IMPLICATIONS OF TRANSITIONING TO IFRS FOR FINANCIAL ANALYSTS IN THE OIL AND GAS PRODUCTION INDUSTRY

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Abstract

Globalization is changing the landscape of the investment world. A shift away from national capital markets to global capital markets has led to a movement towards a set of globally accepted accounting standards, International Financial Reporting Standards (IFRS). Guided by the measurement perspective to accounting and financial market research and in line with the literature on fundamental analysis, this research built on the empirically tested notion that a firm's intrinsic equity value can be measured by examining accounting information such as growth, risk, and earnings as well as other non-accounting information sources. A transition to IFRS would have significant effects on those accounting information sources, specifically the financial statements. Since analysts have been identified as one of the primary users of the financial statements and their investment recommendations have been linked to investor behavior, an exploration of the effects of changes in the financial statements on analysts' fundamental analysis was warranted. More specifically, this study answered the call by scholars in the field for further research into the effects of IFRS adoption in the U.S. The purpose of this two-phase, sequential mixed methods study was to assess the effects of a transition to IFRS on the key financial indicators used by financial analysts in their analyses of publicly traded companies in the oil and gas production industry. The results identify the key financial indicators used by analysts in the industry, highlight the variations in the two sets of standards that result in significant differences in those indicators as calculated under both methods, and provide guidance for management's development of preparation efforts.

Dedication

I dedicate my research to my friends and family who showed unwavering support and faith in me throughout this process. I am eternally grateful to all of you.

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There truly isn't enough time or space to convey my appreciation to all who were involved in this project. Nevertheless, I would like to express my sincere appreciation to Dr. Kenneth Granberry, my committee chair, for his hard work throughout the dissertation phase of my program. The value of his guidance cannot be measured. Also, special thanks go to the other members of my committee, Dr. Gary Robinson and Dr. Scott Yorkovich, for their insight and guidance on this project.

I would also like to thank my friends and family for all of their support during these past few years. Special thanks to my mother, Rita, for always going the extra mile and taking on more work than she had to so that I was allowed the time needed to complete my school work. I couldn't have done this without you.

Last, but certainly not least, I would like to thank God for blessing me with the opportunity to advance my education to this level. I give Him all of the glory for all that I have achieved because without Him, none of it would have been possible.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

Globalization is changing the landscape of the investment world. Researchers agree that advances in technology, reductions in barriers to trade as a result of changing social policies, and global dispersion of production have transitioned capital markets from national and international to global (Cooper, 2008; Sovacool, 2010; Stulz, 2009; Travalini, 2009). Stulz (2009) noted that as barriers to international investment fall and technology improves the cost advantages for a firm's securities to trade in its home country will progressively disappear. This shift towards global capital markets can be seen in the *World Investment Report* released by the United Nations Conference on Trade and Development. The 2010 report shows that between 1995 and 2005 world inflows of foreign direct investment averaged $741 billion per year and world outflows averaged $718 billion per year (UNCTAD, 2010). In comparison, 2009 world inflows and outflows exceeded $1.1 trillion and $1 trillion, respectively. Harris (2009) noted that globalization has had the effect of reducing home bias in individual, institutional, and governmental investment portfolios which has led to the weakening of the dominance of Western nations such as the United States (U.S.). In fact, the *2010-2011 Global Competitiveness Report* issued by the World Economic Forum ranked the U.S. fourth in

terms of global competitiveness behind Switzerland, Sweden, and Singapore. The United States lost its longstanding leading position two years ago when it dropped to second and has since continued to lose ground. Despite the growth and sheer size of the United States' domestic economy, "other regions are growing much more quickly due to the influx of capital from countries and companies with more investment options" (Kotlyar, 2008, p. 232). This shift away from national capital markets to global capital markets has led to a movement towards a set of globally accepted accounting standards. According to its website, the International Accounting Standards Board's (IASB's) goal "is to develop, in the public interest, a single set of high-quality, understandable, enforceable and globally accepted financial reporting standards based upon clearly articulated principles" (IASB, n.d., "About the IFRS Foundation," para. 1). Such a set, known as International Financial Reporting Standards (IFRS), are evolving and are now used for public reporting purposes in more than 100 countries, and the United States is on track to follow suit (Johnson, 2008).

Based on the Securities and Exchange Commission's (SEC's) proposed roadmap towards adoption of IFRS released in 2008 and a recent commission statement released in 2010, a transition from U.S. Generally Accepted Accounting Principles (U.S. GAAP) to IFRS in the United States in the next 5-7 years seems imminent. However, according to industry representatives, investors, and analysts' responses to the roadmap, the U.S. is not prepared for such a dramatic shift (SEC, 2008; SEC, 2010). Such a transition will affect the way financial statements for publicly traded companies in the U.S. are prepared and presented. Since financial statements, and the annual report as a whole, are vitally

important to the analysis of a company's financial strength and stability, a dramatic change in those statements directly affects that analysis. More specifically, the financial indicators used in the fundamental analysis approach to equity valuation will be affected. Research has shown that financial analysts serve as an intermediary between companies and investors, responsible for analyzing and interpreting a company's financial statements and making recommendations to investors (Newman, 2009; Vergoossen, 1997). In fact, previous research has revealed that analysts' recommendations are one of the most influential factors guiding investor behavior (Breton & Taffler, 2001; Krishnan & Booker, 2002; Womack, 1996). Given the importance of analysts' as the link between accounting information and investors, it is important that scholars and practitioners examine how a transition from U.S. GAAP to IFRS might affect analyst's fundamental analyses and investment recommendations in U.S. capital markets.

Background of the Study

International Financial Reporting Standards are rapidly becoming the global standards intended to increase comparability of financial statement data across geographic boundaries and better serve investors in their search for more efficient capital allocation. In 2002, the Financial Accounting Standards Board (FASB) and the IASB signed the Norwalk Agreement committing to convergence of U.S. GAAP and their international counterpart, IFRS ("Memorandum of Understanding," n.d.). In 2007, the SEC reiterated its desire for harmonization of the standards and eliminated the requirement that foreign entities listed on U.S. exchanges prepare a 20-F reconciliation to

reconcile its non-U.S. GAAP statements to U.S. GAAP—as long as the financials were prepared in accordance with IFRS (SEC, 2007). This regulatory change reaffirmed the U.S.'s desire to transition towards IFRS. Eight months after lifting the requirement to prepare 20-F reconciliations, in August of 2008, the SEC issued a proposed roadmap that called for an early adoption option allowing certain companies to use IFRS as early as 2014 (SEC, 2008). After carefully considering responses to the roadmap, the SEC unanimously approved a new policy statement and staff work plan early in 2010. The new plan called for further review of IFRS and a 2011 vote on whether to move forward with a mandate to use IFRS by 2015 (SEC, 2010). "While the SEC affirmed its desire to keep moving toward IFRS adoption, the new timeline offers issuers some breathing room from the 2014 deadline originally spelled out in the proposed roadmap the SEC unveiled in 2008" (DeFelice & Lamoreaux, 2010, p. 22). This affirmed desire towards adoption indicates that the U.S. is well on its way to a transition to IFRS. However, as noted above, companies, investors, and analysts are not prepared for such a shift.

Statement of the Problem

A shift to IFRS from U.S. GAAP would significantly change the financial reporting guidelines that currently guide publicly traded companies on the preparation and presentation of their financial statements. These changes will affect all of the financial statements currently required by U.S. GAAP, and therefore will affect the analysis of those statements as well. Of particular interest in this study is the effect of a transition on financial analysts' analyses of financial statements prepared in accordance

with a different set of standards, since analysts have been identified as one of the primary users of the financial statements and their investment recommendations have been linked to investor behavior (Breton & Taffler, 2001; Womack, 1996). According to the fundamental analysis approach to equity valuation, financial analysts typically examine key financial indicators when evaluating a company's financial strength and stability. The problem that arises as a result of conversion is that changing to a different set of standards directly effects the preparation of financial statements, and a change in the financial statements directly affects those financial indicators calculated by analysts when evaluating a company.

Purpose of the Study

The purpose of this two-phase, sequential mixed methods study was to assess the effects of a transition to IFRS on the key (fundamental) financial indicators used by financial analysts in their analyses of publicly traded companies in the oil and gas production industry. The first phase was a qualitative exploration of the key financial indicators identified by analysts by performing content analysis on a sample of financial analysts' reports from the Investext database. Following this phase, an analysis of the previously identified key financial indicators found in a sample of 20-F reconciliations was performed. The key financial indicators identified in the qualitative phase were then quantitatively tested to assess the magnitude of the differences between those metrics under U.S. GAAP and IFRS in order to identify how each financial indicator was affected

by the change. The potential impact on the publicly traded companies in the oil and gas production industry was considered.

Rationale

This study was necessary and important for many reasons. Guided by the measurement perspective to accounting and financial market research and in line with fundamental analysis literature, this research built on the empirically tested notion that a firm's intrinsic equity value can be measured by examining accounting information such as growth, risk, and earnings as well as other non-accounting information sources. A transition to IFRS would have significant effects on those accounting information sources, specifically the financial statements. Therefore, since analysts have been identified as one of the primary users of the financial statements and their investment recommendations have been linked to investor behavior (Breton & Taffler, 2001; Womack, 1996), an exploration of the affects of changes in the financial statements on analysts' fundamental analysis was warranted. More specifically, this study answered the call for further research into the effects of IFRS adoption in the U.S. (Hail, Leuz, & Wysocki, 2009; Henry, Lin, & Yang, 2009; Plumlee & Plumlee, 2008). In order to do so, this study built on previous research (Abdolmohammadi et al., 2006; Breton & Taffler, 2001; Jones & Shoemaker, 1994; Nielsen, 2008; Previts et al., 1994; Rogers & Grant, 1997) that has utilized content analysis of analyst reports as a means for investigating how analysts process accounting information and what specific information is considered fundamental to their analyses.

Research Questions

Research Questions:

1. What are the key financial indicators identified in analysts' reports on publicly traded companies in the oil and gas production industry?
2. What differences exist between the identified financial indicators when the financial statements are prepared in accordance with U.S. GAAP compared to when the financial statements are prepared in accordance with IFRS?

Significance of the Study

As Kotlyar (2008) stated, "Transitioning to IFRS is likely to impact the way in which management communicates with investors and companies conduct business with customers and vendors, as well as the key processes of daily operations" (p. 235). The findings of this study provide management with a better understanding of the effects of a conversion to IFRS on their company's financial statements, thereby allowing them to better prepare for the transition. This more-developed understanding of the implications of the change has provided some insight into the breadth of the effects of a shift to IFRS, which can guide managements' preparatory actions across various aspects of their business. Further, by identifying the key financial indicators used by analysts when analyzing companies in the oil and gas production industry, management of other companies within this industry are now able to assess the effects of a shift to IFRS on those indicators as well.

Definition of Terms

The following definitions guided this research study:

Analyst report. A report prepared by a financial professional regarding a specific company that includes an investment recommendation and information analysts believe is most relevant to investor decisions to support that recommendation (Rogers & Grant, 1997).

Annual report. The SEC Edgar database describes this report, also known as a 10-k, as an annual publication that public companies must file with the SEC pursuant to sections 13 and 15(d) of the Securities and Exchange Act of 1934. The report provides information on a company's operations and financial position and includes sections such as Management's Discussion and Analysis, Consolidated Financial Statements, Notes to the Financial Statements, and an Independent Auditor's Report.

Content analysis. Krippendorff (1980) defines it as "a research technique for making replicable and valid inferences from data to their context" (p. 21). Weber (1990) noted that content analysis is a research method that uses a set of procedures to make valid inferences about the sender(s) of a message, the message itself, or the audience of the message by examining text. Neuendorf (2001) defines it as a summarizing, quantitative analysis of messages that relies on the scientific method (including attention to objectivity-intersubjectivity, a priori design, reliability, validity, generalizability, replicability, and hypothesis testing) and is not limited to the types of variables that may be measured or the context in which the messages are created or presented.

Financial analyst. Simpson (2010) described a financial analyst as a "capital market intermediary who improves market efficiency through information collection and dissemination" (p. 249). In other words, a financial professional with expertise in analyzing and evaluating investments and making investment recommendations. Typically, these professionals are employed by brokerage firms, investment advisors, and mutual funds and prepare reports detailing their research and analysis of particular companies.

Fundamental Analysis. Involves inferring a firm's intrinsic equity value by carefully examining accounting information such as earnings, risk, and growth in published financial reports, as well as assessing other sources of information concerning the firm's activities, the markets in which it competes, and the overall economic environment (Bauman, 1996; Graham, Dodd, & Cottle, 1963; Zhang & Yang, 2009).

Globalization. Sovacool (2010) described globalization as "a process of widening, deepening, and quickening of worldwide interconnectedness" (p. 15). Other research and related literature has described it as a process of global economic integration as a result of dramatic advances in technology, liberalization of trade and capital policies, lowered costs of communication, and transnational production (Cooper, 2008; Friedman, 2000; Harris, 2009; Sovacool, 2010; Stulz, 2009; Travalini, 2009; UNCTAD, 2002).

IFRS. According to the International Accounting Standards Board (IASB), International Financial Reporting Standards (IFRS) are a global set of accounting standards developed by the (IASB) that are used as a guide in the preparation of public company financial statements.

Key financial indicators. Rogers and Grant (1997) state, "because the primary function of an analyst is to analyze and interpret the important facts relating to an issue and present this information in a coherent, readily intelligible manner, we assume their reports reflect information that analysts believe is most relevant to investor decisions" (p. 19). Guided by fundamental analysis research and using content analysis, the financial information units identified most frequently and of the greatest importance will be deemed the key financial indicators. This is validated by the use of such techniques in similar studies (Rogers & Grant, 1997; Previts et al., 1994). Further, Weber (1990) and Neuendorf (2001) both suggest that relative frequency can be used as a proxy for measuring importance.

Oil and gas production industry. The Global Industry Classification Standard (GICS) describes this industry (10102020) as companies engaged in the exploration and production of oil and gas not classified elsewhere.

U.S. GAAP. United States Generally Accepted Accounting Principles are a set of standards developed by the Financial Accounting Standards Board (FASB) that are used as a guide in the preparation of public company financial statements.

20-F reconciliations. According to the SEC Edgar databases' description, Form 20-F is an SEC filing submitted to the Commission by foreign private issuers pursuant to sections 13 and 15(d) of the Securities and Exchange Act of 1934. In this study, '20-F reconciliations' refers to the annual reports filed by these foreign private issuers, reconciling their financial statements from their national GAAP to U.S. GAAP.

Assumptions and Limitations

Full disclosure of all assumptions underlying the study and the limitations associated with the research method is important in assessing the validity and reliability of this research. Therefore, a brief description of both the assumptions and limitations is presented below.

Assumptions

It could be argued that analyzing analyst reports does not identify all of the important information units used by that particular analyst in making their informed investment recommendation. However, as other researchers have noted, since the primary purpose of an analyst report is to provide evidence that substantiates their recommendations, it is reasonable to assume that they will include those information units they considered significant during their analysis (Breton & Taffler, 2001; Rogers & Grant, 1997; Schipper, 1991). Therefore, in this research, it was assumed that the analyst included all the information units deemed important in their analysis in their report.

In addition to the assumptions made about analyst reports, this research was conducted based on the assumptions underlying what previous research has dubbed the *measurement perspective* to market based accounting research. This perspective is built on the assumption that market price does not necessarily coincide with firm value and views the role of accounting information as a means of *measuring* intrinsic value.

Another important assumption involved the results of the content analysis to be performed on the sample of analyst reports. Those information units identified most frequently were deemed the "key financial indicators" that were used in the second phase

of the study under the assumption that relative frequency can be used as a proxy for measuring importance. This technique has been used in similar studies (Previts, Bricker, Robinson, & Young, 1994; Rogers & Grant, 1997) and was substantiated by Neuendorf (2001) and Weber (1990) as a valid technique for studies such as this.

Limitations

One significant limitation of this study was that it did not examine 20-F reconciliations past 2007 since the requirement for such a form was lifted for companies filing in accordance with IFRS. More recent convergence efforts were not exemplified in these reconciliations and the differences found may have decreased or been eliminated since the preparation of that form. Therefore, a discussion of the recent convergence projects that relate to those differences identified during the study was included in Chapter 5.

Nature of the Study

This study was a two-phase, sequential mixed methods study. The first phase was a qualitative exploration of financial analysts' reports using content analysis in order to identify the key financial indicators analysts rely on when making investment recommendations in the oil and gas production industry. Following this phase, 20-F reconciliations were examined. The key financial indicators identified in Phase 1 were located within, or calculated using, the sample 20-F reconciliations. Each financial metric was analyzed and tested to assess the magnitude of the differences between those metrics under U.S. GAAP and IFRS.

Theoretical/Conceptual Framework

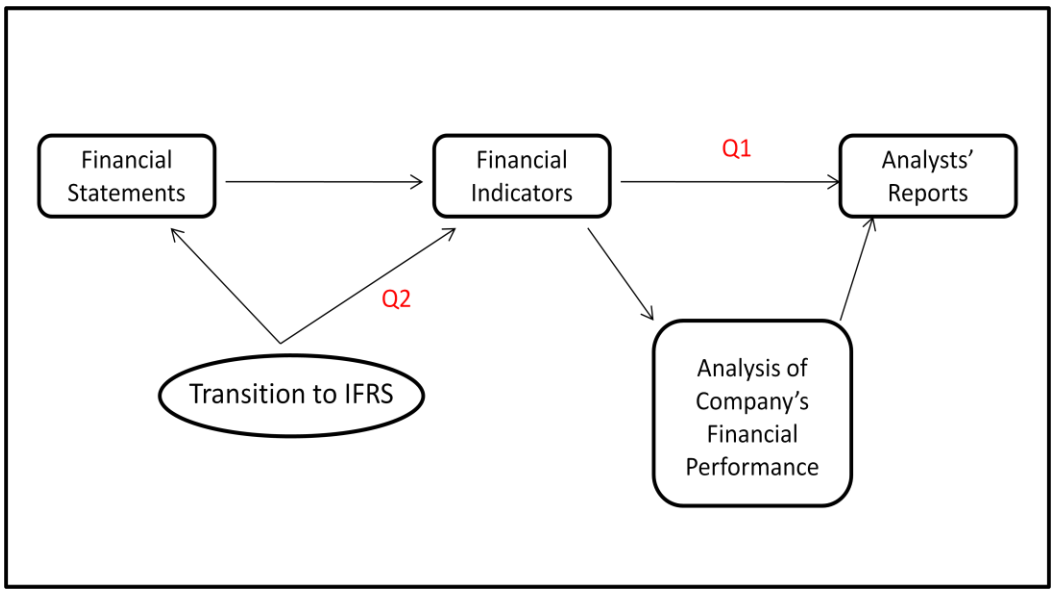

Figure 1. Conceptual framework

Guided by previous research investigating the fundamental analysis approach to security valuation (Abarbanell & Bushee's, 1997; Lev & Thiagarajan, 1993), the diagram above is a visual depiction of the process in which analysts evaluate key financial indicators taken from financial statements and how this process will be affected by a transition to IFRS. Research Question 1 involved an examination of the key financial indicators identified in analysts' reports. Prior research (Rogers & Grant, 1997) substantiates the evaluation of analyst reports by noting that:

> Because the primary function of an analyst is to analyze and interpret the important facts relating to an issue and present this information in a coherent, readily intelligible manner, we assume their reports reflect information that

analysts believe is most relevant to investor decisions. (Rogers & Grant, 1997, p. 19)

Research Question 2 examined how a transition to IFRS will affect those key financial indicators identified in analysts' reports.

Organization of the Remainder of the Study

The remainder of this study is organized as follows. Chapter 2 contains a two part literature review providing pertinent information on the concepts being researched including the development of IFRS and globalization, and a review of the literature related to the research design to be employed. Chapter 3 discusses the research design in depth. Chapter 4 contains the results of the testing that was performed and Chapter 5 includes a discussion on the findings.

CHAPTER 2. LITERATURE REVIEW

Introduction

In this chapter a two-fold literature review is presented. The first section of this literature review revolves around the conceptual framework of the study at hand. A brief discussion on globalization and its role in the development of a global set of accounting standards is presented. Also, since IFRS are still in their early life, it is important to examine them and their evolution in detail. In addition, sections are also devoted to a review of the literature surrounding the theoretical underpinnings of fundamental analysis, the importance of the annual report to financial analysis, and investor's use of analyst recommendations.

