THE VALUE RELEVANCE OF THE DIFFERENCE BETWEEN NONFINANCIAL AND FINANCIAL MEASURES

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ABSTRACT

Extant accounting research has focused on the value relevance of nonfinancial performance measures and financial performance measures separately. I examine the value relevance of the *difference* in those performance metrics. Specifically, I examine whether a difference in nonfinancial and financial information is an indicator of stronger or weaker future firm performance. Additionally, I examine whether the significant difference between nonfinancial and financial measures and future firm performance is related to the life cycle stage of the firm. Finally, I examine whether these differences have an impact on market participants' assessment of firm value.

My results suggest that the difference between nonfinancial and financial performance measures is an indicator for future firm performance. Specifically, the higher the difference in performance measure the weaker the future performance of the firm. However, this difference is somewhat mitigated given the various life cycle of the firms. For the mature firms the difference between nonfinancial and financial measures serves as an indicator for future performance, while a firm in the early or growth stage the difference is not a strong indicator of future performance. Additionally, I find that market participants do not impound the difference between nonfinancial and financial measures into their assessment of firm value. This finding supports both proximity and transparency theory as it relates to how these differences are communicated to financial statement users. Given that the difference between nonfinancial and financial provides a signal of future performance suggests that a trading strategy may be implemented to earn future

abnormal returns. I develop a trading strategy by taking a long (short) position in firms with a low (high) difference between their nonfinancial and financial performance measures and find significant positive abnormal returns.

DEDICATION

This dissertation is dedicated to everyone who helped me and guided me through the trials and tribulations of creating this manuscript. In particular, my family, Kelsey Brasel, and Gary Taylor who were always there to listen when I needed an ear, advise when I needed guidance, and support when I needed a lift. Without you, I would not have been able to achieve all that I have at the University.

LIST OF ABBREVIATIONS AND SYMBOLS

β	Computed value of coefficient
t	Computed value of *t* test
=	Equal to

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CHAPTER 1

INTRODUCTION

The purpose of this paper is to examine whether the difference between nonfinancial and financial measures is value relevant and whether the incremental value associated with this difference is affected by the life cycle of the firm. The difference between nonfinancial performance measures and financial performance measures is illustrated with HealthSouth. From 1999 through 2002, HealthSouth reported an increase in revenue and assets, financial measures, in a period in which the number of facilities, a nonfinancial measure, operated by the company decreased (Brazel et al. 2009). The difference between financial and nonfinancial performance measures is considered to be value relevant when this difference is significantly associated with firm future performance (Beaver 2002).

I utilize a firm's future earnings as a proxy for future performance. I then evaluate the association between the difference in performance measures and a firm's future earnings. I find that the difference between financial and nonfinancial measures is negatively related to future earnings per share, which is an indicator of weaker future performance. Additionally, I find that the strength of the signal is dependent on the firms' life cycle. The difference has the strongest (weakest) association with future performance for firms in their later (earlier) stages of their life cycle. Lastly, I find evidence suggesting that market participants do not incorporate this information related to future performance until the lower earnings are realized. Therefore, a trading opportunity exists in which a return can be obtained by taking a long (short) position in firms with a low (high) difference in their financial and nonfinancial measures.

Historically, shareholders of businesses, such as managers, analysts, and investors, have primarily relied upon financial performance measures to evaluate firm performance. Companies

are beginning to develop and make available to the public nonfinancial performance measures to supplement and complement the financial measures already in place to evaluate the firm's performance (Stivers et al. 1998). For example, internet companies use monthly active users (Raice and Wingfield 2011; Ovide 2012), the healthcare industry use patient length of stay and patient satisfaction (Evans et al. 2005), hotels use customer satisfaction and level of complaints (Banker et al. 2005), and the airline industry uses passenger load factors (Davila and Venkatachalam 2004). Additionally, the Advisory Commission on Improvements to Financial Reporting suggest that the Securities and Exchange Commission (SEC) "encourage companies to provide, explain, and consistently disclose period-to-period company-specific key performance indicators (KPIs)" including nonfinancial metrics as they provide more transparency and understanding about the company to investors (SEC 2008).

