Emerson Electric Company	Yes	No
33	Washington Society of Certified Public Accountants	No	N/A
34	Salesforce.com	Yes	No

ASU 2009-13

FASB responded to Apple's and other companies' lobbying efforts in October of 2009 by issuing Accounting Standards Update 2009-13. The update amended Accounting Standards Codification subtopic 605-25, which "addresses how to separate deliverables and how to measure and allocate arrangement consideration to one or more units of accounting." Specifically, ASU 2009-13 modified the fair value requirements for multiple-deliverable arrangements such that "objective and reliable evidence of fair value" is no longer required for deliverable separation. Now there are three methods available for assigning arrangement consideration to separate deliverables:

1. Vendor-specific objective evidence (VSOE) is the price of a deliverable when the company regularly sells that deliverable on its own. VSOE is the best estimate of fair value, and should be used if it is available.

2. Third-party evidence (TPE) is the price a competitor charges for the same product or a similar and largely interchangeable product. TPE should be used if no VSOE exists (for example, if the company only sells the product in question as part of a package and never on its own).
3. The best estimate of selling price (BESP) is simply the company's estimate of the value of a deliverable. It should be used only if VSOE and TPE are unavailable.

By introducing BESP, ASU 2009-13 effectively made the requirements for deliverable separation less strict, potentially allowing for companies to separate deliverables more easily and, consequently, recognize revenues earlier than they were able to prior to the update. For Apple, this update meant that the company no longer had to recognize its iPhone revenue gradually over two years—instead, the company could simply assign an estimated value to the undelivered elements of its iPhone sales (such as software updates), allowing it to recognize the full value of the delivered portion (the iPhone itself) at the time of sale.

The new accounting treatment for multiple-deliverable arrangements was required to be implemented for all fiscal years beginning on or after June 15, 2010, but companies essentially had three different options for implementing the update:

- *Prospectively for fiscal years beginning on or after June 15, 2010*. Under this option, companies would begin applying the new rules from the start of their next fiscal year beginning on or after June 15, 2010. This means that companies with a calendar fiscal year would begin recognizing revenues

according to the updated standards for all new or materially modified multiple-element transactions entered into on or after January 1, 2011. All unrecognized revenue associated with multiple-element transactions entered into before that time ("legacy transactions") would continue to be recognized as dictated by the prior accounting guidance.

- *Prospectively with early adoption*. This option allowed companies to begin applying the new rules immediately, rather than waiting until their next fiscal year beginning on or after June 15, 2010. Companies that chose this option were required to apply the new rules back to the beginning of the first fiscal year in which they adopted the new standard. For example, a company with a fiscal year beginning on November 1st would have been required to begin applying the new rules on November 1st, 2010 at the latest. However, under the option for early adoption, that company may have chosen to apply the update to its fiscal year ending October 31st, 2009 (immediately following FASB's announcement of the update). If the company chose early adoption, it would have been required to adjust revenues associated with all multiple-element arrangements entered into on or after November 1st, 2008 to reflect the way they would have been recognized had the update been applied from the beginning of the fiscal year. This is done to ensure that annual revenue figures reported on the 10-K reflect consistent accounting treatment throughout the fiscal year. Companies that selected this option were required to disclose the effects of update in the next 10-Q or 10-K filed following their adoption of the new

standards, but were not required to submit amendments to previously filed statements.

- *Retrospectively*. This option required companies to amend all previously filed statements to reflect revenues associated with multiple-deliverable arrangements as if the new accounting rules had always been in place. If a company chose to adopt the new standard prospectively or prospectively but early, it would continue to recognize revenues associated with legacy transactions under the prior rules. Retrospective adoption, however, would effectively eliminate the effects of legacy transactions by presenting all revenues associated with multiple-element transactions as if they had always been recorded using the updated rules. Because this option required companies to amend potentially many years' filings, very few companies chose to apply the new standard retrospectively.