Secondly, in order to gain a good understanding of the methodology and research designs that were employed in this study, a review of the literature surrounding these topics is included. As suggested by Creswell (2009), it is useful to convey a basic definition and description of the mixed methodological approach in a proposal. Therefore, a brief explanation of the mixed methodology, a look at the benefits of mixed methods research, and an evaluation of the use of such methodology in the current study, is given. Also, a historical review of content analysis and its use in accounting research is presented.

Review of Conceptual Framework

The following discussion of the conceptual framework includes a review of the literature on globalization of capital markets, the evolution of IFRS, the fundamental analysis approach to equity valuation, and the role of financial analysts as intermediaries. In addition, a brief discussion on 20-F reconciliations, the use of analyst reports in accounting research, and the rationale behind the industry selected for this research is presented.

Globalization of Capital Markets

In order to comprehend how globalization is affecting the world's capital markets and why it is one of the driving forces behind harmonization of global accounting standards, one must have a clear understanding of what globalization is and how it began. Sovacool (2010) describes globalization as "a process of widening, deepening, and quickening of worldwide interconnectedness" (p. 15). Other research and related literature has described it as a process of global economic integration as a result of dramatic advances in technology, liberalization of trade and capital policies, lowered costs of communication, and trans-national production (Cooper, 2008; Friedman, 2000; Harris, 2009; Sovacool, 2010; Stulz, 2009; Travalini, 2009; UNCTAD, 2002). These key factors are the driving forces behind globalization, and therefore, a brief description of each is presented.

Advances in technology have played a vital role in the evolution of globalization (Sovacool, 2010; Friedman, 2000; Travalini, 2009). Essentially, advances in computerization, telecommunications, and digitization are allowing people all around the

world to get connected and exchange information, knowledge, news, and financial data, among other things, almost instantaneously and at relatively minimal cost. Arguably the most influential technological advancements contributing to the progression of globalization was the creation and rise of the Internet.

While technology has evolved dramatically over the past three decades, the expansion of commerce and investing on to a global front was a far more drawn out process. Stulz (2009) noted that barriers to international investment have progressively been removed since the end of World War II. Sovacool (2010) describes this period as being "punctuated by the coming of the nuclear age, emancipation of European colonies, and establishment of supranational and multinational organizations such the United Nations and International Monetary Fund in 1945 and the World Bank in 1946" (p. 19). For the U.S., as Friedman (2000) describes, it began in the 1960s with the emergence of the corporate bond market, followed by the securitization of home mortgages in the 1970s and the international debt market in the 1980s. In 1989, when Latin America fell into another debt crisis, major U.S. commercial banks converted their outstanding Latin American debt into U.S. government-backed bonds that were either held as assets or sold to the general public at higher than normal interest rates. This democratization of lending dramatically expanded the market and increased its liquidity, all the while putting pressure on those debt ridden countries that were being bailed out to make economic reform. And to exacerbate this pressure, as a result of pension reform and the ability to personally manage retirement accounts, those investors investing in those government backed bonds were "managing [their investments] very aggressively for higher returns"

in fear of the looming problems with social security (Friedman, 2000, p. 58). This global expansion of investing and lending was enhanced when the system of fixed exchange rates and capital controls were eliminated, governments negotiated reductions in barriers to commerce, and developing countries opened their capital markets to foreign traders (Travalini, 2009).

The driving forces described above have changed the dynamics of the world's economy, shifting it to an era of globalization. Researchers agree the United States has established itself as one of the leaders of the globalization movement (Cooper, 2008; Harris, 2009; Travalini, 2009). "Thanks to two hundred years of boom and bust cycles in the railroad business, endless bank failures, huge bankruptcies, monopolies created and busted up, the stock market crash of 1929 and the savings and loan crisis of the 1980s," (Friedman, 2000, p. 189) the U.S. economy was better prepared for the era of globalization sooner than any other country in the world. As Tandoh-Offin (2010) stated, "There is no denying the fact that America itself, through decades of global leadership, helped to start the processes [that led to globalization]" (p. 281). Spencer and Green (1993) credit President Reagan with establishing the U.S. as a leader in the revolution toward globalization and the free movement of capital by highlighting the benefits of foreign investment with three policy objectives: (a) "liberalization of barriers and the reduction of distortion of international investments abroad," (b) "encouragement of a greater role for private foreign investment in the economic development of less-developed countries," and (c) "maintenance of the maximum degree of foreign investment openness for the United States economy" (p. 540). Cooper (2010) adds that

the size and institutional arrangements in the U.S. economy, along with the wide diversity of financial assets its market offers, makes many of its marketable securities more liquid than in other financial markets.

While the U.S. led the revolution toward globalization, globalization itself, along with the financial crisis of 2007, has led to a weakening of U.S. dominance (Harris, 2009). Harris (2009) points out that one-half of global growth that year came from China, India and Russia, which shows that those countries' economies were still growing while the U.S. struggled. Despite the growth and sheer size of the United States' domestic economy, other regions are growing much more quickly due to the influx of capital as global investing becomes more popular. In addition, "higher corporate tax rates combined with stricter regulations about internal controls, such as the post-Enron laws like Sarbanes-Oxley (SOX), are causing more expensive compliance and inhibiting businesses from investing in the…U.S. market" (Kotlyar, 2008, p. 232). This, along with globalization, has led investors to seek out investment opportunities on the global front. In fact, in 2005 all but one of the world's twenty-five largest initial public offerings (IPOs) were executed on non-U.S. exchanges (Zakaria, 2008). This shift away from national capital markets to global capital markets has led to a movement towards a set of globally accepted accounting standards. According to Moussa (2010), a global accounting language is becoming increasingly important in this period of economic globalization because accounting information quality directly influences the level of market transactions and effective allocation of global resources. Such a set has been created and named the International Financial Reporting Standards that are now used for

public reporting purposes in more than 100 countries, and the United States is on track to follow suit (Johnson, 2008).

Equipped with this bettered understanding of globalization and how it is affecting the United States' financial markets and investing in general, let us examine why globalization is one of the driving forces behind a shift to IFRS. Now that investors have the ability to invest in and from overseas and are able to execute these investments through online trading, there is an increased desire for transparency and for reassurance about the accuracy of the information on which they are basing their investment decisions. Beke (2010) stated, "With increasing globalization of the marketplace, international investors need access to financial information based on harmonized accounting systems and procedures" (p. 49). In addition, Lehavy, Li, and Merkley (2011) noted that an increase in the amount and complexity of required disclosures to international investors has led to concerns about the ability of interested users to make informed decisions based on this information. For example, globalization of capital markets may create the illusion to uninformed investors that all markets are equally liquid and efficient and that the financial information behind the investment opportunities available in these markets is current, reliable, accurate, and complete. However, that is not always the case. Therefore, a global set of accounting standards may provide more uniform information for those unsophisticated investors and reduce the cost for those seeking capital (Hail, Leuz, & Wysocki, 2009).

In addition to the reasons mentioned above, there are a multitude of other reasons driving the push for a set of global standards. First, financial statements from companies

in various countries presented in accordance with one set of standards may result in increased investor confidence among international investors that otherwise would only have invested their capital domestically. Cheong and Masum's (2010) study revealed that the introduction of Australian IFRS increased reporting quality in Australia, in as much as it improved analysts' forecasts. This is evidence of the increased usefulness of financial statements after the adoption of IFRS, which may result in increased investor confidence.

Secondly, generally if a company wants to have their stock listed on an exchange it must prepare their financial statements in accordance with local generally accepted accounting principles or provide a reconciliation that conforms to such (UNCTAD, 2009). Having one set of standards would eliminate this impeding rule, thereby facilitating the free flow of capital across geographical boundaries. Although many foreign countries have been preparing at least one set of financial statements in accordance with U.S. GAAP for many years, since it is required to be listed on United States' exchanges, the IASB, and the countries it represents, sought to have a global set of standards. Having newly developed global standards, instead of simply adopting the U.S. standards, promotes inclusivity as many countries have attempted to differentiate themselves from the American way. Beke (2010) highlights this point by stating, "harmonization is used as a reconciliation of different points of view, which is more practical than uniformity, which may impose one country's accounting point of view on all others" (p. 49).

Lastly, from a company's perspective, only having to prepare one set of financial statements would be far more efficient and cost effective than preparing multiple sets of statements to comply with various local regulatory requirements (Epstein & Jermakowicz, 2009).

IFRS

International Financial Reporting Standards (IFRS) are the set of global standards created to answer the call to better serve investors, be more cost efficient in capital allocation, increase comparability of financial statement data across geographical boundaries, and provide a financial synergy to the global investment community. As Kotlyar (2008) stated,

> The combination of a more difficult U.S. investment climate with an increased number of stakeholders in global financial markets—thanks in part to emerging market economies—stimulated the creation of IFRS, as a means of providing comparability between investment opportunities in different countries. (p. 233)

These standards were not always called IFRS, however. Prior to 2001, the standards were known as International Accounting Standards (IAS) (Ball, 2006). These standards were developed by the International Accounting Standards Committee (IASC). The IASC was formed in 1973 closely following the creation of the FASB in the United States, "in the wake of the 1972 World Accounting Congress after an informal meeting between representatives of the British profession (Institute of Chartered Accountants in England and Wales—ICAEW) and the American profession (American Institute of Certified Public Accountants—AICPA)" (Epstein & Jermakowicz, 2009, p. 3).

Immediately following its formation, the professional accountancy bodies in Australia, Canada, France, Germany, Japan, Mexico, Netherlands, and Ireland were asked to join the international body, which was established in London, where its successor, the IASB, remains today. In April 2001, the IASC was incorporated to form the IASB. Ball (2006) stated, "The IASB is better funded, better staffed and more independent than its predecessor, the IASC" (p. 6). According to the IASB's website, the IASB is funded by the IFRS Foundation, a not-for-profit, private sector body, who raises funds from a wide range of participants, mostly banks, organizations, and companies who have an interest in the development of global standards, from across the worlds capital markets.

IFRS and the United States

After the reorganization, relations between the FASB and the IASB grew stronger. In October 2002, the two standard setting bodies signed the Norwalk Agreement committing to "make their existing financial reporting standards fully compatible as soon as practicable and to coordinate their future work programs to ensure that once achieved, compatibility is maintained" ("Memorandum of Understanding," n.d.). "The U.S. Securities and Exchange Commission has for many years been a strong leader in international efforts to develop a core set of accounting standards that could serve as a framework for financial reporting in cross-border offerings" (AICPA, 2008, p. 3). In April 2005, the process of convergence was given a dramatic push when the SEC and the European Union reached an agreement on a roadmap that set out steps the SEC would take to eliminate the need for foreign companies registered on U.S. exchanges using IFRS to reconcile to U.S. GAAP (Jermakowicz & Gornik-Tomaszewski, 2005).

This proposed elimination of the 20-F reconciliation for foreign private issuers whose financial statements are prepared in accordance with IFRS came to pass in November of 2007 (SEC, 2007).

20-F reconciliations. Researchers have studied 20-F reconciliations for a multitude of reasons. In recent years, some research has focused on the effects of lifting the requirement to file such a reconciliation report. For example, Plumlee and Plumlee (2008) sought to provide a more complete picture of the information that is now no longer available to investors. The study examined the quantitative values of the differences between IFRS and U.S. GAAP in 100 20-F filings prepared in 2006 by foreign-private issuers (FPIs) that prepared their financial statements in accordance with IFRS. The results indicated a vast majority of the FPIs reported differences relating to pensions and post retirement benefits as well as goodwill and other intangible assets. In addition, the study revealed that firm size and industry correlated with the sign, magnitude, and category of the reconciling items. This reveals that some industries will be more affected by a conversion to IFRS than others.

Other researchers have used the 20-F reconciliation as a means for investigating the progress of the recent convergence projects between the FASB and the IASB. Henry, Lin, and Ya-wen Yang (2009) examined 225 20-F reconciliations presented for the years 2004-2006 for 75 European Union companies. The results indicated that the average gap between U.S. GAAP and IFRS calculated net income and shareholders' equity declined from 2004 to 2006, consistent with the convergence efforts. However, the authors note that while declining, the differences remained significant. For example, they note that

most firms in the study reported higher net income and lower shareholder's equity under IFRS than U.S. GAAP. The significance of the difference was revealed by examining the sample firms' Return on Equity (ROE) figures. As a result of the conversion, 28 percent of the sample firms' ROE calculated under IFRS was more than 5 percentage points higher than under U.S. GAAP. Further, less than 10 percent of sample firms' ROE was more than 5 percentage points lower. Contributing to the importance of this study, the authors noted that in light of the elimination of the reconciliation requirement and the potential adoption of IFRS for U.S. companies, "investors and other financial statement users should be aware of the significant numerical differences" (p. 121).

SEC roadmap. Eight months after lifting the requirement to prepare 20-F reconciliations, in August of 2008, the SEC issued a proposed roadmap towards adoption of IFRS and asked for comments from scholars and practitioners alike. The proposed roadmap called for an early adoption option allowing certain companies to use IFRS as early as 2014. The responses to this call for comments varied greatly. In Bradshaw et al. (2010), the Financial Reporting Policy Committee of the American Accounting Association make the following points in a published response to the roadmap: (a) Convergence of IFRS and U.S. GAAP is thought to be in the best interest of U.S. companies in the long run, (b) Material differences remain between the two sets of standards "in terms of conceptual issues and in terms of the magnitude of differences in net income and stockholders' equity" (p. 110), and (c) The U.S. educational institutions are not prepared to teach IFRS at the level necessary for near term adoption. While this response was in favor of continued progression toward adoption of IFRS, some

researchers have argued that the benefits of such a conversion would not outweigh the costs. Hail, Leuz, and Wysocki (2009) argue that such a major shift in standards may not yield large net benefits for most companies or the entire U.S. economy, as often claimed. They note that having a single set of standards doesn't guarantee comparability across countries. They state, "reporting incentives and enforcement of standards are at least as important as accounting standards in influencing reporting *practices* [italics in original]" (p. 4). Further, they suggest that comparability benefits to U.S firms and investors will be limited because the U.S. is such a large economy, "firms and countries have incentives to implement IFRS in ways that fit their particular institutional infrastructure and meet the specific needs of their stakeholders" (p. 5), and the fact that U.S. GAAP and IFRS are already fairly similar. While the elicited responses to the proposed roadmap varied, all seemed to be taken into consideration by the SEC and at long last a statement was given about the future of IFRS in the United States. In February of 2010, the SEC unanimously approved a new policy statement and staff work plan that calls for further review of IFRS and a 2011 vote on whether to move forward with a mandate to use IFRS by 2015 at the absolute earliest (SEC, 2010). "While the SEC affirmed its desire to keep moving toward IFRS adoption, the new timeline offers issuers some breathing room from the 2014 deadline originally spelled out in the proposed road map the SEC unveiled in 2008" (DeFelice & Lamoreaux, 2010, p. 22).

Lessons learned. The continued efforts by the SEC to move towards a transition to IFRS seem to indicate that adoption is inevitable. Luckily, there is a benefit to being one of the later countries to implement the transition, in this case the U.S., can reflect on

other countries experiences and learn from them. In a paper published by the United Nations Conference on Trade and Development on the lessons learned from the implementation of IFRS in Brazil, Germany, India, Jamaica, Kenya, Pakistan, South Africa, and Turkey, important recommendations were given.

First, the plan to transition and its "implications for preparers, users, educators, and other stakeholders has to be effectively coordinated and communicated" (UNCTAD, 2009, p. 10). The article goes on to state, "The implementation of IFRS requires considerable preparation both at the country and entity levels" (p. 10). This lesson encompasses many aspects of the transition process. With regards to the country's preparation, regulatory agencies should ensure that the differences in IFRS and currently accepted accounting and reporting methods are addressed prior to implementation. Many countries have done this by "carving out" certain standards. For example, the European Union mandated IFRS in 2005 with the notable exception of IAS 39 which involves reporting guidelines for financial instruments such as various types of hedge funds and financial guarantee contracts. While this may be in the best interest of those countries it causes problems for other countries promoting comparability, such as the U.S. who recently eliminated the reconciliation requirement for foreign private issuers who file financial statements in accordance with full GAAP (Epstein & Jermakowicz, 2009; SEC, 2007).

In addition to these country-level recommendations, one must consider the entity specific requirements for the preparation of the shift. Not only does the change affect the presentation of a company's financial statements, it also changes the underlying

framework guiding those figures. One of the most distinct differences is that IFRS are principles-based, while U.S. GAAP is rules-based (Epstein & Jermakowicz, 2009). Accounting personnel and management need to be adequately trained on the new principles-based standards to ensure their correct application. Also, Epstein and Jermakowicz (2009) recognize additional areas for concern: (a) Changes in financial statement figures could lead to a need for a reevaluation of debt covenants, financing agreements, and legal contracts based on those figures, (b) Tax teams must be aware of the transition differences and their impact on tax, (c) Technology has to be updated, and (d) Investor relations is crucial to communicating the need for and impact of the transition to IFRS to investors. With that said, the purpose of this study was to contribute to the development of a more thorough understanding of how a transition to IFRS will affect U.S. companies and the investors who invest in them.

Fundamental Analysis

It is important to review the theoretical underpinnings guiding this research. In their analysis of conflicting financial market theories, Phoa, Focardi, and Fabozzi (2007) suggest that the term *interpretive framework* might be more appropriate than *theory* when discussing the underlying approaches guiding financial market research. With that said, a brief description of fundamental analysis, the interpretive framework guiding this research, and its origination is presented.

Information perspective vs. measurement perspective. Fundamental analysis involves inferring a firm's intrinsic equity value by carefully examining accounting information such as earnings, risk, and growth in published financial reports, as well as

assessing other sources of information concerning the firm's activities, the markets in which it competes, and the overall economic environment (Bauman, 1996; Graham, Dodd, & Cottle, 1963; Zhang & Yang, 2009). Research in fundamental analysis represents a shift from the long-established informational paradigm that has dominated market related accounting research for more than twenty years (Bauman, 1996; Penman, 1992) to what researchers have dubbed the measurement perspective. Supporters of the two perspectives differ in many ways, such as their views on the Efficient Market Hypothesis (EMH), the distinction (or lack thereof) between firm value and market price, and what information can be used to project future earnings. A look at the disparities between the information and measurement perspectives is essential to a thorough understanding of fundamental analysis.

The information perspective is an extension of one of the most significant developments in the theory of finance, that is, the EMH (Berstein, 1975). Fama (1970) suggested that an efficient market is one in which securities' market prices "fully reflect" all available information and are therefore a fair and accurate estimate of firm value (p. 383). Accordingly, stock price can serve as a benchmark that can be used to evaluate information, specifically accounting data. The information perspective holds that accounting data is relevant to equity valuation if, and only if, the figures have explanatory power, or information content, in reference to stock price (Penman, 1992). Many researchers suggest that the measurement (fundamental analysis) perspective is in sharp contrast to the information perspective in terms of its consistency with EMH (Bauman, 1996; Bettman, Sault, & Schultz, 2009; Elleuch & Trabelsi, 2009; Penman, 1992; Phoa,

Focardi, & Fabozzi, 2007), suggesting that since all available information is immediately reflected in market prices, any attempt to outperform the market by means of meticulous financial analysis is futile. However, this research is in line with the views of Bernstein (1975) whom, in his defense of the function and value of fundamental investment analysis, pointed out the critical distinction between information and the accurate, timely, and informed interpretation of that information. Bernstein (1975) suggested that security analysis is actually a vital part of an efficient market. The point of difference in the two perspectives then, for the purpose of this research, is that the information perspective holds that market price immediately reflects all available information, whereas the measurement perspective embraces the notion that market price may not reflect all information instantaneously but will slowly converge to the security's true value. Therefore, it can be beneficial to perform fundamental analysis in order to identify under or over-valued securities. The role of the financial analyst as an intermediary in this process is discussed in more detail later in this paper as it is a fundamental concept relevant to this study.

While it is noncontroversial that the price of a security is an expression of the present value of expected future benefits, the two perspectives differ when it comes to the definition of future benefits. Research under the information perspective, pioneered by Ball and Brown (1968), has typically developed under the assumption that future benefits are expected future dividends since dividends are what investors actually receive from investing in stock. Therefore, accounting data is thought to be relevant to equity valuation in that it provides information useful to estimating future dividends (Penman,

1992). Under this perspective, the relationship between stock returns and earnings is described as a process of using current earnings to predict future earnings, which are an indicator of future dividends. These future dividends are then discounted to their present value to infer firm value (Beaver, 1989). This process of valuation is known as the dividend discount model. However, as Penman (1992) noted, the model, and the information perspective as a whole, suffer from theoretical deficiencies.