Nonfinancial metrics have been shown to be associated with firm valuation, future firm performance, and executive compensation (for examples, see Amir and Lev 1996; Ittner and Larcker 1998; Aaker and Jacobson 20001; Davila and Venkatachalam 2004; Banker et al. 2005). Additionally, within certain industries, such as the cellular and internet industries, nonfinancial performance measures have been shown to be more value relevant than financial performance measures (Amir and Lev 1996; Trueman et al. 2000; Demers and Lev 2001). However, in other industries where there is an alleged ex-ante preference to nonfinancial measures, such as the homebuilding and retail industries, financial performance measures dominate other measures with respect to firm valuation (Francis et al. 2003). All of these studies have focused on the value relevance of financial and nonfinancial performance measures as individual variables, while the value relevance of the difference between these measures is the focus of this study.

Recent literature has argued that inconsistencies[1] between financial and nonfinancial information may be relevant in assessing a firm's future performance. Brazel et al. (2012) suggest that "the comparison of financial measures and nonfinancial measures located throughout a firm's financial report can be informative regarding the financial health of a firm." Chow et al. (2006) suggest that financial and nonfinancial information should be aligned and consistent in the information provided about firm performance. Therefore, when nonfinancial and financial information do not provide consistent information of firm performance, the difference between such measures may be used to verify the faithfulness of the financial information (Brazel et al. 2009).

Consistent with this notion, the Public Company Accounting Oversight Board (PCAOB) suggests that during analytical procedures, auditors examine relationships between financial and nonfinancial information to assist in the identification of risks of material misstatement (PCAOB 2010). In a recent study, Brazel et al. (2009) find that fraudulent firms are associated with greater differences between financial and nonfinancial measures of performance. Although previous research focuses primarily on identifying fraudulent or manipulated financial performance, the findings from this study suggests a negative association between the persistence of a firm's current financial performance and the magnitude of the disparity between a firm's financial and nonfinancial metrics.

Although prior literature suggests that large differences in nonfinancial and financial performance measures may be indicative of non-persistent firm performance, this relationship may be less significant for firms in different stages of their life cycle. Firms in the early stages of their life cycle experience the highest growth in revenue but that growth is generally generated

[1] For the purposes of this study, the consistency of the difference between financial and nonfinancial performance measures is determined by the magnitude of the difference. Therefore, the difference is considered consistent (inconsistent) when the magnitude is small (large) relative to other firms.

by outside financing and not internally-generated cash flows (Black 1998; Stickney 1990; Higuchi and Trout 2008), which suggests that a large difference in performance measures may be reasonable and not indicative of weaker future earnings and firm performance. Conversely those firms in the later stages of their life cycle experience plateaus in revenue with any financial growth generally being generated internally through firm re-investment (Black 1998; Stickney 1990; Higuchi and Trout 2008), which suggests that inconsistency between financial and nonfinancial measures is a stronger signal that current earnings growth may be sustained in the future. In this study, I examine whether the difference in nonfinancial and financial measures provide a signal for future firm performance and whether this difference as a signal of future performance is mitigated depending on the life cycle of the firm.

My results suggest, consistent with my hypothesis, that the difference between financial and nonfinancial measures provides a signal for future firm performance. I find a significant negative relationship between the difference variable and future earnings per share. However, depending on the life cycle of the firm, I find that this difference is not a consistent signal of future firm performance across the entire sample. The difference measure has the strongest (weakest) relation to future firm performance for firms in the later (earlier) stages of their life cycle.