ASU 2009-13 also significantly expanded the requirements for disclosing information relating to multiple-deliverable arrangements. The prior disclosure requirements under ASC 605-25 were not very specific; they required entities to "disclose their accounting policy for recognition of revenue from multiple-deliverable arrangements and provide a description and nature of such arrangements, including performance, cancellation, termination, or refund-type provisions" (BDO). The updated guidance, however, requires vendors to disclose the following information by similar type of arrangement:

1. A description of the entity's multiple-deliverable arrangements, which includes the nature and terms of the arrangement

2. The significant deliverables within its arrangements
3. The general timing of their delivery or performance of deliverables
4. The significant factors and estimates used to determine vendor-specific objective evidence, third-party evidence, or estimated selling price, and significant changes in the selling price or the methodology or the assumptions used to estimate selling price
5. The general timing of revenue recognition for separate units of accounting.

In addition to these new ongoing disclosure requirements, ASU 2009-13 also includes guidelines for disclosing effects of the update in the year of adoption. Upon adoption of the new standard, companies were required to disclose any changes the update caused to units of accounting, consideration allocation, the pattern or timing of revenue recognition, and whether or not the adoption of the update was expected to have a material effect on the company's financial statements. Companies that expected to be materially affected by the update were required to disclose more detailed information regarding the extent to which they would be affected.

It should be noted that while ASU 2009-13 allows for revenues to be recognized *sooner*, it does not make any changes to the total amount of revenue that can be recorded. Although some companies experienced a spike in reported revenues immediately following their adoption of ASU 2009-13, revenues would eventually stabilize over time. However, matching the bulk of sales revenue with the period in which the sales actually took place is still beneficial to companies

because it provides investors with a better picture of the company's operations during the year. For instance, if Apple were to sell $5 billion worth of iPhones in a given fiscal year, it simply makes the most sense for the bulk of that revenue to be reported on that year's financial statements. Under subscription accounting, Apple would still recognize the entire $5 billion over time, but future 10-Ks would still be showing revenues associated with products sold a year or two in the past. This makes it difficult for users to accurately interpret the company's financial statements. For instance, it is difficult to gauge the success of a company's most recent product when mixed into its annual revenue figures are revenues associated with products sold two years ago.

III. Research Methods

As one of the main objectives of ASU 2009-13 was to improve the quality of reported revenue figures, the research presented here examines the extent to which the update accomplished this objective. In order to determine how the update affected reported revenues, financial information of selected companies was analyzed over periods before and after the update took effect. Changes in the stock prices of these companies from before and after the update took effect were also analyzed. Since stock price is commonly used as an indicator of a company's worth and performance, and a company's performance is driven partly by its revenues, it is expected that changes in a company's revenues should be reflected in the company's stock price. Therefore, the correlation between revenue changes

and stock price changes was used as a measure of how investors respond to reported revenue figures. Specifically, this research examined whether or not revenue changes and stock price changes became more highly correlated after the issuance of ASU 2009-13 than they were prior to the update. If investors felt that the update caused revenues to be reported more accurately after the update than they were in the past, then the correlation between stock price changes and revenue changes should have increased after the update. For instance, say that a 1% increase in revenue were associated with a 0.5% increase in stock price for a particular company before the update took effect. If investors felt that revenue figures reported after the update took effect were indeed more accurate than previous figures, a 1% increase in revenue may have been perceived to be more valuable after the update than it was in the past. This would lead investors to respond by paying more for the company's stock for a given revenue change than they would have previously; in this example, a 1% revenue increase may be expected to produce a 0.6% or 0.7% increase in stock price after the update. If ASU 2009-13 did in fact improve the quality of reported revenue figures, investors' decisions should be more strongly correlated with changes in the new figures than they were with previously reported figures.