The first of these deficiencies is what Penman (1992) calls *the dividend conundrum* (observed dividends are relatively uninformative), which is essentially a rewording of the dividend irrelevancy proposition set forth in Miller and Modigliani (1961) that suggests anything short of a dividend forecast over an infinite horizon is meaningless. He states, "price is based on future dividends but observed dividends do not tell us anything about price" (p. 467).

Another deficiency of the information perspective, arguably the one attributable to the birth of the measurement perspective, is the fact that research under this perspective is conducted within a framework where accounting data is treated as being explanatory in nature and stock price is positioned as the dependent variable. As Bernard (1995) noted, "it precludes from the outset the possibility that researchers could ever discover something that was not already known by the market" (p. 735).

In contrast, the measurement perspective, pioneered by studies by Ohlson (1995) and Feltham and Ohlson (1995), involves the discovery of price without reference to price (Penman, 1992). Bernard (1995) noted that these studies provided a foundation for shifting the appropriate objective of research away from an emphasis on accounting data

and stock price and towards the exploration of the relation between accounting data and firm value. The Ohlson-Feltham model is a theory-based equity valuation model that avoids the ad hoc assumptions regarding future dividends noted above, estimating equity value using book value, earnings forecasts, and forecasts of growth in book value, and served as a starting point for a fully developed theoretical framework for fundamental analysis (Bauman, 1996). It differs from the information perspective's dividend discount model only in that earnings be calculated using the clean-surplus relation of accounting, which indicates that earnings increase owners' equity and dividends decrease owners' equity, but not earnings (Penman, 1992).

In summary, the information perspective is built on the assumption that the market is efficient and stock price serves an accurate estimate of firm value, views the role of accounting data as a form of *information* used for calculating future benefits (specifically, future dividends), and contains research that explores accounting information based on its explanatory power for stock prices. The measurement perspective is built on the assumption that market price doesn't necessarily coincide with firm value, views the role of accounting information as a means of *measuring* intrinsic value, and contains research that explores the relation between accounting data and firm value—i.e. fundamental analysis.

Fundamental analysis research. This research was guided by the measurement perspective and fundamental analysis served as the foundation for the chosen research design. Since the structured approach to fundamental analysis is relatively new to

accounting research, very few studies that are formally classified as such exist in the literature. However, an overview of the limited existing research is presented.

Ou and Penman (1989) were among the first researchers to empirically test the validity of fundamental analysis (Bauman, 1996). Using a statistical approach known as a logit model, Ou and Penman identified a group of accounting fundamentals that could be combined into a single measure, which they refer to as *Pr*, and used as an indicator of future earnings. A simulated trading strategy was followed where they went long on stocks with a *Pr* in excess of 0.6 and short on stocks with a *Pr* less than or equal to 0.4. Their results indicated that trading on value estimates that had been developed solely from financial statement data yielded a 14.5% return over a two year period. An important implication of these results, as related to the current research, is that they established a link between financial statement information and firm value, which is directly related to investment decisions. Again, the role of the financial analyst as the connection between estimating firm value and investment decisions is paramount to this research, and will therefore be discussed in grave detail below.

Another study that represents a significant contribution to fundamental analysis research is that of Lev and Thiagarahan (1993). Unlike the statistical approach taken by Ou and Penman (1989), Lev and Thiagarahan conducted a guided search of financial press literature and other analyst publications and identified twelve accounting fundamentals that appealed to the economic intuition behind fundamental financial statement analysis. The authors then tested the relevance of the twelve identified fundamental indicators to equity valuation. The results revealed that the fundamentals led

to a significant improvement in the explanatory power of the traditional earnings model. Bauman (1996) noted that the fact that most of the regression coefficients of the fundamental signals were of the hypothesized sign and statistically significant represented a major contribution to fundamental analysis research. That is, the fundamentals can be viewed as value-relevant, and supports the notion that analysts should search for information other than current earnings to properly assess the value of a firm.

Building on Lev and Thiagarajan (1993), Abarbanell and Bushee's (1997) study of over 4,000 observations from 1983 to 1990 explored the predictive link of the fundamentals, their ability to tie current financial data to future earnings, by examining the relationship between nine of Lev and Thiagarajan's fundamental signals and both the one-year-ahead earnings change and five-year earnings growth rate. The results indicated that relying on the specific fundamental signals when assessing future earnings is justified. This contributes to the current study in two ways. First, it serves as empirical evidence that fundamental analysis is a legitimate approach to firm valuation. In addition, it highlights the importance of key fundamental signals (indicators) in an accurate assessment of a security's value.

Equipped with an understanding of the theoretical underpinnings guiding this research, one can now delve deeper into the aforementioned link between financial analysts and investor's investment decisions. Specifically, how fundamental analysis contributes to financial analysts' role as intermediaries.

Financial Analysts and Investors

With advances in technology, globalization, and an increased desire to manage one's own investments due to failures like that of Enron, WorldCom, and the Bernie Madoff scandal, the global financial market has created a need for accurate financial information that can be used to minimize the risks associated with investing. In addition, Lehavy, Li, and Merkley (2011) noted,

> The increase in the amount of required disclosures accompanied by the challenging task of communicating increasingly complex business transactions to investors has led to concerns about the effectiveness of management communication and the ability of interested users to make informed decisions based on this information. (p. 1088).

Therefore, now more than ever, a need has arisen for someone or something to serve as an intermediary between companies and investors. According to Newman (2009), financial analysts are used to fill that need. Vergoossen (1997) stated, "analysts play an important role in the capital markets as information intermediaries between companies and investors" (p. 589). Previous research has revealed that analysts' recommendations are one of the most influential factors guiding investor behavior (Breton & Taffler, 2001; Krishnan & Booker, 2002; Womack, 1996). Schipper (1991) stated,

> Given [analysts'] importance as intermediaries who receive and process financial information for investors, it makes sense to view analysts—sophisticated users—as representative of the group to whom financial reporting is and should be

> addressed…[and therefore] accountants have a policy-based stake in understanding how analysts actually use financial information. (p. 105)

More recent studies show an increasing demand for financial services. For example, Lehavy et al.'s (2011) study that examined the effect of the readability of firms' written communication on the behavior of sell side analysts revealed that less readable annual reports were associated with greater dispersion, lower accuracy, and greater overall uncertainty in analyst earnings forecasts. The researchers noted the results were consistent with their "prediction of an increasing demand for analyst services for firms with less readable communication and a greater collective effort by analysts for firms with less readable disclosures" (p. 1087). Since analysts are the link between accounting information and the decisions of many investors, it is important to examine how a transition to IFRS might affect analyst's fundamental analyses and recommendations.

It is important to note that financial analysts rely heavily on publicly traded companies financial statements (i.e. the annual report), along with other information sources, to assess the financial position of a particular company. In fact, according to Schipper (1991), financial analysts are the primary users of the annual report. As discussed in the review of fundamental analysis research, analysts use value-relevant fundamental signals taken from financial statement data when assessing a company's value. Cheong and Masum (2010) attribute analysts' ability to increase market efficiency to "their expertise and knowledge in firm valuation" (p. 66), which is a direct result of financial statement analysis.

> Because IFRS conversions will also require the retroactive restatement of certain historical periods and alter the baseline for each of many key performance indicators, many of the metrics used by investors and analysts to assess and compare companies are likely to change. (Kotlyar, 2008, p. 235)

Therefore, regulatory changes that affect the preparation and disclosure of the annual report directly affect the reviewing analyst's reports.

As noted above, a conversion to IFRS from U.S. GAAP will affect the figures in the financial statements in the annual report, thereby affecting the key financial indicators (fundamental signals) used by financial analysts in their analyses of publicly traded companies. For example, IFRS allows for the use of fair value accounting whereas U.S. GAAP requires the use of the historical cost method for all long-term assets. So, consider a company that owns a parcel of land that is reported at cost (i.e. the price paid for the land at the date of purchase). That same parcel of land is now worth significantly more than the amount it was purchased for. Under IFRS, reporting the land at fair value would directly affect that specific asset account and the total asset figure. Both would be higher since the fair value is greater than the historical cost. This indirectly affects certain financial indicators such as the return-on-assets ratio (ROA).

Changes such as the one depicted in the above example will affect analysts' analyses of these companies. More specifically, changes in the financial statements will directly affect the accuracy of, and the ability to generate, earnings forecasts, which, as shown in the review of fundamental analysis research, are vitally important to analysts' recommendations. Ghosh and Whitecotton (1997) noted that much of the empirical

accounting research focused on the accuracy of analysts' earnings forecasts, which shows the importance of these forecasts in the capital market. More recent studies on analyst's recommendations and earnings forecasts are Barniv, Hope, Myring, and Thomas (2009) and Bradshaw (2004). These studies, along with other research that focuses on the link between earnings forecasts and equity valuation, are guided by the measurement perspective.

Bradshaw (2004) examined whether valuation estimates based on analysts' earnings forecasts are consistent with their stock recommendations. This study, albeit counter intuitive, found that analysts' recommendations related negatively to valuation estimates calculated using the residual income model but positively to valuation estimates calculated using the price-to-earnings-to-growth (PEG) model. Barniv et al. (2009) built on this study and found that recent regulatory reforms diminished the seemingly inconsistent analyst behavior. These studies contribute to the research at hand by exhibiting the importance of analysts' earnings forecasts, thereby highlighting the importance of investigating how a change in the underlying financial data used to calculate those forecasts will affect the analyst's investment recommendation as a whole.

In conclusion, changes in analysts' analyses, earnings forecasts, and investment recommendations due to a transition to IFRS will flow through to the analysts' reports and, subsequently, to investors. Therefore, an examination of the ways in which a transition to IFRS affects the key financial indicators analysts' rely on when making investment recommendations is important.

Industry Selection for the Study

While the financial statements of all publicly traded companies will be affected, this study focused solely on how the transition will affect the oil and gas production industry. The rationale for choosing this industry was twofold. First, previous research has shown that limiting the scope of this type of research yields more generalizable results. For example, Rogers and Grant's (1997) sample primarily included manufacturing and retail companies. Nielsen (2008) focused her research on the health care industry and Abdolmohammadi, Simnett, Thibodeau, and Wright (2006) studied analyst reports for companies in only four industries—automobile manufacturing & parts, textile & apparel, internet, and telecommunications & network equipment. Based on the technique employed in the previous research, this study focused on one industry which benefited the generalizability of the results. In this study, the particular industry chosen resulted after reviewing which industries had foreign companies' stock listed on United States exchanges. Nineteen industries had more than one foreign company listed on at least one of the three major U.S. exchanges. Of these nineteen, the industry that best represented the countries that have recently adopted IFRS, or plan to in the near future, was the oil and gas production industry. Therefore, this industry served as a good focal point for this research.

Analyst reports were investigated. A discussion on the methods of investigation of analyst reports is presented below.

Analyst's Reports

Extending the seminal fundamental analysis literature (Abarbanell & Bushee, 1997; Lev & Thiagarajan, 1993; Ou & Penman, 1989), many researchers have studied how financial analysts process and value accounting information using a variety of quantitative, qualitative, and mixed methods approaches (Breton & Taffler, 2001; Chandra, 1975; Chugh & Meador, 1984; Gniewosz, 1990; Graham, Cannice, & Sayre, 2002; Previts et al., 1994). For example, Chandra (1975) surveyed 400 chartered financial analysts and found that income statement information was of greater importance to the analysts than was balance sheet information. Breton and Taffler (2001) sought insights into the importance of accounting (financial) information relative to non-financial information to analysts when making investment recommendations through qualitative content analysis of 105 analyst reports. Chugh and Meador (1984) developed and sent out a quantitative questionnaire to assess the relative importance of certain information units in the stock valuation process.

Examinination of analyst reports contributes to this research in two ways. The first relates to the relative importance of the financial statements, and the annual report as a whole, to financial analysts' analyses and recommendations. Like Horngren (1978), Gniewosz's (1990) case study of a major Australian institutional investor found that the annual report is the most influential information source to financial analysts. As discussed in the second half of this literature review, specifically in the section on content analysis in accounting research, other researchers (Abdolmohammadi et al., 2004;

Chandra, 1975; and Nielsen, 2008) also refer to the relative importance and/or frequency of disclosure of financial statement information in analysts' reports.

Secondly, other research methods used when investigating how security analysts process accounting information such as protocol analysis, case studies, questionnaires, and interviews are "restricted in their ability to model the real world evaluation situation, being deficient in both context and incentive structure and generally lack the decision consequences of the actual task" (Breton & Taffler, 2001, p. 91). One must take into consideration that the presence of the researcher may influence the results of the study when using these methods. For example, if an analyst was asked whether a particular financial ratio was considered important in their evaluation of a company, they may respond how they feel they are supposed to, as opposed to how they might rate that ratio in a real-world situation. Content analysis overcomes the limitations of these other methods by examining the analyst's actual output prepared in the course of their real life jobs as financial analysts (Breton & Taffler, 1995; Nielsen, 2008, Rogers & Grant, 1997; Schipper, 1991). Rogers and Grant (1997) refer to Cottle, Murray, and Block's (1989) definition of the primary function of an analyst in justifying their use of analysts' reports in their study when they state,

> Because the primary function of an analyst is to analyze and interpret the important facts relating to an issue and present this information in a coherent, readily intelligible manner, we assume their reports reflect information that analysts believe is most relevant to investor decisions. (p. 19)

Summary

The first part of this literature review dealt with the need for global accounting standards and the evolution of IFRS in the globalization of the world's capital markets. The progression of the United States towards adoption of or convergence with IFRS was also discussed. Literature supporting the conceptual framework for a study of the oil and gas production industry was also presented along with literature supporting fundamental analysis and the use of 20-F reconciliations and analysts' reports to carry out such a study.

Review of Methodology and Research Design

Because the mixed methodology is relatively new, Creswell (2009) suggested giving a basic definition and description of the methodology in a proposal. A brief discussion on mixed methods research and an evaluation of the methodology for this study is presented below.

Mixed Methods Research

Mixed methods research is an approach to inquiry that "involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study" (Creswell, 2009, p. 4). It is important to note that the mixed methodology is not simply a mixture of various research designs; like qualitative and quantitative methods, it too has its own underlying philosophical assumptions.

Where supporters of quantitative and qualitative research are influenced by their ontological and epistemological assumptions, mixed methods researchers are influenced

by pragmatism as a philosophical underpinning. Pragmatists are not committed to one way of thinking, one set of assumptions, or one view of reality (Tashakkori & Teddlie, 1998). Creswell (2009) describes pragmatism as a philosophy arising out of actions, situations, and consequences rather than antecedent conditions. Tashakkori and Teddlie (1998) suggest that under this view, the research question is more important than the method or paradigm. "Pragmatists have believed in an external world independent of the mind as well as that lodged in the mind…but they believe that we need to stop asking questions about reality and the laws of nature" (Creswell, 2009, p. 11). Instead, a pragmatic view is that "truth is what works at the time" (p. 11). Pragmatists use both quantitative and qualitative methods because they seek to obtain the best possible understanding of a given phenomenon of interest. Further, Hohenthal (2006) noted that a primary reason for using mixed methods is "the assumption that weakness in each single method will be compensated by strengths in another" (p. 176). This shows that pragmatists not only encourage being open to using both methods, but advocate integrating methods within a single study (Onwuegbuzie & Leech, 2005). They state, "Because pragmatic researchers utilize mixed methodologies within the same inquiry, they are able to delve further into a dataset to understand its meaning and to use one method to verify findings from the other method" (p. 384). This statement depicts some of the mixed methodology research designs.

Creswell (2009) discussed three general strategies of inquiry used in the mixed methodology, and noted that there are several variations within each category. "Sequential mixed methods procedures are those in which the researcher seeks to

elaborate on or expand on the findings of one method with another method" (p. 14). This category encompasses two of four mixed methods research designs. Specifically, the explanatory design, in which a qualitative research phase serves to elaborate or explain the findings of an initial quantitative research phase, and the exploratory design, in which the qualitative phase comes first in an attempt to uncover themes to be explored in the subsequent quantitative phase. Next, Creswell (2009) describes concurrent mixed methods procedures as "those in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem" (p. 14). Many researchers refer to this as triangulation. The final category of mixed methods research designs are the embedded procedures. This is when one methodology is used before and after another methodology. For example, qualitative data is collected in between a pre-test and a post-test in a quantitative experimental research study. While the number of designs seem small compared to the other two methodologies, it is important to remember the multiple variations of quantitative and qualitative research methods that can be used in any given mixed methodological study.

Benefits of mixed methods. It is important to recognize the benefits of the mixed methodology in general. First, one must consider the arguments against both quantitative and qualitative research. Smith (2003) noted that objective measurement is scrutinized in various fields, including and especially in the field of accounting, because the act of observation is itself influenced by the motives and preferences of the observer (p. 4). On the other hand, proponents of quantitative methods would argue that qualitative research is performed in context and has limited generalizability. Therefore,

in my opinion, a pragmatic approach is the best way to overcome these limitations. Onwuegbuzie and Leech (2005) stated, "By having a positive attitude towards both [quantitative and qualitative] techniques, pragmatic researchers are in a better position to use qualitative research to inform the quantitative portion of research studies, and vice versa" (p. 383). The negative implications of limiting one's analysis of a topic of interest to one of the many opposing theoretical perspectives are many. Swanson and Holton (2005) make a compelling argument that "understanding the rival philosophical views can allow for expansion, tolerance, and inclusion in research thinking and methodology instead of a rivalry and exclusivity" (p. 18).

Next, consider the appropriateness of mixed methods research in the field of accounting. Modell and Humphrey (2008) note that there is much to be gained from attempts to secure the possibilities of mixed methods research, "especially where this entails attempts to straddle established paradigmatic boundaries" (p. 99). Generally, it goes without saying that accounting research is dominated by quantitative inquiry. However, recent research into the behavioral aspects of accounting has begun to blur that boundary. Modell and Humphrey (2008) use the recent financial crisis as an example of a "practical reminder of the potential gains to be had from studying a highly quantitative arena from a qualitative perspective" (p. 99).

Evaluation of mixed method approach to this study. When considering whether a mixed methodological approach is appropriate to a particular phenomenon of interest, it is important to evaluate its effectiveness for a specific research question. For the purpose of this study, an evaluation of the mixed methods approach to research that

seeks to identify key financial indicators in financial analysts' reports and how those indicators are affected by changes in the accompanying financial statements was performed.

There are a number of reasons that a mixed methods approach to this inquiry is an effective one. First, the topic of inquiry is made up of two things; that is, the identification of the key financial indicators that financial analysts use when making investment recommendations and how those indicators are affected by changes in the financial statements. An examination of each is necessary and presented below.

Many researchers have sought to investigate how financial analysts use accounting information both quantitatively and qualitatively (Abdolmohammadi et al., 2006; Breton & Taffler, 2001; Nielson, 2008; Previts et al., 1994; Rogers & Grant, 1997; Simnett, Thibodeau, & Wright, 2006). However, there are limitations to both methodologies. As Breton and Taffler (2001) note, "protocol analysis, regression analysis of analyst information cue usage and case study approaches are restricted in their ability to model the real world evaluation situation, being deficient in both context and incentive structure and generally lack the decision consequences of the actual task" (pp. 91-92). Further, the presence of a researcher in many of these qualitative approaches described above could also influence the results of the study. Certain quantitative methods, such as questionnaires and surveys, are also limited in this regard to a certain extent. In addition, they are further diminished in their effectiveness because the accountant in these studies is not subjected to 'real world' data and/or decisions; and

therefore, their responses and behavior may not mirror that of their actual behavior in the given situation had they been faced with it in the real world.

Breton and Taffler (2001) make a compelling argument that "examining the output of analysts in the form of texts of their reports, the end product of their decision process, overcomes the above problems successfully" (p. 92). Therefore, a qualitative analysis of analysts' reports is the most appropriate method for the first aspect of the topic of inquiry.

The second aspect of the topic in question is how changes in financial statements affect the key financial indicators used by financial analysts. This aspect of the phenomenon of interest is relatively objective in nature and can easily be examined quantitatively. So, essentially the topic of the research requires a two-phase study. As noted in the description of the mixed methods designs, an exploratory study is one in which qualitative procedures, seeking to uncover a certain theme or set of concepts, are followed by quantitative methods, in order to evaluate those themes and concepts uncovered in the initial phase.