Given the negative association of future earnings and the difference between nonfinancial and financial performance measures suggests the difference may be used as a predictor of future firm performance, I further examine how market participants incorporates this difference into their assessment of firm value. Nonfinancial performance information is information generally not contained in the financial statements and related footnote disclosures, but can be used to verify the validity of the financial information (Brazel et al. 2009). Prior

literature provides evidence that suggests investors identify and incorporate additional value relevant information disclosures throughout the financial statements (Beaver et al. 1989; Barth 1991; Barth et al. 1992; Barth et al. 1996; Venkatachalam 1996). For example, prior findings suggest that market participants incorporates fair value information disclosed in the footnotes to the financial statements related to (1) pension accounting (Barth 1991; Barth et al. 1992) and (2) financial institution investments (Beaver et al. 1989; Barth 1996; Venkatachalam 1996). With respect to the information suggested by the difference in nonfinancial and financial firm performance, Brazel et al. (2012) argue that investors are likely to properly incorporate this information as general business knowledge is sufficient to understand that nonfinancial and financial performance is expected to be consistent. Consistent with this argument, Hodder et al. (2008) suggest that investors are likely to incorporate intuitively appealing information into their judgments. The arguments and results of these studies are consistent with an efficient market hypothesis, which suggests market participants incorporate value relevant information as soon as it becomes available.

In contrast to an efficient market argument, proximity theory, transparency theory, and the market participants' previously identified weakness in recognizing indicators of less persistent earnings suggest that the market may be inefficient with respect to the difference-related information. Proximity theory suggests that individuals may not infer associations between certain observations if that information is not organized effectively (Brazel et al. 2012). Nonfinancial information may lack proximity as it is generally interspersed throughout a firm's financial statement (Brazel et al. 2012). Transparency theory suggests that individuals will not use information unless it is both available and can be readily processed (Hirst and Hopkins 1998). Nonfinancial information may lack transparency because it may not be disclosed

consistently across reporting periods. Simpson (2010) and others suggest that nonfinancial may not be available, or if it is disclosed, only one year's of nonfinancial information is provided , which may prevent investors from properly evaluating a change in financial performance versus a change in nonfinancial performance. Prior studies have shown that unless value relevant information is provided to investors in a clear and systematic manner, the information may not be useful in judgment decisions (Hopkins 1998; Maines and McDaniels 2000; Lipe and Salterio 2002; Hodge et al. 2010). Issues related to proximity and transparency theory may result in investors inefficiently processing the information contained in differences between nonfinancial and financial performance measures.

In addition to the impact of proximity and transparency theory, market participants may be inefficient in incorporating the information related to a difference in financial and nonfinancial performance measures because it suggests a difference in a firm's persistence of current earnings. Extant literature has shown that the market can be inefficient in assessing signals which suggest a lack of persistence in financial performance. Sloan (1996), Xie (2001), and Richardson et al. (2005) present evidence that the market has difficulties distinguishing the effects on earnings persistent due to the differing levels of accruals in current earnings. It is possible that inconsistent signals between nonfinancial and financial performance measures may not be appropriately impounded by the market as they too suggest a lack of persistent earnings. Supporting this argument, Brazel et al. (2009) find that nonprofessional investor's investment decisions are unchanged when they are provided with inconsistent nonfinancial and financial information. Furthermore, participants consider the difference between financial and nonfinancial information to be a positive signal[2], which suggests that they improperly assess the

[2] Responses from the study's participants suggest that they believed the difference to imply the firm is being more efficient through greater production capabilities, outsourcing, or a more proficient sales force.

difference between the performance measures as an indicator of better, rather than poorer, future performance.

Prior research suggests that the market should incorporate the future performance information provided by the difference in nonfinancial and financial information due to the relative ease of comparability of the information and the market's ability to previously incorporate information found outside of the financial statements (Beaver et al. 1989, Barth et al. 1996, Hodder et al. 2008, Brazel et al. 2012). However investors' ability to process the information may be impaired because this information may lack transparency and proximity and/or the information is improperly processed by the market as it is related to the persistence of firm performance. As there is conflicting support to the market's ability to assess the information suggested by a difference in nonfinancial and financial performance measures, I perform an analysis to address the question in this study.