Data and Sample

The sample of companies used in this analysis was selected through a search of the Securities and Exchange Commission's Electronic Data Gathering, Analysis and Retrieval (EDGAR) database. Publicly traded companies are required

by law to disclose certain information in various forms filed with the SEC. Companies file these forms through EDGAR, and the SEC makes most of them publicly available for download or viewing on its website. Domestic publicly traded companies are required to file a Form 10-K, which "provides a comprehensive overview of the company's business and financial condition and includes audited financial statements" (SEC). Essentially, the Form 10-K provides a comprehensive overview of a company's financial performance throughout its fiscal year and highlights important developments and other significant information that could influence investors' decisions. For the purposes of this research, all information regarding the sample companies' revenue, deferred revenue, earnings, and accounting policies was collected from 10-K filings from the SEC's website.

As the research presented in this paper analyzes the effect of ASU 2009-13 on revenue recognition in multiple-deliverable arrangements, the first step in the data collection process was to identify companies that enter into such arrangements. In order to find companies that may have been affected by this accounting standards update, the EDGAR database was searched for 10-Ks containing several variations of the search terms "2009-13," "multiple element arrangements," and "multiple deliverable arrangements." Companies that were not affected by this update would presumably have made no mention of it in their annual 10-K filings, while companies that were substantially affected would have been required to disclose the effects of the update in their 10-Ks. Moreover, since companies affected by this update would have been affected for more than one

year, only those companies that mentioned the chosen search terms in multiple years' 10-K filings were selected in the first stage of searching. This is because many companies that were not affected by the update still chose to include a brief note about it in their financial statements following FASB's initial announcement of ASU 2009-13, but never mentioned it again in subsequent 10-Ks. However, companies for which ASU 2009-13 had a substantial effect were more likely to mention the update for at least two years following the application of the new rules. Companies whose financial statements were not materially impacted by the change in accounting standards were then removed from the sample of companies selected in the first stage of searching. A company that enters into multiple-deliverable arrangements may not have been materially impacted by the update if these arrangements make up a very small portion of the company's overall revenue or the company was already able to separate deliverable elements before the update by utilizing VSOE. Companies that explicitly stated in their 10-Ks that the update had no material impact on their financial position or method of separating deliverables were removed from the sample.

39 sample companies remained after removing those companies for which the update had no material impact. Of the 39 remaining companies, five were removed due to unavailability of revenue, earnings, or stock price information for at least one of the four years required for analysis. Additionally, six more companies were determined to be outliers, and were removed from the sample. Outliers were determined by multiplying the interquartile range (IQR) of the percentage change in each data category (revenues, earnings, and stock price)

from before and after the update took place by a factor of 3. Companies for which one or more data categories contained a value greater than the third quartile plus three times the IQR or less than the first quartile minus three times the IQR were considered to be outliers and were removed from the sample.

Table 2: Sample Companies

	Company	Ticker	Standard Industry Classification
1	Telephone and Data Systems, Inc.	TDS	Telephone Communications
2	Arqule, Inc.	ARQL	Pharmaceutical Preparations
3	XenoPort, Inc.	XNPT	Pharmaceutical Preparations
4	Synta Pharmaceuticals Corp.	SNTA	Pharmaceutical Preparations
5	Lexmark International, Inc.	LXK	Computer & Office Equipment
6	Hewlett-Packard Company	HPQ	Computer & Office Equipment
7	Sililcon Graphics International Corp.	SGI	Electronic Computers
8	Concurrent Computer Corporation	CCUR	Electronic Computers
9	Apple Inc.	AAPL	Electronic Computers
10	Juniper Networks, Inc.	JNPR	Computer Communications Equipment
11	Echelon Corporation	ELON	Computer Communications Equipment
12	Electronics for Imaging, Inc.	EFII	Computer Communications Equipment
13	Fortinet, Inc.	FTNT	Computer Peripheral Equipment
14	Aruba Networks, Inc.	ARUN	Computer Peripheral Equipment
15	Plug Power, Inc.	PLUG	Electrical Industrial Apparatus
16	Shortel, Inc.	SHOR	Telephone & Telegraph Apparatus
17	Mercury Computer Systems, Inc.	MRCY	Electronic Components & Accessories
18	Psivida Corp.	PSDV	Laboratory Analytical Instruments
19	Antares Pharma, Inc.	AIS	Surgical & Medical Instruments & Apparatus
20	Accuray Incorporated	ARAY	Surgical & Medical Instruments & Apparatus
21	PokerTek, Inc.	PTEK	Misc. Manufacturing
22	Delta Air Lines, Inc.	XAL	Air Transportation
23	United Continental Holdings, Inc.	UAL	Air Transportation
24	Beacon Enterprise Solutions Group, Inc.	BEAC	Telephone Communications
25	Cablevision Systems Corporation	CVC	Cable & Other Pay Television
26	Amazon.com, Inc.	AMZN	Catalog & Mail Order Houses
27	Kenexa Corporation	KNXA	Prepackaged Software
28	NetSuite Inc.	N	Prepackaged Software