In this study, a mixed methodological approach using content analysis followed by quantitative analysis was employed. A review of content analysis literature is presented below.

Content Analysis

Content analysis has been defined in numerous ways. For instance, Krippendorff (1980) defines it as "a research technique for making replicable and valid inferences from data to their context" (p. 21). Weber (1990) noted that content analysis is a research

method that uses a set of procedures to make valid inferences about the sender(s) of a message, the message itself, or the audience of the message by examining text. Neuendorf (2001) stated,

> Content analysis is a summarizing, quantitative analysis of messages that relies on the scientific method (including attention to objectivity-intersubjectivity, a priori design, reliability, validity, generalizability, replicability, and hypothesis testing) and is not limited to the types of variables that may be measured or the context in which the messages are created or presented. (p. 10)

As one can see, there is a contradiction in the literature as to whether content analysis is quantitative or qualitative. According to Weber (1990) content analysis can employ both qualitative and quantitative operations on texts. Based on this and Neuendorf's (2001) definition, content analysis can be quantitative, qualitative, or both.

Neuendorf (2001), a strong supporter of the quantitative classification, goes a step further and references the distinction between quantitative content analysis and more qualitative methods when the author stated, "the most distinctive characteristic that differentiates content analysis from other, more qualitative or interpretive message analyses is the attempt to meet the standards of the scientific method; by most definitions, it fits the positivism paradigm of social research" (p. 11).

With that said, this study employed a method that one could classify as quantitative content analysis in the first phase and a traditional quantitative test in the second phase. Therefore, one could consider this research a quantitative study in its entirety. However, based on the overall disagreement over the classification of the

methodology, I chose to classify it as a mixed methods study since content analysis is so often deemed a qualitative method.

As noted above, a number of previous studies have employed various methods when investigating the financial analysis process such as protocol analysis, case studies, questionnaires, and interviews (Biggs, 1984; Bouwman et al., 1987; Chandra, 1975; Chugh & Meador, 1984; Gniewosz, 1990; Graham et al., 2002; Lev & Thiagarajan, 1996; and Matsumoto, Shivaswamy, Hoban, & James, 1995). These methods are "restricted in their ability to model the real world evaluation situation, being deficient in both context and incentive structure and generally lack the decision consequences of the actual task (Breton & Taffler, 2001, p. 91). In addition, protocol analysis, case studies, and interviews are extremely time consuming and limited in scope. Also, as noted above, one must take into consideration that the presence of the researcher may influence the results of the study when using these methods. For example, if an analyst was asked whether a particular financial ratio was considered important in their evaluation of a company, they may respond how they feel they are *supposed* to, as opposed to how they might rate that ratio in a real world situation.

A viable research design option that overcomes many of the aforementioned limitations of the other described methods is content analysis. In Jones and Shoemaker's (1994) literature review of accounting narratives, the researchers show that content analysis has been widely used in many areas of accounting. They reference 35 studies employing the research design, 15 of which examined annual reports. More specifically, previous research has shown that content analysis is an effective way to examine

analysts' reports. (Abdolmohammadi et al., 2006; Breton & Taffler, 2001; Jones & Shoemaker, 1994; Nielsen, 2008; Previts et al., 1994; Rogers & Grant, 1997).

Previts et al. (1994) is one of the first studies that utilized content analysis as a means for examining financial analysts' reports. In this study the researchers examined 479 analyst reports to assess the information needs of sell-side financial analysts. The results of this study indicate that a) analysts look to income statement items more so than balance sheet and cash flow evaluations, b) emphasize company core earnings, c) prefer conservative earnings management, d) give attention to earnings momentum, e) commonly evaluate assets and liabilities at cost, not market, and f) "extensively consider nonfinancial information, including company risks and concerns, anticipated changes, competitive position, management, and strategy" (p. 55).

Rogers and Grant (1997) performed content analysis on a sample of 187 analyst reports to identify the types of information conveyed and then compared that information to the text of the firms' annual reports to identify potential sources of that information. They found that over 52% of the coded information in analysts' reports could be found in the annual report. While only 26% of the information found in analysts' reports was found in the actual financial statements, over 40% could be found in the narrative sections of the annual report. In addition to providing a rationale for the use of content analysis in accounting research, this study also serves as a basis for examining analysts' reports. As discussed in the first part of this literature review, financial analysts are the primary users of the annual report. Further, the primary output of these financial analysts

is the analyst report. Therefore, the justification of using the analyst report as the focus of this investigation is upheld.

Abdolmohammadi et al. (2006) performed a comparable study using content analysis to analyze 64 analyst reports to categorize the types of information found in the analysts' reports. Unlike Rogers and Grant (1997) who categorized the report text into six broad categories, this study identified 3,129 distinct informational elements. They too found that only about one quarter of the information found in analysts' reports can be traced to the financial statements, thus supporting the assertion that "the existing external reporting model may not fully meet the information needs of the investment community" (p. 388).

In a similar study Breton and Taffler (2001) sought insights into the importance of accounting (financial) information relative to non-financial information to analysts when making investment recommendations through content analysis of their reports. The researchers analyzed 105 analyst reports and their results mirrored that of the aforementioned studies. That is, income based information is relatively more important than balance sheet based information and non financial information is as important, if not more important, than financial information on analyst judgment.

All of these studies yielded useful and relevant information in the field of accounting information processing research. Based on the analysis of the various methods, specifically the review of the content analysis literature, content analysis was chosen and used in the first phase of this study. It was utilized to examine the sample of

analyst reports to identify the key financial indicators that were used in the second part of the study.

Using this research design contributed to content analysis research and accounting research as a whole in three ways. First, this study built on prior fundamental analysis research. More specifically, it built on previous researchers' findings that approximately 25% of the information found in the reports can be traced to the financial statement portion of the annual report. In short, this study focused on the financial information used by analysts as opposed to the non financial information. Secondly, the employment of a mixed methodological approach advanced the richness of accounting research that has, to date, been primarily quantitative. Lastly, this study advanced the understanding of how analyst reports, and investor's interpretations of those reports, may be affected by changes in financial reporting standards.

Summary

The second section of this literature review examined the benefits of using a mixed methodology for this study. In addition, a historical review of content analysis and its use in accounting research was presented to provide a rationale for the use of such a research design in this investigation.

CHAPTER 3. METHODOLOGY

Research Design

The purpose of this two-phase, sequential mixed methods study was to assess the effects of a transition to IFRS on the key financial indicators used by financial analysts in their analyses of publicly traded companies in the oil and gas production industry. The first phase was a qualitative exploration of financial analysts' reports using content analysis in order to identify the key financial indicators analysts rely on when making investment recommendations for the oil and gas production industry. Following this phase, 20-F reconciliations were examined. The key financial indicators identified in Phase 1 were recalculated based upon the restatement of the financial information in the 20-F reconciliations. Each financial metric was analyzed and tested to assess the magnitude of the differences between those metrics under U.S. GAAP and IFRS.

As noted above, Phase 1 consisted of a qualitative exploration of financial analysts' reports. Previous fundamental analysis research has identified many methods of investigating how analysts process and value accounting information. The justification for examining analyst reports for the purpose of this research was twofold. The first reason for examining analysts' reports over other methods relates to the relative importance of the financial statements and annual report as a whole to financial analysts' analyses and recommendations. Horngren (1978) revealed that the annual report is the single most important course of information to analysts. Other research (Abdolmohammadi et al., 2004; Chandra, 1975; and Nielsen, 2008) also refers to the

relative importance and/or frequency of disclosure of financial statement information in analysts' reports.

Secondly, research has shown that examining analyst reports when studying how security analysts process accounting information overcomes the limitations of other methods (Breton & Taffler, 1995; Nielsen, 2008, Rogers & Grant, 1997; Schipper, 1991). Rogers and Grant (1997) refer to Cottle et al.'s (1989) definition of the primary function of an analyst in justifying their use of analysts' reports in their study when they state, "because the primary function of an analyst is to analyze and interpret the important facts relating to an issue and present this information in a coherent, readily intelligible manner, we assume their reports reflect information that analysts believe is most relevant to investor decisions" (p. 19). This assumption formed the basis for the chosen research design.

A number of previous studies have employed various methods when investigating the fundamental financial analysis process such as protocol analysis, case studies, questionnaires, and interviews (Biggs, 1984; Bouwman et al., 1987; Chandra, 1975; Chugh & Meador, 1984; Gniewosz, 1990; Graham et al., 2002; Lev & Thiagarajan, 1996; and Matsumoto et al., 1995). These methods are "restricted in their ability to model the real world evaluation situation, being deficient in both context and incentive structure and generally lack the decision consequences of the actual task (Breton & Taffler, 2001, p. 91). In addition, protocol analysis, case studies, and interviews are extremely time consuming and limited in scope. Also, one must take into consideration that the presence of the researcher may influence the results of the study when using these methods. For

example, if an analyst was asked whether a particular financial ratio was considered important in their evaluation of a company, they may respond how he/she feels he/she is 'supposed' to, as opposed to how he/she might rate that ratio in a real world situation.

The first phase of the study investigated the financial indicators identified by analysts as important in their analyses of companies in the oil and gas production industry by examining a sample of financial analysts' reports from the Investext database. Investext describes itself as the world's largest online database of company and industry research. It contains over 2 million company, industry, and geographic research reports written by analysts at more than 980 leading investment banks, brokerage houses and consulting firms worldwide (Investext, 2010).

Previous research has shown that content analysis is an effective way to examine analysts' reports (Abdolmohammadi et al., 2006; Breton & Taffler, 2001; Nielsen, 2008; Previts et al., 1994; Rogers & Grant, 1997). Therefore, content analysis was performed on a sample of reports to identify the key financial indicators that were used in the second part of the study.

Once Phase 1 was complete, Phase 2 of the study began. During Phase 2, 20-F reconciliations were examined and analyzed. The key financial indicators identified in Phase 1 were located within the 20-F reconciliations, and each financial metric was analyzed and tested to assess the magnitude of the differences between those metrics under U.S. GAAP and under IFRS.

Sample

This two-phase study required a separate sample for each phase of the research. Information on each is presented below.

Phase 1

The population of analyst reports that was explored included all reports for the oil and gas production industry in the Investext database. Investext describes itself as the world's largest online database of company and industry research. It contains over "2 million company, industry, and geographic research reports written by analysts at more than 600 leading investment banks, brokerage houses and consulting firms worldwide" (Investext, 2010). A stratified random sample of analyst reports that met the following criteria was used:

1. Report had to be issued after the firm's annual report issuance date but before the first quarter report for the subsequent year.
2. Reports for publicly traded companies within the oil and gas production industry for fiscal years ending in 2004, 2005, 2006, and 2007.

The first criterion was in place to ensure that the analyst report is considered a "comprehensive" firm review as opposed to an "update" report (Rogers & Grant, 1997). Analyst reports issued after first quarter earnings reports but before the release of the annual report tend to contain only quarterly information rather than financial data for the entire fiscal year.

The second criterion is in place for multiple reasons. First, the sample did not include financial information for 2008, 2009, or 2010, the most recent fiscal years ended at the time of this study, because 20-F reconciliations were no longer required for foreign public entities after 2007. In addition, examining the financial figures for these fiscal

years provided a comparatively more accurate depiction of the variations in the financial metrics since those years took place prior to the rapid decline of the U.S economy. Therefore, the differences being tested were not minimized by the recent economic recession the U.S. was (and currently is) facing.

Similar to the method used in Previts et al. (1994), stratified random sampling was utilized in this phase when selecting the analyst reports to be included in the sample. The sample was stratified on company size (market capitalization), fiscal year end date, and brokerage house to ensure proportionate representation of analyst reports. Similar to the SEC and Plumlee and Plumlee (2008), large companies were defined as those with a market capitalization in excess of $700 million, medium companies as those with a market cap between $700 million and $75 million, and small companies as those with a market cap of less than $75 million.

The number of analyst reports included in the sample was to range from 30-60, depending on the representativeness of the reports for the aforementioned stata. The justification for this sample size was based on previous research. The number of analyst reports sampled in the aforementioned previous research ranged from 64 reports to 479 reports. The average number of reports per industry that were analyzed among the four notable content analysis studies that included figures on the number of reports per industry (Abdolmohammadi et al., 2006; Nielsen, 2008; Previts et al., 1994; Rogers & Grant, 1997) was 36 reports. Based on this, a sample size of 30-60 was chosen.

Phase 2

The population from which the sample for this phase was chosen included all 20-F Filings in the SEC Edgar database with reconciliations from IFRS to U.S. GAAP. Any 20-F/A filings, which are amendments to the initial filing, were excluded from the population. In order to collect the sample that was used in Phase 2, a list had to be compiled of all European Union, Australian, Swiss, Chinese, and South African companies whose stock is listed on a U.S. exchange (NASDAQ, Amex, NYSE) using the Bank of New York Mellon's depositary receipts website (http://www.adrbnymellon.com/home_dr.jsp). These countries were chosen because they recently adopted IFRS as their generally accepted accounting principles. A similar approach was taken in Henry, Lin, and Yang (2009); however, this study only included companies from the European Union. Using the Global Industry Classification Standard (GICS), which has been shown to be better than SIC or NAIC industry codes at explaining variations in financial metrics (Bhojraj, Lee, & Oler, 2003; Henry et al., 2009), a list was compiled of those companies in the oil and gas production industry.

The sample of 20-F filings included all 20-F filings available in the SEC Edgar database for the listed companies for fiscal years ending 2004-2007.

Data Collection

As noted above, this study was a two-phase sequential mixed methods study. Therefore, the data collection strategies for each phase are described below.

Phase 1

The first step of this phase was to collect the sample of analyst reports to perform content analysis on. As noted above, stratified random sampling was used to collect 30-60 analyst reports that met the aforementioned criteria from the Investext database. In addition, approximately 10 additional reports were collected for the sole purpose of defining the contextual categories used in the content analysis. More detail on this pre-sample analysis is given below.

Phase 2

Using the SEC Edgar database, the sample for Phase 2 was collected. The sample included all 20-F filings for the listed companies for fiscal years ending 2004-2007.

Data Measures

In Phase 1 of the present study, content analysis was utilized to qualitatively explore analyst reports in order to identify the key financial indicators analysts rely on when making investment recommendations for the oil and gas production industry. Following this phase, 20-F reconciliations were used to recalculate each identified financial indicator based upon the restatement of the financial information in the 20-F reconciliations. The magnitude of the differences between those metrics under U.S. GAAP and IFRS were measured.

Data Analysis

This two-phase, sequential mixed methods study required a data analysis plan for both phases of the study. A discussion on each phase is presented below.

Phase 1

After the sample of analyst reports had been collected, a coding scheme was developed in accordance with Weber's (1990) 8-step approach described below:

1. *Define the recording units.* For this study, the information units of text to be classified were words and phrases. Weber (1990) noted a distinct pitfall of using this level of information unit in his assertion that computers cannot distinguish among the various uses of a word with more than one meaning. While this is true, this unit was still appropriate for this study since accounting terminology does not often carry more than one meaning.

2. *Define the categories.* The categories identified here were mutually exclusive and relatively narrow in nature. Neuendorf (2001) emphasizes the importance of a priori design in quantitative content analysis and therefore the categories will be identified prior to the start of the actual study. Similar to the steps taken by Breton and Taffler (2001) and Previts et al. (1994), and at the direction of Krippendorff (1980), a pre-sample analysis was performed to help develop a set of categories that were used in the actual analysis of the main study. This was done by identifying word and phrase frequencies using content analysis software. The words and phrases appearing most frequently were further evaluated. Concept mapping was utilized. "Concept mapping generates a matrix of dimensional coordinates that can be used to construct a three-dimensional map of concepts (dictionaries), in which the proximities between terms are indicative of the degree to which they tend to co-occur" (Neuendorf, 2001, p. 237). Based on co-occurrences of the most frequently occurring words, (not including standard and custom "stop words" such as *a*, *the*, etc.) the content analysis software can produce a multidimensional scaling analysis of the co-occurrence matrix (i.e. a concept map). The results of these two reports were reviewed and a standardized coding instrument was developed.

3. *Test coding on sample of text.* This was performed to assess the reliability of the coding scheme.

4. *Assess accuracy and reliability.* The output of the content analysis software was examined to ensure the reliability of the computer's ability to accurately code the text. Further, inter-coder reliability was investigated to ensure that

the percent agreement coefficient and Cohen's kappa exceed the widely accepted rate of 70%. After the reliability coefficients were measured, all disagreements between my analysis and the content analysis software were reconciled.

5. *Revise the coding rules.* (Necessary only if reliability was low)
6. *Return to step 3.* (Only necessary if one revised the coding rules in step 5)
7. *Code all text.*
8. *Assess achieved reliability.* Similar to the steps taken in step 4, reliability was assessed on the final set of coded data.

After the text was coded, those information units identified most frequently and of the greatest importance were deemed the key financial indicators to be used in the second phase of the study. This is validated by the use of such techniques in similar studies (Rogers & Grant, 1997; Previts et al., 1994). Further, Weber (1990) and Neuendorf (2001) both suggest that relative frequency can be used as a proxy for measuring importance.

Lastly, the key financial indicators, including a description of the calculation of such indicator when necessary, were entered into an Excel Spreadsheet in preparation for Phase 2.

Phase 2

The spreadsheet created in Phase 1 contained a list of the key financial indicators identified by the content analysis performed in the first phase of the study, along with a description of the calculation of that indicator if it was not found directly in the financial statements. For instance, ROE was determined to be a key financial indicator and was listed with a description of the appropriate calculation of the ratio (i.e. net income/total stockholder's equity) to ensure the ratio was calculated consistently for all firm years.

The compilation of 20-F reconciliations collected was then analyzed. This analysis yielded two amounts for each financial indicator for each company year – the metric calculated under U.S. GAAP and the metric calculated under IFRS. The final data set contained a scale dependent variable (the financial indicator) taken under two conditions (the independent variable—U.S. GAAP vs. IFRS), with the objective of this research being to assess the magnitude of the differences between these two numbers.

Previous research reveals there are three primary measures of change generally used in many areas of research, which include the simple difference (SD = A – B) being used most frequently, percent change (PC = [(A – B) / B] x 100), and symmetrized percent change (SPC = [(A – B) / (A + B)] X 100) (Ankarali & Ankarali, 2009; Berry & Ayers, 2006; Kaiser, 1989; and Vickers, 2001). Further, these researchers argue that the chosen measure of change to use in a study depends on the nature of the data and that one measure of change may be insufficient. Ankarali and Ankarali (2009) suggest choosing the measure that is appropriate for describing the change, that is how it will be interpreted by the reader, and consider which statistical test is most suitable for analyzing the selected measure of change. The results of their study indicated that paired samples t-tests are unsuitable for PC and SPC, but befitting for simple differences. Further, they suggest the most appropriate approach is to report both simple differences and percent changes, at least for descriptive purposes.

Therefore, this research utilized two of the three primarily used measures of change, simple difference and percent change. First, since the data included a scale variable taken under two conditions, a paired samples t-test was performed on the simple

differences between the U.S. GAAP indicator and the IFRS indicator. This test assumes that the underlying data is normally distributed. Therefore, tests for normality were performed. Those metrics that had sufficient data for 30 or more company years were considered to be normally distributed. If the normality assumption was not met, the non-parametric equivalent to the paired samples t-test was performed, the Wilcoxon Signed-Rank test (Norušis, 2008).

The null hypothesis for each financial indicator was:

> H^o: There is no difference between the mean [financial indicator] as calculated using the financial statements prepared in accordance with U.S. GAAP vs. the mean [financial indicator] as calculated using the financial statements prepared in accordance with IFRS.

The alternative hypothesis for each financial indicator was:

> H^a: There is a difference between the mean [financial indicator] as calculated using the financial statements prepared in accordance with U.S. GAAP vs. the mean [financial indicator] as calculated using the financial statements prepared in accordance with IFRS.

Results for each financial indicator were presented in a chart. Those differences with a corresponding p-value of less than .05, the null hypothesis that there is no significant difference between the figures taken from the U.S. GAAP statements and the IFRS statements was rejected.