Initial descriptive statistics and correlation results suggest a negative relation between the difference in financial and nonfinancial performance measures and future realized returns. Consistent with the inefficient market argument, these results suggest that market participants do not full incorporate the information suggested by an inconsistent difference as a predictor of poorer future firm performance. These results however suffer from an omitted variable bias as they do not control for firm-specific risk factors.

Consistent with these results, results of the multivariate regression analysis suggest that market participants do not incorporate the signal of weaker future performance provided by the difference measure until the poorer future earnings are realized. Specifically, no association is identified between the difference variable and future realized returns for either the 3- or 6-month return window after the issuance of the financial statements, but a negative association is

identified for both the 9- and 12-month return windows. These results suggest that although the weaker future performance could have been identified with the issuance of the financial statements, the market does not seem to incorporate this information until the poorer earnings are realized in the following year. Additionally, I find that by pursuing a trading strategy in which an investor takes a long (short) position in firms with a low (high) difference between financial and nonfinancial performance measure, a significantly positive return can be realized.

This study extends the literature with respect to additional value relevant information provided in a firm's financial statements as I identify the difference in nonfinancial and financial information to be an indicator of poorer future firm performance. In addition, this study provides supporting evidence on the market's lack of efficiency in processing value relevant information. This study answers the call by the investing public to investigate and provide support for new anomalies or signals (Richardson et al. 2010), and this study provides further support for the PCAOB's recommendations of auditors to review nonfinancial information as it can be value relevant for users of the financial statements.

The remainder of the paper is organized as follows. Chapter 2 review prior literature and develops my hypotheses, Chapter 3 discusses my methodology and research design, Chapter 4 discusses my results, and Chapter 5 provides concluding remarks.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Value Relevance of Nonfinancial Measures

In its final report to the SEC (2003), the Advisory Committee on Improvements to Financial Reporting notes that "financial measures tell only part of how a company manages its business." The Committee found that in order to provide additional information related to firm performance, many companies disclose non-financial business and operational data to supplement the financial statements (SEC 2003). To validate management's claim that nonfinancial measures are value relevant, accounting research has examined the association of those measures with security price-based variables such as stock returns and market value of equity[3].

Extant accounting research has primarily focused on two industries to evaluate the value relevance of nonfinancial information with a few studies examine nonfinancial measures across multiple industries. Dresner and Xu (1995), Behn and Riley (1999), Riley et al. (2003), and Davila and Venkatachalam (2004) find that nonfinancial information specific to the airline industry is associated with profitability and is value relevant. Behn and Riley (1999) find that customer satisfaction, load factor, market share, and available ton miles are all associated with future revenue, expense, and operating income performance. Dresner and Xu (1995) examine the association between three customer service variables (i.e., the number of customer complaints related to on-time performance, mishandled baggage, and ticket over-sales) and profitability of U.S airlines. This study's results suggest that increasing customer service increases customer satisfaction (as proxied by the number of customer complaints), which improves overall

[3] For examples of such studies, see Dresner and Xu (1995), Amir and Lev (1996), Barth et al. (1998), Ittner and Larcker (1998), Behn and Riley (1999), Trueman et al. (2000), Riley et al. (2003), Rajgopal et al. (2993a), Rajgopal et al. (2003b), David and Venkatachalam (2004).

corporate performance. Riley et al. (2003) examine the value relevance of nonfinancial and financial performance of airlines to equity investors. This study finds that revenue load factor, available ton miles, market share, and customer dissatisfaction are all associated with contemporaneous stock returns suggesting that investors place value on this nonfinancial information. Davila and Venkatachalam (2004) analyze the relevance of nonfinancial information outside of the financial markets and within a contracting setting in the airline industry, specifically with respect to executive compensation. They find that passenger load factor is positively associated with CEO cash compensation suggesting that nonfinancial performance targets are used to induce appropriate management behavior. Overall the findings of these studies suggest that nonfinancial measures can provide value relevant information with respect to the airline industry.