Table 3 presents some descriptive statistics for the sample firms. The final sample used in this analysis consisted of 28 companies with average (median) annual revenues of $10 billion ($283 million), and average annual earnings of $389 million (-$3.8 million). These companies were mostly from industries relating to software, computer hardware, medical equipment, or air travel. This is because transactions with multiple-deliverable arrangements are common in these industries. Software, computer, and medical equipment companies may commonly offer software, hardware, and service components in bundled packages. Similarly, airlines are known to distribute frequent flyer miles to customers, which may qualify as separate elements from the plane ticket itself for accounting purposes. Additionally, airline companies may have been highly likely to mention ASU 2009-13 in their 10-Ks, as the update would have changed their methods for deliverable separation significantly. In the past, airline companies would not have been able to separate frequent flyer miles from ticket value for accounting purposes due to a lack of vendor-specific objective evidence of their fair value. ASU 2009-13 would permit airline companies to estimate the value of frequent flyer miles for deliverable separation purposes, thereby allowing them to recognize revenue from ticket sales earlier.

For each sample company analyzed, revenue, deferred revenue, and earnings information was collected from four successive years' 10-K filings. Information from years 1 and 2 consisted of figures reported before ASU 2009-13 took effect, while years 3 and 4 represented figures reported using the updated revenue recognition standards. The four years selected for analysis varied from

company to company, as they were selected based on the time at which each company adopted the new standard. Years 1 and 2 were selected as the last two fiscal years before a company began applying the new rules, and year 3 was the first year in which a company began applying the new rules. For example, a company with a calendar fiscal year electing prospective adoption would have been required to begin applying the new rules as of January 1, 2011. As a result, the 10-K reflecting the company's 2011 fiscal year would have been the first 10-K that the company issued using the new accounting rules. Therefore, for this company, 10-Ks from years 2011 and 2012 would have been selected as years 3 and 4, while 2009 and 2010 would have represented years 1 and 2. By contrast, a company electing early prospective adoption may have started applying the new rules as of January 1, 2010; for this company, 2008 and 2009 would represent years 1 and 2, and years 2010 and 2011 would represent years 3 and 4.

In order to put the sample companies' data into context against general market changes over the period analyzed, the same analysis that was performed on the sample companies was also performed on a much larger group of control companies. Control companies' data were taken from the S&P Capital IQ Compustat database, which stores a wealth of information relating to companies' financials. Revenue, earnings, stock prices, and other information from a period between June of 2008 and June of 2012 for 13,451 North American public companies was initially downloaded from the database. This four-year window was chosen because, for companies choosing prospective adoption, the effects of ASU 2009-13 would have begun appearing on 10-Ks one year after the required

adoption date of June 15, 2010. Therefore, the year between June of 2011 and June of 2012 represented the difference between years 3 and 4 for the control group, and the difference between years 1 and 2 was captured between June of 2008 and June of 2009. For both sample and control companies, closing stock price data was collected from the Compustat database for the final trading dates of companies' fiscal years for the years analyzed.