Next, as suggested by Ankarali and Ankarali (2009), the percent change between the indicators calculated using U.S. GAAP and the indicators calculated using IFRS were

analyzed. Percent change were calculated as (PC = (FI_ifrs – FI_us) / FI_us) where FI_ifrs represents the financial indicator calculated under IFRS and FI_us represents the financial indicator calculated under U.S. GAAP. Henry, Lin, and Yang (2009) took a similar, yet different, approach and quantified differences between amounts reported under IFRS and U.S. GAAP using two scaling alternatives—IFRS book value and U.S. GAAP net income. Those researchers included in their results all percent changes exceeding 5 percentage points. Following this rationale, those percent differences calculated in this study exceeding five percentage points were investigated further to determine whether they were statistically significant. In addition, since some of the financial indicators were used in calculating other indicators (eg. total assets is the denominator of the ROA calculation), those differences relating to these component indicators that resulted in another indicator exceeding the threshold were also investigated. Specifically, for those financial indicators that were financial ratios, other ratios in the same category were to be examined to determine if the change was consistent. For example, if the current ratio had been 5 percentage points higher under IFRS than U.S. GAAP, other liquidity ratios would have been examined to determine if the magnitude of the differences were consistent across many of the liquidity measurements, in which case an evaluation of the potential impact of such differences on analyst's analyses, based on this researchers' sensitivity to and familiarity with such differences, would have been warranted and discussed. For those financial indicators that were not financial ratios, the analysis was to focus on the investigation into the causes of

the differences between the figures as calculated in accordance with the two sets of standards.

Validity and Reliability

Since this was a sequential mixed methods study employing both qualitative and quantitative research designs, validity and reliability was examined at both levels. Reliability and validity in the qualitative content analysis phase, as noted in the coding steps to be taken, was evaluated by re-examining the output of the content analysis software to attest to the reliability of the computer's ability to accurately code the text correctly. Inter-coder reliability was further investigated to ensure that the percent agreement coefficient and Cohen's kappa exceed 70%. After the reliability coefficients were measured all disagreements between my coding and the content analysis software's coding were reconciled. According to Creswell (2009), threats to validity of quantitative research methods must be identified and the research designed to minimize or eliminate these threats. Being that historical objective financial data was used, the potential for changes in that data or incorrect perception of that data was eliminated. In addition, stratified random sampling was utilized to ensure specific companies that were predisposed to greater affects of IFRS were not targeted.

Ethical Considerations

All data used in the study was available to the public; therefore, it was granted exempt status by the Institutional Review Board (IRB). Company identifiers such as

company name and company address were removed from the data to ensure confidentiality. These identifiers were not relevant to the study at hand since it sought to evaluate how a transition to IFRS will affect the oil and gas production industry as a whole and financial indicators used by analysts, not how it will affect specific companies. In addition, it should be noted that the researcher is in no way affiliated with any of the companies selected for this study and therefore there is no inherent conflict of interest or researcher bias.

CHAPTER 4. RESULTS

As noted in Chapter 3, this study had a very complex research design; therefore, a diagram for reference is presented below to visually depict the steps taken to carry out this research.

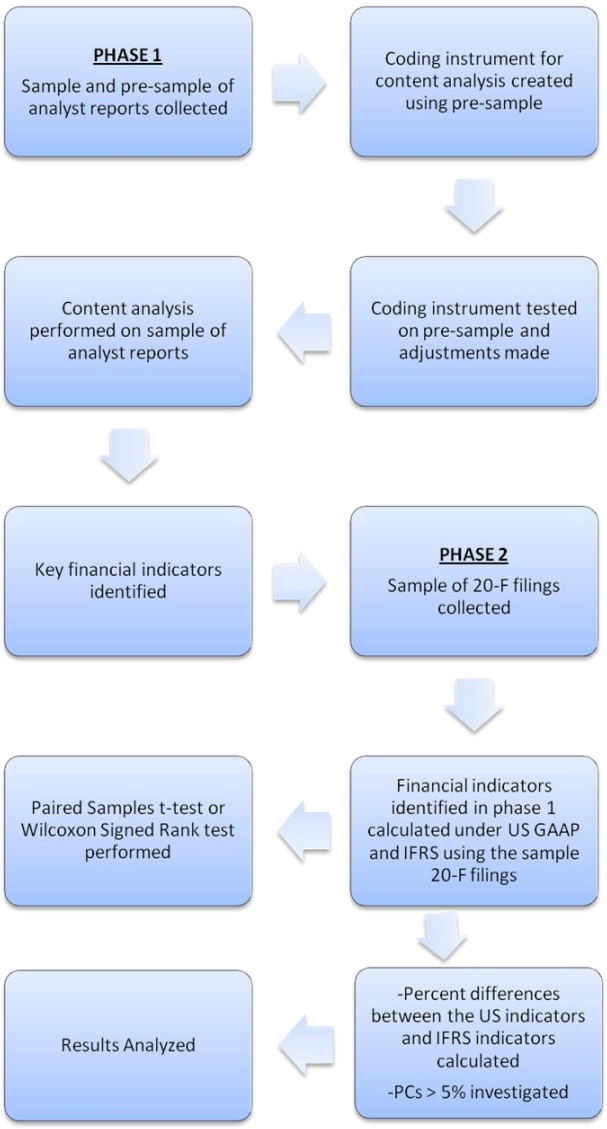

Figure 2. Research design diagram

Chapter 1 revealed that the purpose of this two-phase, sequential mixed methods study was to assess the effects of a transition from U. S. GAAP to IFRS on the key

financial indicators used by financial analysts in their analyses of publicly traded companies in the oil and gas production industry. As indicated in the diagram, the first phase included a qualitative exploration of the key financial indicators identified by analysts by performing content analysis on a sample of financial analysts' reports from the Investext database. Following this phase, an analysis of the key financial indicators identified in Phase 1 was performed. The key financial indicators identified in the qualitative phase were quantitatively tested to assess the magnitude of the differences between those metrics under U.S. GAAP and IFRS in order to identify how each financial indicator was affected by the change.

Results

A discussion of the data collection process, the data analysis, and the results of the analysis for each phase are presented below.

Phase 1

Phase 1 employed content analysis on a sample of analyst reports to identify the key financial indicators analysts use when analyzing companies in the selected industry. Below is a review of the data collection process, the pre-sample analysis, and the results of the analysis of the sample data.

Data collection. A sample of analyst reports on companies in the oil and gas production industry with fiscal years ending from 2004 to 2007 was collected from the Investext database. The population of analyst reports from which the sample was chosen consisted of approximately 1,100 reports. The data collection plan called for stratified

random sampling based on various strata including market capitalization, fiscal year, and brokerage house. All of the analyst reports included in the population were for large cap companies resulting in one stratum. To ensure each of the fiscal years set out in the sample criterion were included; random selections were taken from the population which was stratified into four groups—2004, 2005, 2006, and 2007—using the fiscal year end date of the company's annual report being analyzed as a basis. Fifteen reports analyzing companies with fiscal years ending in 2004, twelve reports for 2005, fourteen reports for 2006, and twelve reports for 2007 were selected. The population was further stratified based on the brokerage house that furnished the report. Including at least one report from all of the brokerage houses represented in the population ensured that the analysis would include what all analysts reporting on the oil and gas production industry viewed as important and not just those indicators considered significant by analysts from a few firms. Table 1 shows a list of the brokerage houses that had analyst reports in the population and the number of reports for that firm included in the sample.

Table 1. Brokerage Houses

Brokerage House	# of reports
A.G. EDWARDS & SONS, INC.	1
ALANDSBANKEN	1
ALLARIA LEDSEMA & CIA	1
BANCA IMI	1
BANCO PACTUAL S.A.	1
BBVA SECURITIES LTD.	1
BEAR STEARNS AND CO INC	1
BNP PARIBAS FORTIS(HISTORICAL	1
BNP PARIBAS PEREGRINE SECURITIES LIMITED	1
BNP PARIBAS SECURITIES (ASIA)	1
CARNEGIE INVESTMENT BANK AB	1

Table 1. Brokerage Houses *(continued)*

Brokerage House	# of reports
CHARLES STANLEY & CO., LTD.	1
CIBC WORLD MARKETS INC. (CANADA)	1
CITI	1
CITI (EUROPE/UK RESEARCH)	1
CITI (HONGKONG RESEARCH)	1
CITI (LATIN AMERICA RESEARCH)	1
CORE PACIFIC-YAMAICHI INTERNATIONAL (HK) LTD	1
CREDIT SUISSE – EUROPE	2
CREDIT SUISSE - NORTH AMERICA	1
CREDIT SUISSE FIRST BOSTON LTD.	1
DAVENPORT & COMPANY LLC	1
DBS VICKERS SECURITIES LIMITED	1
DEUTSCHE BANK - LATIN AMERICA	1
DEUTSCHE BANK - SOUTH AFRICA	1
DEUTSCHE BANK SECURITIES LTD.	1
DEUTSCHE SECURITIES ASIA LTD.	2
HSBC GLOBAL RESEARCH	1
IBERSECURITIES, AVB	1
IIIR 12 MONTHS AND OVER	2
ING BANK N.V	1
INTERBOLSA	1
JPMORGAN	2
KIM ENG	1
MACQUARIE RESEARCH 1-10 PGS	1
MIRAE ASSET SECURITIES ENGLISH LANGUAGE	1
MORGAN STANLEY	2
NATIXIS	1
PRICETARGET RESEARCH, INC.	1
PRUDENTIAL EQUITY GROUP, INC.	1
RAYMOND JAMES ARGENTINA	1
RBS	1
SANTANDER CENTRAL HISPANO INVESTMENT	1
SANTANDER GBM	1
SOCIETE GENERALE	1
SOUTH CHINA RESEARCH LTD	1
VALUENGINE, INC.	1
WILLIAMS DE BROE	1
Total	53

Table 1 shows that the sample consisted of at least one analyst report from all 48 brokerage houses represented in the population. Two reports were randomly selected for five of the larger brokerage houses. In all, the sample included 53 analyst reports taken from the Investext database.

Pre-sample. Similar to the steps taken by Breton and Taffler (2001) and Previts et al. (1994), and as suggested by Krippendorff (1980), a pre-sample analysis was performed to help develop the coding instrument used in the actual analysis of the main study. Using the same criteria discussed above, fourteen reports that were not included in the data sample were chosen from the same population and used for this pre-sample analysis.

Pre-sample collection. Due to the fact that analyst reports contain a multitude of irrelevant information, optical character recognition (OCR) software, which electronically translates scanned images of handwritten or typed words into a usable text format, was used to select/omit certain sections of the sample documents to include/exclude from the analysis. It is important to note that all analyst reports are similar in format. The first page gives the investment recommendation (buy, sell, and hold) and/or valuation suggestions (overweight, underweight, and neutral) and also provides a summary of the full report, highlighting the most critical information supporting the recommendation and valuation. The following pages of the report include a more detailed look at the reasons behind the analyst's recommendation, including tables and charts. These are followed by pages full of disclaimers, information defining what constitutes each valuation category for that particular firm, information on the brokerage house and the analyst writing the report, and required national and international disclosures. Building on the method used in Breton and Taffler (2001), which only included the summary in their analysis, Presto! OCR Pro 4.0 software was used to omit irrelevant sections and select the summary and all supporting information presented in

text format to be used in the analysis. Since the important information contained in the charts and tables was discussed in the text portion of the analyst reports if it was significant, the charts and tables themselves were not included in the analysis.

Pre-sample analysis. First, a keyword dictionary to be used in the analysis of the main sample was created. Using KWIC (keyword in context) software, a list of keywords, not included in the standard English stop-list, appearing more than 3 times in the pre-sample was created. Since phrases appeared less frequently, all of those that appeared more than 2 times in the pre-sample were included. The list included 262 words and phrases (hereafter referred to as "keywords") that could be categorized into four categories.

The four categories derived from the data included stop words not included in the standard list, non-categorizable information units, financial information, and non-financial information. Examples of the keywords classified as stop words included terms that are frequently used as verbs or adjectives in accounting. For example, "group*," "view*," and "project*" were included. The * allowed the software to consider all forms of the word when counting the frequency of that term. So, the phrases, "we project that," "are grouped as," and "can be viewed" were considered in the KWIC analysis when they should not have been. In total, 51 of the 262 words were categorized as such. Words identified as being in this category were later removed from the analysis. Information units were classified as financial information if they referenced any item found on the financial statements (such as net income, assets, and EBITDA) or a figure/ratio calculated from items found directly on the financial statements (such as operating profit, refining

margin, and free cash flow). Keywords in this category made up 62 (or 23.67%) of the 262 keywords in the list. Non-financial information, which consisted of 52 of the 262 keywords, included those terms and phrases that related to company information, strategy, and market conditions. For example, references to crude oil prices, locations of refineries, and future development plans were coded into this category. The final category included all other non-categorizable units. These units included descriptive or generic terms unable to be classified as financial or non-financial, terms referencing time periods, and terms associated with other terms in the list that did not carry stand alone meaning. For example, "estimate*" (since it must be associated with another information unit), "year*" (a reference to a time period), and "outlook" (since it is a generic term unable to be classified as financial or non-financial) were put in this category. In all, 97 of the 262 keywords (or 37%) were classified as being in this category.

Next, the coding instrument was tested on the pre-sample. In order to accurately analyze the text, content analysis software that allowed for custom user-defined dictionaries was used. Further, the software used, Hamlet II 3.0, permitted the inclusion of multi-word entries in the user-defined dictionary since accounting terminology is often made up of multiple words. For instance, *net income* and *free cash flow*. While the software could recognize multi-word entries, it did not account for terms that were listed as single terms but were also included in some of the phrases. For example, cash, cash flow, cash inflow, cash neutrality, cash outflow, free cash flow, and operating cash flow were all listed as separate keywords. The software would count the frequency of the

standalone word only, and would return zeros for all other keywords containing that term. In order to yield accurate results, the following steps were taken:

1. Two dictionaries were created, one containing only the single-word keywords (196 items) and one containing only the multi-word keywords (66 items).
2. Content analysis was performed using each dictionary, resulting in two outputs.
3. Outputs were exported into Excel and combined, resulting in 262 rows of data.
4. Formulas were used to generate the actual frequency of those words found in both the single-word dictionary and the multi-word dictionary. Continuing the example from above, the term *cash* was counted 44 times in the text according to the single-word output for the pre-sample. A formula was used to subtract the number of times *cash* was used in the multi-word dictionary to arrive at the actual frequency of the word as a standalone term.

   Cash (44) – cash flow (2) - cash inflow (1) - cash neutrality (4) - cash outflow (3) - free cash flow (17) - operating cash flow (1) = 16

   Therefore, once the formula was implemented, the frequency listed for the term *cash* was shown as 16, which represents the actual number of times that term was used on its own.
5. A spreadsheet incorporating these formulas was created to be used in the analysis of the main sample data.

The pre-sample was then coded by hand to assess the reliability of the coding instrument. The agreement coefficient was 82.4%, which exceeds the predetermined 70% outlined in the research design.

Data analysis. All 53 sample analyst reports were coded using both the single and multi-word dictionaries. The outputs for both dictionaries were exported to Excel and then copied into the spreadsheet created in the pre-sample analysis. The total number of information units analyzed by the content analysis software that were included in the sample (does not include stop-words in the standard stop-list) was 56,612. 1,292 of these were categorized as stop-words and were removed from the analysis, bringing the total number of analyzable units to 55,320. Table 2 shows the results of the analysis.

Table 2. Keyword Analysis

Category	# of keywords	# of occurrences	% of total text	% of keywords
Generic/Descriptives	97	4569	8.3%	46.0%
Financial	62	1874	3.4%	29.4%
Non-financial	52	2165	3.9%	24.6%
Total	211	8608	15.6%	100.0%

**the total number of keywords does not include those classified as stop- words that were removed from the analysis.*

As one can see in Table 2, of the 55,320 information units, 8,608 were coded as uses of the keywords (excluding those 1,292 previously identified as stop-words) found in the custom-dictionaries used for analysis, which equates to approximately 15.6% of the total text. Words and phrases in the Generic/Descriptive and Non-financial Information categories made up approximately 46% and 24.6% of the coded text, respectively. Of particular importance to this study were those information units coded as being in the Financial Information category. These keywords made up approximately 29.4% of the coded text, which is in line with previous research (Abdolmohammadi et al., 2006;

Rogers & Grant, 1997) that revealed that approximately 25% of the information found in analyst reports can be traced to the annual report.

Using frequency as a proxy for importance, the financial indicators analysts viewed as most important in their analyses were identified. The results of this phase answered Research Question 1, "What are the key financial indicators identified in analysts' reports on publicly traded companies in the oil and gas production industry"? Prior to doing so, however, a review of the 62 keywords in the Financial Information category revealed that some of the terms were synonymous. In order to include as many terms as possible in the next phase of the study, keywords that refer to the same thing were combined. For example, *net income*, *earnings*, and *profit* were combined to form one financial indicator dubbed *earnings*. *Stock* and *equity* were combined, and *cash flow* and *free cash flow* were combined. Prior research did not provide a basis for quantifying the amount that is considered the most important of a group of terms. Therefore, this researcher exercised her prerogative and, in an attempt to include as many keywords as possible while still allowing for a reasonable completion time, included the top one third of the 62 financial keywords occurring most frequently in the list of key financial indicators. *Basis*, which represents net book value, was removed from the list since it must accompany another term in order to have valuable meaning. For example, the net book value of a particular asset can be calculated, where as *net book value* alone cannot. Each occurrence of the listed financial indicator was investigated in the sample data to ensure proper calculation of those key financial indicators that could not be found directly on the financial statements. As a result of this analysis, two of the keywords

were broken down into two measures that were able to be calculated. As indicated in Table 3, the term *return* was associated with the return on equity (ROE) ratio and the return on assets (ROA) ratio; therefore, both were included in the spreadsheet. Also, the two most popular discounted cash flow (DCF) models were included—the dividend discount model (DDM) and the discounted free cash flow model (DFCFM). Table 3 presents results for Research Question 1, a list of the 21 key financial indicators and their associated calculations, when necessary, to be used in the second phase of this study.

Table 3. Key Financial Indicators

Financial Indicator	Description	Description	Calculation	Financial Statement
share			# of shares outstanding	B/S
earnings			net income	I/S
capex		(capital expenditures)		B/S, I/S, SCF, Notes
EPS		(earnings per share)	net income / # shares outstanding	I/S, B/S
return		(see below)		
	ROE	(return on equity)	net income / total stockholder's equity	I/S, B/S
	ROA	(return on assets)	net income / total assets	I/S, B/S
dividend			dividends paid / # of shares outstanding	B/S
EBIT		(earnings before interest and taxes)	net income - interest expense - income tax expense	I/S
EBITDA		(earnings before interest, taxes, deprecation, and amortization)	net income - interest expense - income tax expense - depreciation expense - amortization expense	I/S
DCF		(discounted cash flow models)		
	DDM	*(dividend discount model)	$V^o = D^o (1 + g) \div (r - g)$	I/S, B/S
	DFCFM	**(discounted free cash flow model)	$V_0 = \sum_{t=1}^{\infty} \frac{CF_t}{(1+r)^t}$	I/S, B/S
tax			income tax expense	I/S
sales			total sales revenue	I/S
expense			total expenses	I/S
asset			total assets	B/S

Table 3. Key Financial Indicators *(continued)*

Financial Indicator	Description	Description	Calculation	Financial Statement
equity			total stockholder's equity	B/S
cash			total cash and cash equivalents	B/S
operating profit			Revenue - COGS - operating expenses	I/S
revenue			total revenue	I/S
FCF		(free cash flow)	net income - net capital expenditures - change in net working capital + new debt - debt payments	I/S, B/S
refining margin			refining revenues - expenses attributable to refining	I/S

Note. I/S = Income Statement; B/S = Balance Sheet; SCF = Statement of Cash Flows; Notes = Notes to the financial statements; V° = value of the stock in current year; D⁰= dividend paid in current year; g = expected constant growth rate; r = discount rate/required return rate; V° = value of the stock in period if t = 0; CFt = FCF in period t; r = WACC (weighted average cost of capital); t = time period

Phase 2

During Phase 2, all 20-F reconciliations for the criterion years for the listed companies that reconciled from IFRS to U.S. GAAP were examined and analyzed. The key financial indicators identified in Phase 1 were located within, or calculated using, the 20-F reconciliations and each financial metric was analyzed and tested to assess the magnitude of the differences between those metrics under U.S. GAAP and under IFRS. A review of the data collection process and the analysis of the sample data are presented below.

Data collection. A list was compiled of all European Union, Australian, Swiss, Chinese, and South African companies whose stock is listed on a U.S. exchange (NASDAQ, Amex, NYSE) using the Bank of New York Mellon's depositary receipts website (http://www.adrbnymellon.com/home_dr.jsp). These countries were chosen because they recently adopted IFRS as their generally accepted accounting principles.