Another industry in which significant research has been conducted with respect to the value relevance of nonfinancial performance measures is the high-technology industry. As companies in this industry utilize firm resources in order to acquire or improve intangible assets[4], , which may not be incorporated in the financial information, nonfinancial performance measures may provide additional information with respect to the overall value of the firm (Ittner and Larcker 1998). With respect to the cellular market, Amir and Lev (1996) find that both subscriber population and the firm's percentage of total market share are positively associated with stock returns, firm stock price, and firm market-to-book ratios. Aaker and Jacobson (2001) examine the value relevance of brand attitude in the personal computing and network computing markets. In their study, they find that changes in brand attitude are leading indicators of return on equity and are positively associated with contemporaneous stock returns. The authors argue that

[4] Intangibles assets include brand attitude, brand quality, customer satisfaction and innovation (Ittner and Larcker 1998, Aaker and Jacobson 2001).

changes in brand attitude suggest a change in expectation of a firm's future performance and that the market incorporates this new information in the current period.

Within the high-technology industry, multiple studies have focused on the relevance of nonfinancial information for Internet firms. Researchers have argued that, for firms in the high-technology industries, nonfinancial measures may be a better reflection of firm performance than financial information. Trueman et al. (2000) find that both the number of page views and the number of unique visitors to a firm's website are associated with a firm's stock price, while Rajgopal et al. (2003b) find that a firm's network advantage, as measured by the number of unique visitors, is associated with one-year-ahead and two-year-ahead earnings forecasts provided by equity analysts. Demers and Lev (2001) specifically examine the change in value relevance of nonfinancial information in the two years surrounding the Internet burst. They find that "reach" and "stickiness"[5] are both associated with a firm's share price in each of 1999 and 2000, and they find that the relevance of these nonfinancial performance measures do not appear to change over time. Taken together, the results of previous studies show that in an industry where financial measures may not be appropriate in evaluating a firm's performance, nonfinancial measures can provide useful information.

Although previous studies related to the value relevance of nonfinancial information have tended to be industry-specific, a few studies have examined the relevance of nonfinancial information across multiple industries. Using an annual survey published by *FinancialWorld*, Barth et al. (1998) examine the effect of brand value across numerous firms and industries. The study finds that brand value is contemporaneously associated with share prices and that changes in brand value are associated with contemporaneous annual stock returns. The authors argue that

[5] For the Internet industry, "reach" measures the extent to which a firm is able to attract unique visitors and "stickiness" measures the amount of time visitors remain on a website.

brand value estimates capture information that is relevant to investors and are sufficiently reliable to be reflected in share prices and returns. In another study, Rajgopal et al. (2003a) find evidence of order backlog, a nonfinancial measure used across multiple industries, to be a leading indicator of future earnings.

Across multiple industries, years, and measures of nonfinancial performance, previous literature has consistently shown that nonfinancial information has explanatory power with respect to overall firm performance and is value relevant.

B. Value Relevance of Nonfinancial Measures Compared to Financial Measures

The majority of the studies previously discussed examine the incremental value relevance of nonfinancial measures after controlling for the information in financial measures (for example, Barth et al. 1998, Rajgopal et al. 2003a, Rajgopal et al. 2003b, Davila and Venkatachalam 2004), but they do not explicitly compare the level of relevance of nonfinancial information versus financial information. Generally prior literature has found that nonfinancial measures are at least as relevant to future firm performance as financial measures but with some conflicting results.