From the initial group of control companies, 7,262 companies missing revenue, earnings, or stock price information for at least one of the four years required for analysis were removed from the control group. From the remaining companies, outliers were identified in the same manner used to identify outliers for the sample companies. The removal of 1,896 outliers resulted in a final control group consisting of 4,293 companies. As shown in Table 3 below, these companies had average (median) annual revenues of $4.7 billion ($345 million), and average (median) annual earnings of $403 million ($18.5 million). Table 3 shows that relative to the control firms the sample has slightly smaller companies with respect to assets, but are larger with respect to revenues.

Table 3: Descriptive Statistics for Sample and Control Companies

Sample Companies			
	Revenues (000s)	*Earnings (000s)*	*Assets (000s)*
Mean	10,083,918	389,519	8,239,349
Standard Error	5,103,372	326,715	4,465,193
Median	282,939	-3,871	203,054
Standard Deviation	26,517,900	1,697,660	23,201,826
Skewness	4	5	4
Range	126,032,853	9,484,000	114,790,717

Minimum	147	-723,000	8,283
Maximum	126,033,000	8,761,000	114,799,000

Control Companies			
	Revenues (000s)	*Earnings (000s)*	*Assets (000s)*
Mean	4,769,784	403,415	18,656,005
Standard Error	286,021	27,259	2,180,643
Median	345,091	18,527	706,581
Standard Deviation	18,740,393	1,786,064	142,877,860
Skewness	10	9	14
Range	420,015,999	50,552,585	3,221,971,988
Minimum	1	-14,014,000	12
Maximum	420,016,000	36,538,585	3,221,972,000

Revenue and earnings data for each sample company were collected from the year 2 and year 4 10-Ks. Specifically, these data were collected from the Consolidated Statements of Operation presented in Item 8 of the 10-K—"Financial Statements and Supplementary Data." Years 2 and 4 were chosen in order to simulate what investors would have seen upon initially viewing the 10-Ks. In order to put annual financial figures in context, the 10-K includes figures from the reporting year as well as figures from at least one year prior to the reporting year. Therefore, investors viewing a particular year's 10-K would compare that year's figures with the previous year's figures reported on the same 10-K. In other words, an investor analyzing the 2011 revenues of Apple, Inc. would compare the 2011 revenues to the 2010 revenues as reported on the 2011 10-K rather than pulling up the previous year's 10-K for comparison. Presenting multiple years' financial information on a single 10-K ensures consistency across all periods being

presented, as this method of presentation adjusts for any reporting changes that may have occurred between 10-K issuances. For instance, if a company made a change to its accounting methods following the filing of its year 1 10-K, the year 2 10-K figures would not be comparable to the year 1 figures as originally filed. However, the year 1 figures presented on the year 2 10-K would be adjusted to reflect the updated method of accounting, and would therefore be consistent with and comparable to the year 2 figures.

Tests

A multiple-regression analysis was performed on the percentage change in revenues, earnings, and stock prices from before and after the update took effect using the Regression tool in Microsoft Excel. The independent variables in this analysis were percentage change in revenue and percentage change in earnings, and the dependent variable being predicted was percentage change in stock price, as illustrated by the following equation:

$$\Delta\text{Price} = \beta 1 \Delta\text{Earnings} + \beta 2 \Delta\text{Revenue} + \varepsilon$$

The central component of this analysis was the correlation coefficient on the percentage change in revenues; a higher correlation between revenue changes and stock changes in the post-update data compared to the pre-update data would indicate that revenue changes were a more useful predictor of stock price changes after the update than they were before the update took place.