This was an expansion of Henry, Lin, and Yang's (2009) study, which only included companies from the European Union. Using the Global Industry Classification Standard (GICS), which has been shown to be better than SIC or NAIC industry codes at explaining variations in financial metrics (Bhojraj, Lee, & Oler, 2003; Henry et al., 2009), a list was compiled of those companies in the oil and gas production industry. This list is shown in Table 4.

Table 4. Oil and Gas Production Company List

Company Name	Symbol	Country
BP	BP	United Kingdom
China National Offshore Oil-CNOOC	CEO	China
China Petroleum & Chemical	SNP	China
Ecopetrol	EC	Colombia
Eni	E	Italy
Petrobras Energia	PZE	Argentina
PetroChina	PTR	China
Petroleo Brasileiro - Com	PBR	Brazil
Petroleo Brasileiro - Pref	PBR/A	Brazil
Royal Dutch Shell - A Shares	RDS.A	United Kingdom
Royal Dutch Shell - B Shares	RDS.B	United Kingdom
Sasol	SSL	South Africa
Statoil	STO	Norway
TOTAL	TOT	France
YPF	YPF	Argentina

Next, the sample of the 20-F filings that included reconciliations from IFRS to U.S. GAAP for the listed companies for fiscal years ending from 2004-2007 was collected using the SEC Edgar database. The filings for China National Offshore Oil-CNOOC, Petrobras Energia, Petroleo Brasileiro, Statoil, and YPF were eliminated from the analysis due to the fact that the 20-F filings for these companies showed reconciliations from various national GAAP, such as Hong Kong GAAP (for CEO) and

Argentine GAAP (for PZE and YPF), and not from IFRS. The SEC's late 2007 decision to eliminate the requirement that foreign private issuers listed on U.S. exchanges prepare a 20-F reconciliation, as long as that company's financial statements were prepared in accordance with IFRS, played a key role in further reducing the sample. All but one of the companies represented in the sample had a fiscal year end date of December 31st, and therefore, took advantage of the lifted requirement and did not prepare the reconciliation for 2007. Sasol's fiscal year ends on June 30th of each year, and since it had prepared the 20-F filing prior to the SEC's announcement, it was able to be included in the study.

As one can see in Table 4, two of the fifteen listed companies, Petroleo Brasileiro (PBR and PBR/A) and Royal Dutch Shell (RDS.A and RDS.B), are represented twice in the table. This is because both had two classes of stock. As noted above, PBR was eliminated from the analysis. In 2005, Royal Dutch Shell became the single 100% parent company of Royal Dutch Petroleum Company, a Dutch company, and of Shell Transport and Trading Company Limited, a United Kingdom company (Royal Dutch Shell plc, 2005). The "Unification transaction", as referred to in the annual report, resulted in one set of financial statements that reflect the two classes of shares (p. 6). This combined 20-F filing, for fiscal years ending in 2005 and 2006, was included in the sample for Phase 2.

The final sample to be analyzed consisted of nineteen 20-F filings. As discussed in the Ethical Considerations section of Chapter 3, certain steps were taken to ensure confidentiality. At this point in the study, all identifying fields, such as company name and company address, were eliminated. Each company year was numbered, resulting in a list starting with CY1 and ending with CY19.

Data analysis. Each financial indicator listed in the spreadsheet created in Phase 1 was located in, or calculated using information within, the 20-F filing for each of the 19 company years if the appropriate information was available to do so. It should be noted that *earnings* and *equity* figures were those amounts attributable to equity shareholders of the company. Also, the filings presented financial information in various currencies such as the South African rand (4), the European euro (5), the Chinese yuan (5), and the United States dollar (5). Of the 798 potential figures (21 financial indicators, calculated under two conditions (IFRS and U.S. GAAP), for each of the 19 company years), 603 were available to be calculated using the information provided in the 20-F filings. Those indicators that could not be found or calculated were given a value of *n*.

In addition to the financial indicators, two other figures had to be calculated to be used in the *DDM* and *DFCFM* calculations—*r* and *g*. In this study, *r* was represented by the weighted average cost of capital (WACC) for the associated company year. In order to obtain this figure, this researcher referred back to the sample of analyst reports used in Phase 1. The WACC listed, if given, in each report for that company year was recorded. In many cases there were multiple reports that noted varying WACC figures for each company year. When this occurred, the average WACC was calculated and recorded in the final data set. For example, the sample of reports contained 4 analyst reports that referenced a WACC for a particular company year, 10%, 10%, 12.2%, and 12%, respectively. Therefore, the average WACC of 11.05% was used. The analyst reports for RDS did not state a WACC, so the *r* value for two of the 19 company years was listed as *n*.

The expected constant growth rate to be used in the *DDM* calculation was calculated as the average dividend growth rate from 2004 to 2007. Three growth rates were calculated for each of the seven companies represented in the sample—percentage growth from 2004 to 2005, percentage growth from 2005 to 2006, and percentage growth from 2006 to 2007. The average of the three growth rates was calculated and recorded in the spreadsheet to be used in the calculation of the aforementioned financial indicator. The dividend discount model is based on the assumption that r is greater than g. The data revealed that g was greater than r for all 17 of the company years with values for r. Since the underlying assumptions of the model were not met, it was eliminated from the study.

The final data set is presented in Table 5. All figures are in millions except per share amounts. As noted above, company identifiers were omitted for privacy reasons, even though all information within the data set is available to the general public.

Table 5. Calculated Key Financial Indicators

	Company Year																		
Financial Indicator	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
share_ifrs	21126	20028	86702	86702	86702	4005	4005	175824	129021	179021	6525	6299	610	614	620	623	587	2426	604
share_us	21126	20028	86702	86702	86702	4005	4005	175824	129021	179021	6525	6299	610	614	620	623	587	2426	604
earigs_ifrs	22026	22315	53912	36019	41455	8788	9217	12436	133362	142224	25311	25442	5795	9449	10406	17030	12273	11768	10868
earigs_us	19642	21114	54562	39975	45147	7583	10005	13065	137925	147514	25688	24797	5358	9719	11299	16765	11597	11400	7221
capex_ifrs	12281	15125	70604	67583	63993	7414	7833	10928	119227	130409	15904	22922	n	n	n	n	n	n	n
capex_us	12281	15125	73452	64579	63699	n	n	11520	124801	148746	n	n	n	n	n	n	n	n	n
equity_ifrs	79661	84624	262845	193040	224301	36868	39029	51376	543667	617591	90924	105726	35027	43530	52605	61617	40645	40321	31608
equity_us	85147	86517	262297	187850	222803	35125	37656	48693	499130	574470	94103	108018	33669	40945	50668	60764	73055	71884	65108
eps_ifrs	1.04	1.11	0.62	0.42	0.48	2.34	2.49	0.07	0.75	0.79	3.79	3.97	9.50	15.39	16.78	27.34	20.91	5.13	17.99
eps_us	0.93	1.05	0.63	0.46	0.52	2.02	2.71	0.07	0.78	0.82	3.84	3.87	8.78	15.83	18.22	26.91	19.76	4.97	11.96
roe_ifrs	0.2765	0.2637	0.2051	0.1866	0.1848	0.2384	0.2362	0.2421	0.2453	0.2303	0.2784	0.2406	0.1654	0.2171	0.1978	0.2764	0.3020	0.2919	0.3438
roe_us	0.2307	0.2440	0.2080	0.2128	0.2026	0.2159	0.2657	0.2683	0.2763	0.2568	0.2730	0.2296	0.1591	0.2374	0.2230	0.2759	0.1587	0.1586	0.1109
roa_ifrs	0.1065	0.1026	0.0881	0.0759	0.0755	0.1048	0.1044	0.1688	0.1714	0.1631	0.1153	0.1081	0.0790	0.1072	0.1009	0.1430	0.1156	0.1118	0.1253
roa_us	0.0919	0.0963	0.0929	0.0886	0.0862	0.0914	0.1166	0.1876	0.1832	0.1718	0.1149	0.1033	0.0779	0.1208	0.1203	0.1522	0.0823	0.0819	0.0591
divpersh_ifrs	0.348	0.384	0.120	0.130	0.100	1.100	1.250	0.260	0.340	0.360	1.130	1.270	4.500	5.400	7.100	9.000	6.480	1.870	5.400
divpersh_us	0.348	0.384	0.120	0.130	0.100	1.100	1.250	0.260	0.340	0.360	1.130	1.270	4.500	5.400	7.100	9.000	6.480	1.870	5.400
ebit_ifrs	32182	35658	85023	69749	69281	17741	20230	12589	n	n	44464	44349	9168	14386	17212	25621	23462	24216	18628
ebit_us	29377	33858	88566	75355	75582	n	n	n	n	n	42648	44195	8739	14865	17911	24135	21588	23011	13837
ebitda_ifrs	40953	44786	119258	102091	100899	23533	26651	n	n	n	n	n	n	n	n	n	28873	29271	24350
ebitda_us	38630	43682	115629	102353	100885	n	n	n	n	n	n	n	n	n	n	n	28609	28661	21544
tax_ifrs	9288	12516	23515	17815	19880	8128	10568	5143	n	n	17999	18317	n	4573	6534	8153	11825	13720	8570
tax_us	8967	11704	23710	19614	21461	8333	10484	n	n	n	17637	18151	n	n	n	n	11572	13381	8357
sales_ifrs	239792	265906	1044652	597197	799259	73728	86105	46956	552229	688978	306731	318845	60151	69239	82395	98127	122618	132689	100481
sales_us	239792	265906	1044652	597197	799259	70331	80011	46956	552229	688978	306111	312323	58808	67427	80466	95831	122618	132689	100481
expese_ifrs	223169	248001	1020994	577992	787911	65279	77065	34321	412587	539581	280470	292534	n	59680	71813	80577	130895	120921	111130
expese_us	223760	249099	1020044	574036	784219	63087	70183	33120	414544	542891	379413	287526	n	59410	70920	80842	111021	121289	93260
asset_ifrs	206914	217601	611790	474594	549040	83850	88312	73694	778067	872163	219516	235276	73346	88178	103158	119065	106144	105223	86767
asset_us	213758	219288	587126	450971	523883	82977	85806	69653	752663	858400	223646	240085	68765	80428	93888	110134	140972	139155	122237
cash_ifrs	2960	2590	8088	16381	14069	1333	3985	1366	80905	48559	11730	9002	1410	2350	3102	5987	4318	2493	3860
cash_us	2960	2590	8088	16381	14069	1121	3685	1366	80905	48559	11730	9002	1410	2350	3102	5987	4321	2493	3858
opprofit_ifrs	22133	22626	83820	63069	68246	16827	19327	17711	n	n	26568	26311	9168	14386	17212	25621	24047	24130	16686
opprofit_us	19749	21424	85198	68413	72338	15528	19345	n	n	n	24756	24692	8739	14865	17911	24135	22442	24090	14520
reveue_ifrs	243948	270602	1076402	619783	832687	74526	86888	46956	552229	688978	306731	318845	60151	69239	82395	98127	122618	132689	100481
reveue_us	243948	270498	1076402	619783	832687	71129	80794	46956	552229	688978	306111	312323	58808	67427	80466	95831	122618	132689	100481
fcf_ifrs	19140	13047	25271	1498	14221	7522	n	n	n	n	n	n	n	n	n	n	n	n	n
fcf_us	16331	11033	16054	4322	14515	n	n	n	n	n	n	n	n	n	n	n	n	n	n
refmargi_ifrs	6442	n	-25298	5943	-3536	1857	319	n	n	n	n	n	n	n	n	n	n	n	n
refmargi_us	n	n	n	n	n	881	605	n	n	n	n	n	n	n	n	n	n	n	n
r	0.067	0.057	0.094	0.105	0.100	0.100	0.099	0.100	0.094	0.088	n	n	0.114	0.100	0.100	0.110	0.070	0.072	0.070
g	0.1540	0.1540	0.1713	0.1713	0.1713	0.1326	0.1326	0.1223	0.1223	0.1223	0.1046	0.1046	0.2610	0.2610	0.2610	0.2610	0.1536	0.1536	0.1536

The primary goal of this research was to assess the magnitude of the differences between each financial indicator as calculated under IFRS and U.S. GAAP. Since the data included a scale variable taken under two conditions, the data analysis plan presented in Chapter 3 called for a paired samples t-test to be performed on the simple differences (*FI_ifrs – FI_us*) between each IFRS indicator and the associated U.S. GAAP indicator.

A paired samples t-test is performed based on the assumption that the underlying data is normally distributed. Since the data set did not contain 30 or more company years, tests for normality were performed. SPSS allows the user to run special plots that make it easier for the user to assess normality. One such plot, a Q-Q plot, shows the observed value and the value that is expected if the data are a sample from a normal distribution (Norušis, 2008). In order to utilize this tool, a variable had to be created for each financial indicator that calculated the simple difference between each indicator calculated in accordance with IFRS and in accordance with U.S. GAAP (*FI_ifrs – FI_us*). The resulting variable was named *FI_diff*. For example, a variable was created and labeled *capex_diff* by subtracting *capex_us* from *capex_ifrs*. Once each simple difference had been calculated and the associated variable had been created, the Q-Q plot was run on the newly created variables. Expectedly, there were no differences in the IFRS and U.S. GAAP amounts for the *share* and *dps* variables since they represent the number of shares outstanding and amount of dividends per share, respectively—neither of which is subject to a varying calculation if presented in accordance with a different set of standards. *Capex, earng, roa, asset, ebit, ebitda, opprof, and fcf* appeared to be

normally distributed, whereas, *eps, equity, roe, cash, exp, sales, tax, refmgn, and rev* did not. The Kolmogorov-Smirnov test and the Shapiro-Wilk test were run on those variables that did not appear to be normally distributed. All revealed a significance level (p-value) below 0.01, indicating that each did not meet the normality assumption for the pair samples t-test. Therefore, for those variables, the non-parametric equivalent, the Wilcoxon-Signed Ranks test was performed.

First the paired samples t-tests were run on the variables that were normally distributed. The variables and their corresponding p-values are presented in Table 6 below.

Table 6. Normally Distributed Variables

Variable	Sig (2-tailed)
capex	.170
earng	.326
roa	.615
asset	.733
ebit	.982
ebitda	.036
opprof	.820
fcf	.500

The results reveal that the null hypothesis, there is no difference between the mean [financial indicator] as calculated using the financial statements prepared in accordance with U.S. GAAP vs. the mean [financial indicator] as calculated using the financial statements prepared in accordance with IFRS, was able to be rejected for the *ebitda* variable. It should be noted that this particular variable had data for 8 of the 19 possible cases, so further analysis was performed to ensure the reliability of the results. For all

other variables listed in Table 6, there was insufficient evidence to reject the null hypothesis.

The Wilcoxon-Signed Ranks test was performed on those variables that did not meet the normality assumption. The variables and their corresponding p-values are presented in Table 7 below.

Table 7. Non-normal Variables

Variable	Sig (2-tailed)
eps	.327
equity	.841
roe	.872
cash	.273
exp	.157
sales	.012
tax	.480
refmgn	.650
rev	.008

The results indicate the null hypothesis can be rejected for the *sales* and *rev* variables. Similar to *ebitda* above, *sales* contained 8 of the 19 cases. In contrast, *rev* (Revenues) contained all 19 potential cases and still had a corresponding p-value of less than 0.01, which is even smaller than the required 0.05 predetermined significance level.

After completing the paired samples t-test and the non-parametric equivalent to that test, as suggested by Ankarali and Ankarali (2009), the percent change (PC) between the financial indicators calculated using U.S. GAAP and the financial indicators calculated using IFRS was computed and analyzed. For each indicator a new variable was created and named *FI_pc* by dividing the simple difference (*FI_diff*) by the financial indicator prepared using U.S. GAAP (*FI_us*). For example, *capex_pc* was created using

the following calculation: *capex_diff / capex_us*. Similar to Henry, Lin, and Yang (2009), the data analysis plan in Chapter 3 stated that all PCs exceeding 5 percentage points, or those that were used as a component in another indicator that exceeded the threshold, were to be investigated further. Of the 254 calculated PC figures, 107, or 42.13%, exceeded this level. Summary statistics are presented in Table 8 below.

Table 8. Percent Changes Summary Statistics

Variable Name	*capex_pc*	*earng_pc*	*roa_pc*	*eps_pc*	*equity_pc*	*roe_pc*	*asset*	*ebit*	*ebitda*
# of PC's calculated	8	19	19	19	19	19	19	14	8
# of PC's ≥ 5%	2	10	16	10	8	14	9	8	2
Average |PC|	0.087	0.132	0.202	0.130	0.218	0.361	0.137	0.107	0.095

Variable Name	*opprof*	*cash*	*exp*	*sales*	*tax*	*rev*	*rfmgn*	*fcf*
# of PC's calculated	16	19	18	19	12	19	2	5
# of PC's ≥ 5%	10	2	4	1	3	1	2	4
Average |PC|	0.082	0.135	0.182	0.076	0.078	0.075	0.790	0.396

Table 8 shows all 17 variables, the number of PCs calculated for that variable, the number of company years that had a calculated PC greater than or equal to 5 percentage points for each variable, and the average PC for each variable using the absolute value of those changes since the direction of the deviation is not being assessed at this point. The results of this analysis show that *roa* and *roe* have the highest number of PCs exceeding 5%. Also, one can see that in 8 of the 17 variables more than 50% of the calculated PCs exceeded the threshold. Further, more than 1/3 of the calculated PCs exceeded 5

percentage points in 11 of the 17 variables. This indicates that when the data was available, the PC was often times significant. In addition, it is important to note that a pattern emerged at this point in the analysis. One company (hereafter referred to as company G) was associated with the largest PCs in 9 of the 14 variables it had calculated PCs for. A thorough examination of the potential impact on analysts' analyses of this company will be addressed in the discussion and implications section of this research paper. After this pattern was recognized, and due in part to the fact that the causes for the high PCs varied from company to company, an identifier was given to each of the 7 companies represented in the sample. This allows for specific details surrounding the PCs to be investigated on an individual company basis while still ensuring confidentiality. Referring to Table 5, company years 1 and 2 relate to company A, 3-5 to company B, 6 and 7 to company C, 8-10 to company D, 11 and 12 to company E, 13-16 to company F, and 17-19 to company G.

Presented below is a discussion of the analysis and in depth investigation of each variable's PCs that were greater than or equal to 5%. In addition, the data analysis plan called for further examination of a PC if the associated variable was used in calculating another financial indicator that had a PC that exceeded the threshold. For example, ROA and ROE were directly affected by the earnings, equity, and total assets variables. Therefore, if *roa* or *roe* exceeded 5%, each of the component variables was investigated as well. A brief discussion of the causes of these differences is presented when information was available in the 20-F filings. The implications of such variances are discussed in Chapter 5. The results of the investigation of the highest PCs are presented

first, followed by a discussion of those company years that did not have PCs that exceeded the threshold but still warranted further examination because of their indirect affect on other variables.

Earnings. The *earng* variable was one of 9 variables that had calculated PCs for all 19 company years, 10 of which exceeded 5%. Company A and company C had variances exceeding 5% for all company years included in the data set, company B had 2 of 3, and the rest only contained one PC that met the threshold. Only three of the 10 exceeded 10%, however, indicating that many were close to the predetermined level. Those PCs were attributable to company A at 12.1%, company C at 15.9%, and company G at 50.5%. These PCs were investigated first.

Company A. First, company A's 20-F filings for company years one and two (CY1 and CY2) were investigated since both had a PC greater than five percentage points (12.1% and 5.7%, respectively). For CY1, the variance in the earnings figure was primarily attributable to deferred tax assets and liabilities, pensions and other post retirement benefit obligations (P&PRBO), and impairments. The filing for CY2 cited these items as well, and also listed accounting for oil and gas reserves as a major factor. The inclusion of deferred tax assets and liabilities was expected since deferred taxation is affected by many of the other reconciling items that directly contributed to the variances in the earnings figures, such as P&PRBO, provisions, and financial derivatives. The remainder of this Chapter will reveal that this is consistent across many of the companies.