While examining the value relevance of nonfinancial measures of cellular firms, Amir and Lev (1996) find that on a stand-alone basis, traditional financial information is value irrelevant. Specifically, earnings and change in earnings are not associated with contemporaneous stock returns, and book value and earnings are not associated with a firm's stock price. The study finds that the financial information only becomes relevant when nonfinancial information is included in the regressions. The authors argue that the incorporation of nonfinancial information "mitigates the correlated omitted variables problem present in most common valuation models…and thereby better highlights the relevance of both the financial and

nonfinancial variables." Consistent with these findings, Trueman et al. (2000) find that net income is not associated with market prices for Internet firms, which the authors argue supports investors' claims that financial information is of very limited use in the valuation of Internet stocks, while they find a significant association with nonfinancial measures and stock prices. Further research related to the Internet market finds that the value relevance of nonfinancial performance measures remained consistent in the pre- and post-market correction in 2000, while such financial measures as advertising expenses decreased in relevance during the same period (Demers and Lev 2001).

For the airline industry, two studies have examined the informational content of nonfinancial information compared to financial information. Riley et al. (2003) find that after including nonfinancial performance metrics, such as revenue load factor and available ton miles, in a stock returns model, financial information, such as earnings per share and abnormal earnings per share, do not provide incremental explanatory power. These results suggest that financial measures do not provide additional information with respect to stock returns beyond that provided by nonfinancial measures. Consistent with this finding, through exploratory factor analysis, Liedtka (2002) finds that the combination of nonfinancial performance measures provide value relevant information on seven constructs, such as passenger safety, labor efficiency, and service quality, that are not measured by common performance measures, such as cash flow from operations, return on assets, and liquidity. Together these results suggest that at least for the airline industry, nonfinancial performance measures can provide value relevant information beyond that provided by financial performance measures.

Contrary to the previous studies, Francis et al. (2003) examine the ability of financial and nonfinancial performance metrics to explain the variability in annual stock returns for industries

where there is an alleged ex-ante preferred summary performance metrics. For the industries that tend to prefer nonfinancial measures of performance, such as the homebuilding industry and the retail industry, earnings dominates the other measures with respect to explanatory power of contemporaneous stock returns. Although the nonfinancial measures results generally support the notion that these measures provide incremental information above financial measures, the results suggest that market participants place greater value on the financial information.

C. Value Relevance of the Difference in Nonfinancial and Financial Measures

Extant literature has focused on the incremental value relevance of nonfinancial information compared to financial information or the level of relevance of the two types of performance measures. However, there has been relatively little research examining the value relevance, if any, of the *difference* between nonfinancial information and financial information. Beaver (2002) argues that "a signal is informative only if the signal can alter beliefs conditional upon the other information available." This notion of a signal requires that the difference between a nonfinancial and financial measure provide some unique information that is not preempted by the two individual components.

Brazel et al. (2012) suggest that "the comparison of financial measures and nonfinancial measures located throughout a firm's financial reports can be informative regarding the financial health of a firm." Nonfinancial information can be indicators of a firm's long-term prospects compared to the relatively short-run signals of financial information (Banker et al. 2005). Banker et al. (2005) argue that financial measures reflect only a portion of past and current activities, whereas nonfinancial measures reflect the effect of current managerial actions which will affect future performance. Consistent with this argument, Chow et al. (2006) suggest that financial and nonfinancial information should be aligned and should both contribute to operational

performance and strategic decision making. Riley et al. (2003) identify nonfinancial performance metrics in the airline industry which provide consistent explanatory power of firm stock returns compared to financial performance variables. These results further suggest that nonfinancial and financial information should correspond with respect to signals of firm performance.

Due to this expected, consistent relationship between nonfinancial performance measures and financial performance measures, Brazel et al. (2009) argue that nonfinancial information can be used to verify financial information. They argue that differences between nonfinancial and financial measures may suggest a disparity between a firm's reported financial performance and its true economic performance.

Nonfinancial information is generally conceived as being less susceptible to distortion compared to financial information. Brazel et al. (2009) argue that nonfinancial information is harder to manipulate because verification is often straightforward, and if management attempts to manipulate a nonfinancial measure, it will require the assistance of individuals outside of the accounting department. Additionally, Bell et al. (2005) argue that there is less of an incentive for firms to distort nonfinancial measures because the information is used within the organization for purposes outside of financial reporting, such as strategic decision-making.