IV. Results

Table 4 presents the results of the regression analysis. Results of the regression analysis show that, for the period before ASU 2009-13 took effect, the revenue coefficient for the sample companies was 0.618597, compared to 0.119875 for the control companies. In other words, for each percentage increase in revenues, the stock price of the control companies increased by 0.119875%, while the stock price of the sample companies increased by 0.618597%. For the period after ASU 2009-13 took effect, the revenue coefficient for the control companies was 0.236991, while the revenue coefficient for the sample companies was -0.450674.

These results do not support the hypothesis that the correlation between revenue changes and stock changes would become stronger after the issuance of 2009-13. While it was hypothesized that the correlation between revenues and stock price would become stronger after the effect, it became both weaker and negative, decreasing from 0.61857 to -0.450674. In other words, a 1% increase in revenue was associated with a 0.45% *decrease* in stock price after the update in the sample companies. Since increases in revenue generally do not lead to decreases on stock prices, these results are unexpected and, as discussed below, may not be an accurate reflection of how ASU 2009-13 affected companies that use multiple-deliverable arrangements.

The results of the control companies indicate that the correlation between revenue changes and stock price changes in the market as a whole increased

slightly over the periods analyzed, from 0.1199 to 0.2370. The correlation between revenue changes and stock price changes was stronger in the "before" period among sample companies than among control companies, which could indicate that industries most likely to have multiple-deliverable transactions are more sensitive to revenue changes in general. This could be due to the fact that the software and computer hardware companies that are likely to sell products in multiple-deliverable arrangements often take on significant expenses relating to product development during their first few years of operations. Because of these expenses, these companies may report net losses for their first few years of operations. Although these losses are expected and are a normal part of business, they are a poor indicator of a new company's performance. Instead, investors may look to revenue figures as a measure of a company's performance. Therefore, it is fitting that revenue changes may generally lead to larger changes in stock price for companies that enter into multiple-deliverable arrangements than for other companies.

The decrease in correlation between revenue changes and stock changes for the sample companies from 0.6189 to -0.4507 indicates that revenue increases were associated with decreases in stock prices during the period after ASU 2009-13 took effect. While it was hypothesized that the variables would be more strongly positively correlated after the update than before, they in fact became less strongly correlated, and negative. The negative correlation may be due to the small sample size used, as discussed below. A negative correlation between stock

changes and revenue changes would not typically be expected, as increases in revenue generally indicate that a company's worth is increasing, not decreasing.

Table 4: Regression Results

Panel A: Overall Regression Statistics

Sample Companies		
	Before ASU 2009-13	After ASU 2009-13
Multiple R	0.467983442	0.362172962
R Square	0.219008502	0.131169254
Adjusted R Square	0.156529182	0.061662794
Standard Error	0.475078983	0.473378608
Observations	28	28

Control Companies		
	Before ASU 2009-13	After ASU 2009-13
Multiple R	0.227458964	0.261043608
R Square	0.05173758	0.068143765
Adjusted R Square	0.0512955	0.067709333
Standard Error	0.684274999	0.343512336
Observations	4293	4293

Panel B: Regression Coefficients

Sample Companies							
		Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Before ASU 2009-13	Intercept	0.2825	0.1011	2.7923	0.0099	0.0741	0.4909
	% Change in Revenues	0.6186	0.2344	2.6388	0.0141	0.1358	1.1014
	% Change in Earnings	-0.0311	0.0682	-0.4554	0.6527	-0.1717	0.1095
After ASU 2009-13	Intercept	0.0576	0.0964	0.5978	0.5553	-0.1409	0.2561
	% Change in Revenues	-0.4507	0.2548	-1.7684	0.0892	-0.9755	0.0742
	% Change in Earnings	0.1074	0.0978	1.0982	0.2826	-0.0941	0.3089
Control Companies							
		Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Before ASU 2009-13	Intercept	0.3777	0.0108	34.9295	1.7855 E-235	0.3565	0.3989
	% Change in Revenues	0.1199	0.0437	2.7420	0.0061	0.0342	0.2056