First, deferred taxation for both company years was examined. For CY1, the major components of deferred taxation that indirectly affected earnings were P&PRBO

and provisions. Since P&PRBO was also one of the significant items directly affecting net income, it was examined first. The major differences regarding P&PRBO revolve around the recognition of actuarial gains and losses. IAS 19, *Employee Benefits*, states that all actuarial gains and losses should be recognized in the income statement, whereas SFAS 87, *Employers' Accounting for Pensions*, suggests they only be recognized in income when they exceed certain thresholds. The second most significant component contributing to the deferred tax assets and liabilities reconciliation item that was investigated was provisions. The filing noted that under IFRS, provisions for decommissioning and environmental liabilities were estimated in accordance with IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, using costs based on current prices discounted to present values taking the time value of money into consideration. In contrast, under U.S. GAAP, these are recognized in accordance with SFAS 143, *Accounting for Asset Retirement Obligations*, which uses a credit- adjusted, risk-free rate to discount the estimated liabilities. Further, these liabilities are only discounted when the timing and amounts of the payments are fixed and reliably determinable, which differs greatly from the IFRS rule. Accounting for both P&PRBO and provisions resulted in differences in earnings as calculated in accordance with the two sets of standards. In addition to the major components of deferred taxation for CY1 listed here, CY2's filing also highlighted financial derivatives as a point of deviation. During the year, company A adopted IAS 39, *Financial Instruments: Recognition and Measurement*, which requires changes in the fair value of derivatives held for trading purposes and/or derivatives designated as fair value hedges be recognized in the income statement, thereby affecting

earnings. Further, IAS 39 requires that changes in the fair value of derivatives designated as cash flow hedges be recognized in equity via other comprehensive income. Amounts recorded in equity are transferred to the income statement when the hedged transaction affects profit or loss, hence the impact on deferred taxation. Under US GAAP all derivative financial instruments are accounted for under SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities*, and recorded on the balance sheet at their fair value. Similar to IAS 39, SFAS 133 requires that changes in the fair value of derivatives be recorded each period in the income statement or other comprehensive income, depending on its classification. Prior to CY2, company A did not designate any of its derivative financial instruments as part of hedged transactions under SFAS 133. As a result, all changes in fair value were recognized in the income statement. A difference therefore existed between the treatment applied under SFAS 133 and that upon initial adoption of IAS 39 associated with those specific derivative instruments. This difference remained until those individual derivative transactions matured.

Next, the notes to Company A's financial statements that related to impairments and their impact on net income under the two sets of standards were examined. Under U.S. GAAP, SFAS 144, *Accounting for the Impairment or Disposal of Long-lived Assets*, requires that the carrying value of property, plant, and equipment (PP&E) and goodwill be compared with undiscounted future cash flows to determine if an impairment loss, which is reflected on the income statement, is present. Under IFRS, discounted future cash flows are used. The notes revealed that some of the impairment charges recognized under IFRS would not have been recognized using U.S. GAAP. After adjusting for the

impact of depreciation, which also affects income, the reconciliation items were calculated and their effect on earnings and equity were disclosed.

Finishing up the investigation of company A, CY2's 20-F filing was reviewed to assess the impact of differences in estimating oil and natural gas reserves on earnings. This reconciling item yielded a PC that warranted further investigation during CY2 as a result of a switch from the United Kingdom accounting rules contained in the Statement of Recommended Practice *Accounting for Oil and Gas Exploration, Development, Production and Decommissioning Activities* (SORP) to the SEC's rules for estimating oil and natural gas reserves for reporting purposes. The SEC requires the use of year-end prices, and the SORP suggests using long-term planning prices. The consequential difference in reserves volumes resulted in different charges for depreciation, depletion and amortization between IFRS and US GAAP, directly effecting net income.

Company G. The 20-F filings for company years associated with company G were investigated next. The large differences in the per share figures between CY 17 and CY 18 were due to a 4:1 stock split occurring that year. While this was important to note, it was not related to the large PCs observed for 9 of the 17 variables. The 20-F filings for those company years identified the primary cause of the exceedingly large PCs as the differences in the rules for accounting for business combinations between the two sets of standards. Under U.S. GAAP, the acquisitions of two companies did not qualify as pooling-of-interests, as they did under IFRS, and therefore, would have been accounted for as purchases resulting in differences in accounting for the equity investments, goodwill, and PP&E revaluations of the consolidated companies.

Company C. Next, company C's data for CY6 and CY7 was examined. Those company years showed PCs in earnings of 15.9% and 7.9%, respectively. The primary reason for the PC in both company years resulted from the method of valuation of crude oil, petroleum products, and natural gas inventories. The last-in-first-out (LIFO) inventory valuation method is allowed under U.S. GAAP but not under IFRS. While this made up a considerable portion of the differences in the earnings figures, both company years were affected by other reconciling items as well.

Additional reasons for the differences in earnings for CY6 are presented below. Like many of the company years discussed above, the 20-F filing for CY6 identified differences in deferred tax assets and liabilities as a contributing cause to the variation in earnings. Under IFRS, taxes payable relating to certain potential distributions from retained profits and other reserves, or upon liquidation of a company, are accrued only to the extent such distributions are planned. Under U.S. GAAP, deferred tax liabilities are recognized regardless of expected distribution of dividends or the disposal of investments. One exception to this rule however, is that U.S. GAAP does not require the accrual of deferred taxes when the investment is a foreign subsidiary and there is sufficient evidence that profits will remain permanently invested in the entity. Adjustments were made taking both the rule and the exception into consideration. In addition, further adjustments to deferred taxation were necessary due to the fact that other reconciling items resulted in deferred tax assets or liabilities.

The other causes for the high PC recorded for CY7 related to successful-efforts accounting and accounting for subsidiaries. The notes to the financial statements

presented in the 20-F filing reference the difference in accounting for costs associated with the development and operation of exploratory wells. Under IFRS, exploration costs, including successful exploratory wells, were expensed when incurred. Under U.S. GAAP, costs relating to exploratory wells are initially capitalized as *incomplete wells and other* until it is deemed a successful effort (i.e., commercial quantities of reserves were discovered). This initial capitalization gave rise to differences in the earnings calculation under the two methods. In addition, the classification of one of company C's subsidiaries differed under IFRS and U.S. GAAP. The subsidiary was sold during the year and since it was fully consolidated under IFRS, no gain was recognized. However, for U.S. GAAP purposes, company C's investment in the subsidiary was accounted for under the equity method, and subsequently a portion of the gain on the sale was recognized in net profit.

Company B. CY4 and CY5 are associated with company B. Both had PCs in earnings that exceeded the stated level, 9.9% and 8.2%, respectively. An investigation of both 20-F filings, along with the filing for CY3 (even though the calculated PC did not surpass the threshold), revealed that the PCs for this variable were largely attributable to the revaluation and subsequent disposal of PP&E. Based on the rules under IFRS, company B revalued PP&E when it was reorganized in 1999 and revalued the PP&E in connection with the acquisitions of five major companies in subsequent years. These revaluations resulted in a charge to income with respect to a reduction in the carrying amounts of certain PP&E below their historical cost bases. However, under U.S. GAAP, PP&E is stated at historical cost less accumulated depreciation. The differences between these regulations caused variances in the earnings figures for the aforementioned

company years. However, it should be noted, as a result of the tax deductibility of the net revaluation surplus under IFRS, a deferred tax asset related to the reversal of the revaluation surplus was created under US GAAP, and a corresponding increase in equity was recorded. In addition, under IFRS, on disposal of a revalued asset, the related revaluation surplus is transferred from the revaluation reserve to retained earnings. Under US GAAP, the gain and loss on disposal of an asset is determined with reference to the asset's historical carrying amount and included in current earnings. The differences in accounting for PP&E described above led to the observed variations in calculating net earnings.

Company D. Company D's earnings figures were also examined more closely due to the fact that the related ROA and ROE indicators had PCs that exceeded the threshold. The primary reasons for the variances in earnings for CY8 and CY9 were identified in the filings as being related to the revaluation of PP&E, accounting for minority interests, and the income tax effects of those items. Similar to the differences identified in the discussion of company B, U.S. GAAP does not allow for the revaluation of PP&E. Therefore, the effect of the revaluation, the related depreciation charges and the loss on the disposal of previously revalued PP&E was reversed for reconciliation purposes. Also, in accordance with the revised IFRS 1, *Presentation of Financial Statements*, and IAS 27, *Consolidated and Separate Financial Statements*, minority interests were included in profit for the year, whereas under US GAAP, they were excluded from net income. In addition to the items identified in CY8 and CY9, earnings

required further adjustment in CY10 due to the acquisition of a 67% equity interest in a subsidiary.

Company F. CY13-CY16 related to company F. The 20-F filings revealed that all company years related to company F had variances in earnings between IFRS and U.S. GAAP attributable to the accounting rules for calculating impairments. As noted under company A, SFAS 144 requires that the carrying value of PP&E and goodwill be compared with undiscounted future cash flows to determine if an impairment loss is present, whereas IAS 36 requires the use of discounted future cash flows. This resulted in differences in both earnings and equity. Other causes for the variances in the earnings figures for CY13-CY16 related to accounting for P&PRBO, for which a thorough explanation was detailed under company A. For CY16 only, the capitalization of borrowing costs caused a difference in earnings and total assets. Under IFRS, IAS 23, *Borrowing Costs*, company F offset borrowing costs by interest received on the temporary investment of funds in calculating the interest capitalization rate. In that year, the amount of interest capitalized to qualifying assets was limited to the net interest expense. Under U.S. GAAP, SFAS No. 34, *Capitalization of Interest Cost*, interest received on the temporary investment of funds is not permitted to be offset against interest expense in calculating the interest capitalization rate. Therefore, under U.S. GAAP, the amount of interest capitalized to qualifying assets exceeded the amount capitalized under IFRS.

Company E. Unlike the other 6 companies, company E did not yield PCs that exceeded 5% in earnings, ROA, or ROE. Therefore, further investigation was not warranted.

Equity. Based on the literature review, it was expected that the earnings and equity figures would be most greatly affected by a transition to IFRS. The analysis of the final data set suggested that this assumption was somewhat true, although the magnified effects on the ROA and ROE ratios, which will be discussed under those variables, had not been considered prior to examining the results of this analysis. Eight of the nineteen company years had PCs in total shareholders' equity that exceeded five percentage points. Six of the eight were related to only 2 companies, company D and company G; so, the impact of the transition on this figure was not as significant as initially perceived based on the data. Three of the 8 exceeded 10%, all coming from the same company, company G, at 44.4%, 43.9%, and 51.5%. Companies A and D also had differences that warranted further investigation. The potential impact of these differences will be presented in the final chapter of this study. Companies G, D, and A were examined first since the largest observed PCs were attributable to them.

Company G. First, the 20-F filings for company G were gathered and examined. The filings identified the main cause for the variances in the equity figures, and subsequently the ROE figures, as the same difference responsible for the large PCs in earnings—accounting for business transactions. Under U.S. GAAP, the acquisitions of two subsidiaries would have been accounted for as purchases resulting in differences in

accounting for the equity investments, goodwill, and PP&E revaluations of the consolidated companies.

Company D. Company D's reconciliation data led to calculated PCs for CY8, CY9, and CY10 as 5.5%, 8.9%, and 7.5%, respectively. Similar to earnings, the disallowance of the revaluation of PP&E and the regulations related to accounting for minority interests were identified as the major components leading to the variances in the equity figures for all three company years. Further, rules related to accounting for acquisitions of an equity interest in a subsidiary were cited as having significantly affected CY10. Specifically, a deferred tax asset relating to the reversal of the effect of the revaluations was established and a corresponding increase was recorded in equity. Also, minority interests were included in equity in accordance with IFRS 1 and IAS 27. Therefore, adjustments had to be made since U.S. GAAP requires these amounts to be excluded from equity.

Company A. A review of company A's information, specifically CY1 and CY2, revealed that deferred tax assets and P&PRBO had considerable impact on the equity figures. In addition to the information referred to in the discussion of the items indirectly affecting earnings via deferred taxation, certain other differences in accounting for P&PRBO and financial derivatives were associated with the identified variances in total equity. The first cause for the 6.4% difference in the equity figure for CY1 related to adjustments that were necessary due to the fact that IAS 19 differs from SFAS 87. Under U.S. GAAP, when a pension plan has an accumulated benefit obligation that exceeds the fair value of the plan assets, the unfunded amount is required to be recognized as a

minimum liability on the balance sheet. The offset to this liability is to be recorded as an intangible asset up to the amount of any unrecognized prior service cost or transitional liability, and thereafter directly in other comprehensive income. IAS 19 does not have a similar concept so differences arose. While CY2 did not yield a PC that exceeded 5 percentage points, an examination of the PC in earnings for this company year yielded important information relevant to the equity figure and has been included. During CY2, company A adopted the newly issued SFAS 158, *Employers' Accounting for Defined Benefit Pension and Other Post-retirement Plans, an amendment of FASB Statements No. 87, 88, 106, and 132(R).* SFAS 158 requires an employer to recognize the overfunded or underfunded status of a defined benefit post-retirement plan as an asset or liability on the balance sheet and recognize changes in that funded status in other comprehensive income in the year in which the changes occur. Therefore, a minimum liability was no longer required. The newly adopted recognition rules mirrored those under IFRS, hence the elimination of a PC warranting further investigation. This amendment is a prime example of convergence between the two sets of standards, a topic that will be expanded upon further in Chapter 5. It should be noted that the previously mentioned differences in the recognition rules for actuarial gains and losses still existed under SFAS 158, which explains why P&PRBO continued to affect earnings in CY2. The equity figure was further adjusted for both company years as a result of the adoption of IAS 39 outlined in the discussion on the previous variable. All cash flow and fair value hedges that had previously qualified for hedge accounting under UK GAAP were recorded on the balance sheet at fair value with the offset recorded through equity.

Company B. The PCs in equity for the company years associated with company B, CY3-CY5, were largely attributable to the revaluation and subsequent disposal of PP&E. Based on the rules under IFRS, company B revalued PP&E when it was reorganized in 1999 and revalued the PP&E in connection with the acquisitions of five major companies in subsequent years. These revaluations resulted in an increase in equity with respect to the increase in the carrying amounts of certain PP&E above their historical cost bases. U.S. GAAP does not allow for the revaluation of assets and requires they be recorded at historical cost. Therefore, as noted in the results for the earnings variable, the net revaluation surplus was reversed for reconciliation purposes. The effect on equity stems from the tax deductibility of the net revaluation surplus under IFRS. Upon reversal of the surplus under U.S. GAAP, a deferred tax asset was created and a corresponding increase in equity was recorded.

Company C. An examination of Company C's reconciliation filings for both CY6 and CY7 revealed the major components of the variances in total shareholders' equity for those company years related to successful-efforts accounting, deferred taxation, and the disallowance of the LIFO inventory valuation method under IFRS. A thorough explanation of each of these reconciling items was presented under the earnings variable.

Company F. All company years for Company F were investigated. Like most of the companies listed above, P&PRBO was one of the primary components making up the differences between the equity figures. In addition, accounting for financial derivatives, as detailed in company A's results, was also cited as a cause for the observed variances.

Company E. As noted in the results for the earnings variable, company E did not warrant further investigation into the differences between the earnings figures, equity figures, or asset figures since those variables, nor ROA and ROE, resulted in PCs exceeding 5%.

Total Assets. In this variable 9 of 19 PCs exceeded 5%, while only 3, all associated with company G, exceeded 10%. In addition, all four company years associated with company F, one company year associated with company D and one company year associated with company B had PCs above the threshold.

Company G. As noted in the previous variables, the large PCs for this company were attributable to the differences in the IFRS and U.S. GAAP rules for accounting for the company's two acquisitions of subsidiaries.

Company F. All four company years associated with company F showed PCs in total assets that exceeded the threshold. The notes to the financial statements in the 20-F filings revealed these differences were a direct result of many of the leading causes already discussed. Specifically, accounting for provisions, P&PRBO, impairment, financial derivatives, and borrowing costs.

Company B. CY4, which related to company B, had an associated PC of 5.2%. The PC in total assets for company B's company years were primarily caused by the revaluation of PP&E discussed under earnings. Taking both the revaluation of PP&E and the disposal of previously revalued PP&E into consideration, the carrying amounts of PP&E for this company year were significantly higher under IFRS, which indirectly affected the return on assets figure.

Company D. According to the notes to the financial statements in the 20-F reconciliation, the 5.8% change observed in CY8 was due, in large part, to the disallowance of the revaluation of PP&E and the regulations related to accounting for minority interests.

Company A. For CY1, the major impacting items on this variable were P&PRBO and provisions. A detailed explanation of these reconciling items was presented under earnings and further explained within the equity variable. For CY2, the deferred tax assets and liabilities item was cited as being the primary cause of the PC of this variable. Again, the factors contributing to this item were extensively examined in the results for the previously reviewed variables.

Company C and Company D. . The major components of the variances in total assets for CY6 and CY7 related to successful-efforts accounting, deferred taxation, and the disallowance of the LIFO inventory valuation method under IFRS. The PCs in CY9 and CY10 related to the disallowance of the revaluation of PP&E and the regulations related to accounting for minority interests. Rules related to accounting for acquisitions of an equity interest in a subsidiary were also cited as having significantly affected the PC in this variable for CY10.

Capital Expenditures. In total, two of the eight PCs calculated exceeded 5%. However, relative to the PCs for many of the other variables, the percentages were quite low. In fact, CY8's 5.1% barely exceeded the threshold, while CY10's 12.3% was well over the mark. Both company years were associated with company D. Although the 20-F filings did not directly indentify specific causes for the differences between the figures

under the two sets of standards, they were likely attributable to the adjustments made relating to accounting for minority interests discussed above.

Return on Assets and Return on Equity. As noted above, *roa* and *roe* had the most PCs warranting investigation. For *roa [roe]*, three of the 16 PCs [three of the 14 PCs], were greater than 20%, all of which came from company G. The impact of the reconciliation seemed to be magnified for these variables, which was likely due to the fact that the two are calculated using three figures that were highly affected by the change in the underlying standards. As one can see in the present review of the results of this examination, earnings, equity, and total assets were all included as variables in this study. A detailed explanation of the reconciling items associated with each can be found within the results for that particular variable.

Earnings per Share. Like the *earng* variable, the *eps* variable was also one of nine with calculated PCs for all 19 company years. Only three of the ten PCs were greater than 10%, so while the frequency of PCs reaching the predetermined threshold seems high, most were still relatively small. Since the number of shares outstanding does not change when the statements were prepared under a different set of accounting standards, the PCs are directly related to the numerator of the ratio, earnings. The results for that variable revealed that the major differences that gave rise to the PCs were related to deferred tax assets and liabilities, P&PRBO, and accounting for impairments. The implications of such variances in the EPS figure are extremely important since this financial indicator is one of the primary metrics used by analysts and investors when considering a company for investment. They too will be examined in detail in Chapter 5.

EBIT, EBITDA, and Operating Profit. These variables are directly related to the earnings variable described above, as they are all three impacted by the reconciling items described within the results of that variable. The causes identified in the investigation of the company years with PCs exceeding the threshold for these variables were the same as those listed under earnings such as, deferred tax assets and liabilities, P&PRBO, impairments, accounting for oil and gas reserves, accounting for financial derivatives, and accounting for PP&E.

Cash and Cash Equivalents. Only one company disclosed different amounts for cash and cash equivalents under IFRS and U.S. GAAP, company C. CY6 showed an 18.9% difference and CY7 showed an 8.1% difference. Neither the reconciliation filing for CY6 nor the filing for CY7 identified the cause of these variances. However, it was likely due to the reclassification of the subsidiary using the equity method under U.S. GAAP referred to within the discussion of the earnings variable.

Total Expenses, Total Sales, and Total Revenues. Similar to the PCs noted above for cash and cash equivalents, further investigation of the 20-F filings for company C did not reveal a specific cause of the variance. Further, these too were likely attributable to the subsidiary being accounted for differently under the two sets of standards.

Income Tax Expense. Three of the 12 company years that had enough information to calculate income tax expense under both IFRS and U.S. GAAP had observed PCs that exceeded five percentage points—CY2, CY4, and CY5. While information regarding these differences was not explicitly stated in the filings, a person

familiar with accounting for deferred taxes would recognize the implied reference to income tax expense in the discussion of deferred tax assets and liabilities. An in depths discussion of the causes of these deferrals is presented under the earnings and equity variables.