	% Change in Earnings	0.1201	0.0086	13.9604	2.3825 E-43	0.1032	0.1370
After ASU 2009-13	Intercept	-0.1064	0.0057	-18.7699	1.3199 E-75	-0.1175	-0.0953
	% Change in Revenues	0.2370	0.0238	9.9751	3.4987 E-23	0.1904	0.2836
	% Change in Earnings	0.0587	0.0048	12.2906	3.7951 E-34	0.0493	0.0680

V. Limitations of Research

The results of this research are surprising not only in the context of ASU 2009-13, but also in the context of market behavior in general. While the sample companies showed a decrease in the correlation between stock changes and revenue changes after the issuance of ASU 2009-13, this result may or may not be an accurate representation of the effects of the update. A number of factors, including the small size of the sample used, a lack of availability of information, and economic instability, may have skewed the results of this research.

Sample Size

Ideally, the sample of companies affected by ASU 2009-13 analyzed for this research would have been significantly larger. The final sample size of 28 companies was much smaller than was originally intended, and resulted from an inability to effectively identify companies impacted by ASU 2009-13. The method for identifying sample companies was to search the SEC EDGAR database for 10-Ks containing specific search terms relating to multiple-deliverable arrangements and ASU 2009-13. Although this method could theoretically identify companies most

affected by the update, the SEC website provides few options for modifying or narrowing searches. The vast majority of 10-Ks produced through this search indicated that the update did not have a material impact on the filing company's financial position, despite mentioning the search terms multiple times. Some of these companies may have been concerned with ASU 2009-13 because they anticipated it to impact them at some time in the future, but this impact may not have appeared right away. This may be true for small or relatively new companies that anticipate significant growth in the future or for companies that do not currently enter into multiple-deliverable arrangements, but may wish to use them in the future. For instance, out of the 16 public companies that sent comment letters to FASB indicating their support for ASU 2009-13, only three were materially impacted by the update. The fact that these companies took the time to voice their support for the proposed updates indicates that deliverable separation was important to them for some reason, but perhaps not immediately. Some of the companies produced through the EDGAR search may have mentioned the search terms in their 10-Ks out of anticipation of it having some kind of relevance in the future. Regardless, the large number of companies identified through the search that were not currently affected by the update indicates that this method of identifying affected companies may not have yielded very accurate results. Moreover, if so many companies identified through this method of searching were not affected by the update despite making multiple mentions of it in their 10-Ks, there may have been some companies that were substantially affected, but did not appear in the search.

Additionally, the SEC website does not allow the user to sort search results by the number of appearances of the search terms. It is feasible that companies that were most affected by ASU 2009-13 may have mentioned the search terms more times in their 10-Ks than other companies did. However, it was not possible to identify the companies that made the most references to ASU 2009-13 or multiple-deliverable arrangements using the available EDGAR search tools. A more accurate method for identifying sample companies may have produced a larger sample, which could have improved the quality of the results significantly.

Current Availability of Information

Although ASU 2009-13 was issued in 2009 and took effect in June of 2010, its effects may not have fully appeared over the period analyzed, and are probably still appearing today. The 10-Ks used as years 3 and 4 for the sample companies were among the first issued using the new revenue recognition standards, and, for most companies, 2012 served as year 4 for the purposes of this analysis. Since it is impossible to collect information for fiscal year 2013 and beyond at this time, it is difficult to develop a clear idea of the long-term effects of ASU 2009-13 based on the information that is currently available. The one-year period used to measure the after effects of ASU 2009-13 may have been too short and too soon after the implementation of the new rules to provide a clear picture of the impact that the update may have had on companies that enter into multiple-deliverable arrangements.

Economic Instability

Since data from both sample and control companies came from as early as 2008, it is possible that the effects of the economic recession impacted the results of this analysis. The recession may have affected everything from companies' earnings and sales figures to investors' spending habits. Although the control companies provide a baseline of overall market changes, it is impossible to determine the extent to which the economic decline may have affected the revenue, earnings, and stock price information used in this analysis.