Refining Margin and Free Cash Flow. While the average PCs calculated for *refmgn* and *fcf* seem extremely high, 79% and 39.6% respectively, one must take into account the number of cases being examined—two for *refmgn* and 4 for *fcf*. Refining margin was able to be calculated in two company years, both of which came from the same company, Company C. In contrast, while it was a daunting task requiring hours of research into the intricacies of the 20-F filings, free cash flow was able to be calculated for 2 company years for company A and 2 company years for company B. Free cash flow can be calculated multiple ways. It can equal cash from operations less capital expenditures. It can equal the sum of earnings, change in working capital, and change in debt less capital expenditures. All of these possible calculations were taken into consideration when attempting to back into the FCF amount. The PCs in this variable are attributable to the reconciling items affecting earnings and changes in working capital, which is calculated by subtracting current liabilities from current assets. These items have been discussed in detail in the results for the earnings and asset variables above and should be referenced when considering the causes of the PCs identified for the *fcf* variable in Table 8.

Summary. In an attempt to provide the most comprehensive analysis of the differences in the financial indicators calculated using the financial statements prepared

in accordance with IFRS and those calculated using the financial statements prepared in accordance with U.S. GAAP, two tests were performed. First, a paired samples t-test, or the non-parametric equivalent when the data did not meet the normality assumption, was performed. Next, the individual differences were examined. Those resulting in a PC greater than or equal to 5% were examined further. A discussion of the results of both analyses and the ensuing investigations was presented. Table 9 shows all calculated PCs used in that analysis.

Table 9. Percent Changes

CY	capex_pc	earng_pc	roa_pc	eps_pc	equity_pc	roe_pc	asset_pc	ebit_pc	ebitda_pc	opprof_pc	cash_pc	exp_pc	sales_pc	tax_pc	rev_pc	rfmgn_pc	fcf_pc
1	0.000	0.121	0.159	0.118	-0.064	0.199	-0.032	0.095	0.060	0.121	0.000	-0.003	0.000	0.036	0.000	n	0.172
2	0.000	0.057	0.065	0.057	-0.022	0.081	-0.008	0.053	0.025	0.056	0.000	-0.004	0.000	0.069	0.000	n	0.183
3	-0.038	-0.012	-0.052	-0.016	0.002	-0.014	0.042	-0.040	0.031	-0.016	0.000	0.001	0.000	-0.008	0.000	n	0.574
4	0.047	-0.099	-0.143	-0.087	0.028	-0.123	0.052	-0.074	-0.003	-0.078	0.000	0.007	0.000	-0.092	0.000	n	-0.653
5	0.005	-0.082	-0.124	-0.077	0.007	-0.088	0.048	-0.083	0.000	-0.057	0.000	0.005	0.000	-0.074	0.000	n	-0.020
6	n	0.159	0.147	0.158	0.050	0.104	0.011	n	n	0.084	0.189	0.035	0.048	-0.025	0.048	1.108	n
7	n	-0.079	-0.105	-0.081	0.036	-0.111	0.029	n	n	-0.001	0.081	0.098	0.076	0.008	0.075	-0.473	n
8	-0.051	-0.048	-0.100	0.000	0.055	-0.098	0.058	n	n	n	0.000	0.036	0.000	n	0.000	n	n
9	-0.045	-0.033	-0.064	-0.038	0.089	-0.112	0.034	n	n	n	0.000	-0.005	0.000	n	0.000	n	n
10	-0.123	-0.036	-0.051	-0.037	0.075	-0.103	0.016	n	n	n	0.000	-0.006	0.000	n	0.000	n	n
11	n	-0.015	0.003	-0.013	-0.034	0.020	-0.018	0.043	n	0.073	0.000	-0.261	0.002	0.021	0.002	n	n
12	n	0.026	0.046	0.026	-0.021	0.048	-0.020	0.003	n	0.066	0.000	0.017	0.021	0.009	0.021	n	n
13	n	0.082	0.014	0.082	0.040	0.040	0.067	0.049	n	0.049	0.000	n	0.023	n	0.023	n	n
14	n	-0.028	-0.113	-0.028	0.063	-0.086	0.096	-0.032	n	-0.032	0.000	0.005	0.027	n	0.027	n	n
15	n	-0.079	-0.161	-0.079	0.038	-0.113	0.099	-0.039	n	-0.039	0.000	0.013	0.024	n	0.024	n	n
16	n	0.016	-0.060	0.016	0.014	0.002	0.081	0.062	n	0.062	0.000	-0.003	0.024	n	0.024	n	n
17	n	0.058	0.405	0.058	-0.444	0.903	-0.247	0.087	0.009	0.072	-0.001	0.179	0.000	0.022	0.000	n	n
18	n	0.032	0.365	0.032	-0.439	0.840	-0.244	0.052	0.021	0.002	0.000	-0.003	0.000	0.025	0.000	n	n
19	n	0.505	1.120	0.504	-0.515	2.100	-0.290	0.346	0.130	0.149	0.001	0.192	0.000	0.025	0.000	n	n

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

Introduction

Guided by the measurement perspective to accounting and financial market research and in line with fundamental analysis literature, this research built on the empirically tested notion that a firm's intrinsic equity value can be measured by examining accounting information such as growth, risk, and earnings as well as other non-accounting information sources. A transition to IFRS would have significant effects on those accounting information sources, specifically the financial statements. Therefore, since analysts have been identified as one of the primary users of the financial statements and their investment recommendations have been linked to investor behavior (Breton & Taffler, 2001; Womack, 1996), an exploration of the effects of changes in the financial statements on analysts' fundamental analysis was warranted. More specifically, this study answered the call for further research into the effects of IFRS adoption in the U.S. (Hail, Leuz, & Wysocki, 2009; Henry, Lin, & Yang, 2009; Plumlee & Plumlee, 2008). The purpose of this two-phase, sequential mixed methods study was to assess the effects of a transition to IFRS on the key financial indicators used by financial analysts in their analyses of publicly traded companies in the oil and gas production industry. The results identify the key financial indicators used by analysts in the industry, highlight the variations in the two sets of standards that result in significant differences in those indicators as calculated under both methods, and provide guidance for management's development of preparation efforts.

Overview of the Study

Chapter 1 of this study introduced the problem, the purpose and nature of the study, and identified key terms, assumptions, and limitations within the study. Chapter 2 contained a two-part literature review that provided pertinent information on the concepts that were researched including the development of IFRS, globalization, and a review of the literature related to the research design used. Chapter 3 discussed the research design in depth and Chapter 4 contained the results of the testing and analysis of the data. This chapter contains sections on the implications of the results presented in Chapter 4, a review of recent convergence projects and how they impact the analysis of the results, limitations identified during the study, conclusions based on the research, and recommendations for future research.

Implications

Although a thorough examination of the implications of the results of this study was presented in Chapter 4, further analysis on the results of Phase 2 was necessary in order for conclusions to be made. A summary of the results from both phases, including a recap of the research questions being investigated, and a discussion of this additional analysis of the Phase 2 data is presented below.

Research Questions

Chapter 1 identified Research Question 1 as, "What are the key financial indicators identified in analysts' reports on publicly traded companies in the oil and gas production industry"? As noted in Chapter 4, Research Question 1 was answered in Phase 1 of this study. Table 5 lists the 21 most important key financial indicators

identified in analysts' reports on publicly traded companies in the oil and gas production industry. This list includes indicators such as earnings and equity, as well as total sales, total assets, total revenues, and total expenses. This list will aid in management's preparation for a transition in many ways. First, it highlights those figures that analysts regard as significant. Knowing what analysts, and subsequently investors, view as important gives management some guidance on where to focus their efforts with regards to investor education. Also, management can provide more detail on the differences between these figures under IFRS and U.S. GAAP in the notes to the financial statements to help in the analysis process.

Research Question 2, "What differences exist between the identified financial indicators when the financial statements are prepared in accordance with U.S. GAAP compared to when the financial statements are prepared in accordance with IFRS?," was investigated in multiple ways. First, the differences between the two figures were tested using a paired samples t-test or the nonparametric equivalent when the normality assumption was not met. The results revealed that that the differences between EBITDA, total sales, and total revenues as calculated in accordance with IFRS versus being calculated in accordance with U.S. GAAP were statistically significant. These differences were investigated further in the next step of the data analysis plan.

Next, the PC in each calculated financial indicator from IFRS to U.S. GAAP was calculated. The data analysis plan called for further investigation of those PCs that exceeded the predetermined level of five percentage points, as well as those used in calculating another variable associated with PCs above that threshold. More specifically, it stated that financial indicators that were financial ratios would be evaluated by

examining other ratios in the same category to determine if the magnitude of the differences were consistent across the group, in which case an evaluation of the potential impact of such differences on analysts' analyses was warranted. Further, those indicators that could not be easily categorized were to be examined differently. Since most of the financial indicators were not ratios, the analysis of those indicators revolved primarily around the investigation into the causes of the differences between the figures as calculated under the two sets of standards.

The results of the in depths investigations of the underlying causes contributing to the large variances in the financial indicators as calculated in accordance with each set of standards was discussed in detail in Chapter 4. A summary of these findings is listed below.

The primary causes for the difference between the financial indicators calculated in accordance with IFRS and those calculated in accordance with U.S. GAAP discussed in Chapter 4 included inconsistencies between the two sets of standards in accounting for: deferred tax assets and liabilities, P&PRBO, provisions, financial instruments, business combinations, impairments, fair value accounting, inventory valuation estimates, borrowing costs, and successful efforts accounting.

Convergence Projects

Since the requirement that foreign private entities listed on U.S. exchanges file a 20-F reconciliation form was lifted in 2007, as long as the companies filed in accordance with IFRS, 20-F filings past that date were not examined. More recent convergence efforts were not exemplified in these reconciliations and the differences found may have decreased or been eliminated since the preparation of those forms. Therefore, a

discussion of the recent convergence projects that relate to those causes identified above is presented.

Pensions and post retirement benefits obligations. Some significant changes to P&PRBO have been made that impact the calculation of the financial indicators in this study. As noted in Chapter 4, in 2007 the FASB issued SFAS 158, *Employers' Accounting for Defined Benefit Pension and Other Post-retirement Plans, an amendment of FASB Statements No. 87, 88, 106, and 132(R).* SFAS 158 requires an employer to recognize the overfunded or underfunded status of a defined benefit post-retirement plan as an asset or liability on the balance sheet and recognize changes in that funded status in other comprehensive income in the year in which the changes occur. Therefore, a minimum liability was no longer required. This newly adopted recognition rule mirrored that of IFRS, thereby reducing the disparity between the two sets of standards. Further, in June of 2011, the IASB "amended IAS 19, *Employee benefits*, making significant changes to the recognition and measurement of post employment defined benefit expense and termination benefits, and to the disclosures for all employee benefits" (PWC, 2011, p. 562). In September, the FASB issued an update to the comparable U.S. standard. The revised standard is intended "to provide more information about an employer's financial obligations to a multiemployer pension plan and, therefore, help financial statement users better understand the financial health of all of the significant plans in which the employer participates" (p. 560). This is a prime example of the success of convergence efforts, and it highlights the objective of both governing bodies, which is "to adopt a converged standard on this topic and both boards have stated their intent to make further changes to their respective standards to achieve this" (p. 551).

While the standards for P&PRBO are more closely aligned, certain differences still remain, such as the requirement in IAS 19 to disclose expected contributions for the next operating period. This study highlighted the significance of such differences, revealing that they still represent a hurdle in the movement towards convergence.

Provisions. The PCs resulting from differences in accounting rules related to the recognition and measurement of provisions and contingencies were primarily associated with discounting provisions and the requirements for loss contingency recognition. Both IFRS and U.S. GAAP require recognition of a loss based on the probability of occurrence, although the definition of probability is different under US GAAP (where probable is interpreted as "likely") and IFRS (where probable is interpreted as "more likely than not"). This difference still exists. In addition, the difference in estimating and discounting provisions still remains unchanged as well. With regards to disclosure requirements however, certain advancements have been made. In 2010, the FASB issued a proposal to require additional disclosures related to provisions and contingencies, which consisted of information that would allow financial statement users to understand the nature, potential magnitude, and potential timing of certain losses (PWC, 2011). As a result of the comments about the proposed disclosures, the FASB postponed this project. The IASB went a step further, by issuing an exposure draft during 2010 which would have, among other things, removed the more-likely-than-not threshold for determining when contingent liabilities should be recognized. However, this proposal was not supported, and in response, the IASB has softened its stance on some of the more controversial aspects of its proposal and plans to post an updated draft.

Financial instruments. In May 2010, the FASB proposed changes to its standards on financial instruments accounting. That proposal included an entirely new classification and measurement model for all financial instruments, a new credit impairment model for debt instruments, and significant amendments to the guidance on hedge accounting. This proposal includes guidance on a number of issues relevant to this study such as hedge accounting, fair value derivatives, cash flow derivatives, the equity method of accounting for subsidiaries, and accounting for minority (non-controlling) interests. The FASB is still deliberating this proposal and has made significant changes to it based on responses from constituents and recent IASB projects (FASB, 2011b). In contrast, the IASB has already finalized its classification and measurement guidance in the form of IFRS 9, *Financial instruments,* and while the two differ considerably, "the IASB has indicated that it will give its constituents the opportunity to comment on the FASB's approach once it is closer to being finalized" (PWC, 2011, p. 137).

Impairments. To date, there have been no significant updates to the standards relating to the impairment of tangible long lived assets. Because the standards are so similar on the issue, one using undiscounted cash flows to compare to the carrying amount and one using discounted cash flows, the convergence project was not given priority. Impairment for goodwill, on the other hand, has seen recent developments. On September 15, 2011, the FASB completed the related project with the issuance of Accounting Standards Update No. 2011-08, *Intangibles–Goodwill and Other (Topic 350): Testing Goodwill for Impairment* (FASB, 2011c).

Business combinations. The 20-F filings for 2 company years identified the primary cause of the exceedingly large PCs in a number of variables as the differences in

the rules for accounting for business combinations between the two sets of standards. Under U.S. GAAP, the acquisitions of two companies did not qualify as pooling-of-interests, as they did under IFRS, and therefore, would have been accounted for as purchases resulting in differences in accounting for the equity investments, goodwill, and PP&E revaluations of the consolidated companies. The joint project for business combinations was completed in 2008 (FASB, 2011a).

Inventory costing estimates. Differences remain in the allowed methods of valuation of crude oil, petroleum products, and natural gas inventories between the two sets of standards. The last-in-first-out (LIFO) inventory valuation method is allowed under U.S. GAAP but not under IFRS. This represents a big difference that has yet to be addressed.

Fair value accounting and revaluation of PP&E. On May 12, 2011, the FASB completed the Fair Value Measurement joint project with the issuance of Accounting Standards Update No. 2011-04, *Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs* (FASB, 2011b).

Borrowing costs. According to the progress report on the IASB-FASB convergence work issued in April of 2011, IAS 23, *Borrowing Costs,* was revised in 2007 to align with U.S. GAAP standards thereby completing the joint project (FASB, 2011a).

Successful efforts accounting. As discussed in Chapter 4, under U.S. GAAP, the full cost method for accounting for exploration and evaluation of mineral interests requires that all costs incurred in prospecting, acquiring mineral interests, exploration, appraisal, development and construction be capitalized. Whereas, under IFRS 6, the

company has the option to expense exploration and evaluation costs as incurred. There have been no convergence efforts to eliminate this difference to date.

Deferred tax assets and liabilities. As discussed in previous chapters, the large differences in deferred taxation were encountered because they reflected the tax effects of the other reconciling items detailed above. Therefore, convergence of the standards on those issues would essentially eliminate, or has eliminated, the majority of the observed differences.

Conclusions

As Kotlyar (2008) stated, "Transitioning to IFRS is likely to impact the way in which management communicates with investors and companies conduct business with customers and vendors, as well as the key processes of daily operations" (p. 235). The results of this study add to the body of knowledge and contribute to a better understanding of the consequences that a transition to IFRS would have on the oil and gas production industry. The results of this research uncovered multiple concerns.

First, the results documented in this study revealed that 107 of the 254 calculated PC figures, or 42.13%, exceeded the predetermined threshold of 5 percentage points. Further, 8 of the 17 key financial indicators had more than 50% of their calculated PCs that exceeded that mark. This number jumps to 11 of 17 if examining the data for those variables with more than one third of the calculated PCs exceeding 5%. When the data was available, the PC was often times significant. This indicates that the two sets of standards were still very different during those years. As noted above, while convergence projects have reduced some of these differences, some still remain.

The data also revealed that some companies were affected more than others. For instance, company G was associated with most of the largest PCs in a number of variables because it was one of the only companies that had to account for IFRS's disallowance of the LIFO inventory valuation method. This helps to illustrate the fact that a transition to IFRS will impact companies very differently. Where one company may only have minimal differences in the financial figures used in fundamental analysis as a basis for investment decisions, others may see extremely large deviations. This variation in the potential impact of a transition is only magnified when considering companies from other industries.

As noted above, recent convergence projects have greatly minimized the disparities between the two sets of standards. The impacts of those projects relating to this study were varied. While the standards for P&PRBO are more closely aligned, certain differences still remain. Therefore, the significant differences cited in this study that were attributable to the rules for accounting for P&PRBO have not been completely eliminated and would affect analysts' investment recommendations. Further, those differences relating to accounting for provisions, impairment of PP&E, successful efforts accounting, and the disallowance of the LIFO inventory valuation method have not been resolved to date. Such differences represent a huge hurdle in the comparability of the financial statements to previous years if the transition to IFRS were to take place.

In contrast, the two standard setting bodies have harmonized their standards related to accounting for borrowing costs, fair value accounting, and business combinations. In addition, the FASB is in the process of deliberating a proposal on accounting for financial instruments, which includes guidance on a number of issues

relevant to this study such as hedge accounting, fair value derivatives, cash flow derivatives, the equity method of accounting for subsidiaries, and accounting for minority (non-controlling) interests. These efforts would essentially eliminate many of the differences that were identified in this study, thereby reducing the impact of such a transition to a new set of standards.

It should also be noted that IFRS 1, *First-time Adoption of International Financial Reporting Standards,* requires companies to retrospectively apply the international standards that exist as of the company's first reporting date under IFRS, to all periods presented as if they had always been in effect. This will be extremely helpful for analysts when comparing company results for the current period to previous periods. However, the IASB recognizes there are certain situations in which the cost of a full retrospective application of IFRS would exceed the potential benefit to investors and other users of the financial statements. Therefore, IFRS 1 provides guidance that all companies must follow on their initial adoption of the international standards and contains a number of voluntary exemptions and mandatory exceptions to the requirement. With the completion of nearly every joint convergence project, IFRS 1 is amended to include verbiage relating to the updated standards, allowing for various impracticability exceptions. The impact of these exceptions cannot be assessed prior to conversion since the standard changes so frequently.

In addition, the analysis in Phase 2 of this study helped shine some light on the motive behind the SEC's decision to eliminate the 20-F filing requirement for some companies. The results revealed that approximately 25% of the 798 potential key financial indicators could not be calculated due to a lack of information provided in the

form. The financial indicators with the most notable lack of information were *EBITDA, DDM, DFCFM, free cash flow*, and r*efining margin*. This limited information made it difficult to compare the figures between the two sets of standards, thereby reducing the amount of useful data that analysts and investors would have used in making investment decisions. This may have contributed to the SEC's decision to lift the requirement to file such reconciliations, since the information loss was not significant. This is important to the current study in that it provides some guidance for management's preparations for transition. More specifically, guidance on where to focus investor education and which topics warrant thorough explanations in their annual reports. Companies preparing for a transition should include more detailed information on the differences between the aforementioned figures under the two sets of standards since they were identified as significant to analysts' analyses of companies in this industry.

Limitations

As noted in Chapter 1, the company filings and analyst reports investigated in this study do not reflect recent convergence efforts since the 20-F reconciliation form is no longer required for foreign private issuers whose financial statements are prepared in accordance with IFRS or U.S. GAAP. Those recent projects may have reduced or eliminated a number of the observed differences in the calculated financial indicators, thereby reducing the applicability of the results to the present day. However, in an attempt to overcome this limitation, an investigation into the impacts of those recent convergence projects on the differences found in the analysis was performed and the results of this examination were presented.

Recommendations for Future Research

Scholars and practitioners in the oil and gas production industry would benefit from continued investigations of the convergence efforts and their impact on the financial statements and the users of those statements. Also, being that there is very limited research on possible adoption of IFRS, other industries would benefit from studies exploring the potential impacts of such a transition.

In addition, future research that builds on the results of this study is recommended. Potential topics might include an investigation into the evolution of investors' and analysts' understanding of the key financial indicators identified in this study with regards to the impact of a transition. For example, a study in the year of, or year after, conversion that examines how analysts account for the changes in these indicators and how the transition actually affects their investment recommendations.

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