Investor Awareness of Economic Reality

This research was based on the underlying assumption that investors react to revenue figures as reported on companies' 10-Ks. However, this may not be a realistic reflection of investor behavior, since investors have access to a wide variety of information regarding companies' accounting policies, and much of this information is required to be disclosed in financial statements. Because of this, it is possible that investors were already aware of the economic reality of transactions before ASU 2009-13 took effect, and had effectively been making investment decisions based on actual revenue figures rather than reported ones all along. If this is the case, then the correlation between revenue changes and stock changes may have actually decreased after the update rather than increased. For example, in the period before the update took effect, investors may have known that a 1% increase in reported revenue corresponded to an actual revenue increase of 2%, and made investment decisions accordingly. This would have shown the

correlation between revenue changes and stock changes to be higher on paper than it was in reality, since revenue figures were lower on paper than they were in reality. In the period after the update took effect, since the reported figures would have been equal to the actual figures, investors would not have had to adjust investment decisions upward, and the correlation between revenue changes and stock changes would have actually decreased.

VI. Conclusion

While the research presented here may provide some indication of the impact that ASU 2009-13 had on revenue recognition for companies that enter into multiple-deliverable arrangements, a more comprehensive study is required to determine the true extent of this impact. It is important to know how reported revenue figures affect investors' decisions, if they affect them at all, and whether changes to the Accounting Standards Codification accomplish their goal of making financial information more accurate and more useful for users. If this research were to be expanded in the future, it should examine a longer period of time after the implementation of the update in order to determine its long-term effects, which may not be immediately apparent. Most importantly, a larger sample of companies should be analyzed so that the impact of ASU 2009-13 can be more accurately measured.

Bibliography

"Accounting Standards Update No. 2009-13." (Oct. 2009): n. pag. Financial Accounting Standards Board. Web.

Amazon.com, Inc. (2010). 10-K Annual Report 2010. Retrieved from SEC EDGAR Database http://www.sec.gov/edgar.shtml

"Apple Reports First Quarter Results." *Apple*. N.p., 25 Jan. 2010. Web. 9 May 2013.

Cohn, Michael. "Amazon Follows Apple's Lead with Accounting Rule." *Accounting Today*. N.p., 27 July 2010. Web. 9 May 2013.

Elmer-DeWitt, Philip. "Accounting Rule Change in Apple's Favor." *CNN Money*. N.p., 14 Sept. 2009. Web.

Elmer-DeWitt, Philip. "Spotlight on Apple's Hidden Revenue Stream." *CNN Money*. N.p., 20 Jan. 2009. Web.

FASB (Financial Accounting Standards Board). (n.d.). *ASC 605-25*. Retrieved May 10, 2013, from FASB Accounting Standards Codification database

FASB (Financial Accounting Standards Board). (2009, October 7). *Accounting Standards Update (ASU) No. 2009-13*. Retrieved May 10, 2013, from FASB Accounting Standards Codification database.

"Form 10-K." *Form 10-K*. U.S. Securities and Exchange Commission, n.d. Web.

Gochoco, Jon. "A Look at Current Financial Reporting Issues." *PwC Dataline* (10 Jan. 2011): 1-45. Web.

"Jobs, Steve. "Apple F4Q08 (Qtr End 9/27/08) Earnings Call Transcript." *Apple Inc.* N.p., 21 Oct. 2008. Web.

Leone, Marie. "New Revenue-Recognition Rules: The Apple of Apple's Eye?" *CFO*. N.p., 16 Sept. 2009. Web.

"Multiple Deliverable Revenue Arrangements." McGladrey, n.d. Web. 9 May 2013.

"Revised Revenue Changes May Change the Way You Do Business." *BDO Knows* (Oct. 2009): n. pag. *Www.bdo.com*. BDO Seidman, LLP. Web.