Two empirical studies have been performed to assess the ability of differences in nonfinancial and financial performance measures to identify potential fraudulent accounting. Using a matched-pair sample, Brazel et al. (2009) find that the difference between financial and nonfinancial information is significantly greater for firms that committed fraud than for their non-fraud counterparts. Additionally, the study finds that the difference in nonfinancial and financial measures is a significant fraud indicator. Consistent with these results, Dechow et al.

(2011) find that abnormal reductions in employees, a nonfinancial measure, compared to changes in total assets is useful in detecting misstatements.

Although these studies specifically examine the difference in nonfinancial and financial information in fraudulent firms, the results suggest that a disparity between nonfinancial information and financial information may suggest a lack of persistence in the financial data as nonfinancial measures are less likely to be distorted. Therefore, I predict the following hypothesis (in the alternative form):

H1: The difference in financial and nonfinancial information will be negatively associated with future earnings.

D. Life Cycle Effect on the Value Relevance of the Difference in Nonfinancial and Financial Measures

Although my first hypothesis suggests that a difference in financial performance measures and nonfinancial performance measures may suggest a lack of persistency of earnings, this conjecture may be affected by the firm's life cycle stage. Generally, life cycle theory suggests that firms go through four phases: start-up, growth, maturity, and decline (Black 1998). Firms in the early stages of their life cycle experience their highest growth in revenue (Black 1998; Stickney, 1990; Higuchi and Trout, 2008), and they maximize revenue growth through growth opportunities provided by sources outside of the firm (Anthony and Ramesh 1992, Black 1998). Conversely, firms in the later stage of their life cycle experience low revenue growth (Black 1998; Stickney, 1990; Higuchi and Trout, 2008), and growth is generally generated internally by the firm (Black 1998).

For firms in the earlier stages of their life cycle, a difference in nonfinancial information and financial information may be attributable to the significant growth experienced by the firm

and not an indicator of weaker future performance. However, for firms in the later stages of their life cycle, a difference in nonfinancial and financial information would be unexpected and may be a stronger indicator of poorer future performance. Therefore, I predict the following hypothesis (in the alternative form):

> H2: The difference in financial and nonfinancial information will be a stronger (weaker) indicator of future performance for a firm in its late (early) life cycle stage.

E. Market's Reaction to the Difference in Nonfinancial and Financial Measures

I predict that the differences between nonfinancial and financial information will be value relevant for a firm, specifically with respect to the persistence of future earnings. In such a case, for a market to be considered efficient, stock prices should assimilate the value of all leading indicators of future firm performance (Aaker and Jacobson 1994, Rajgopal et al. 2003a), and there should be no relation between that information and future abnormal stock returns (Richardson et al. 2005). However, in prior literature, the assumption of market efficiency has been contested, even with respect to widely publicized financial information (Rajgopal et al. 2003a). Behn and Riley (1999) argue that providing financial statement users with nonfinancial performance information may improve the users' ability to evaluate and predict future financial performance, which is consistent with prior literature suggesting that the market uses all available disclosed information in pricing. However, the market may be less than efficient in incorporating the information due to the lack of proximity or transparency of the information and the lack of persistence in earnings suggested by the information.

After Ball and Brown (1968) provided evidence suggesting markets utilize earnings information to determine firm value, accounting research has examined what additional information beyond the face of the financial statements is incorporated within a firm's stock

price. Barth (1991) and Barth et al. (1992) find that additional information included in a firm's footnotes to the financial statements related to unrecognized pension assets and obligation is incorporated into a firm's stock price in a manner consistent with the market viewing these accounts as the company's genuine assets and obligations. Barth (1991) find that the value of the assets and liabilities disclosed in the footnotes are closer to the market's valuation of those accounts than the value recognized on the balance sheet. Barth et al. (1992) find that the market assigns different valuation coefficients to pension cost components based on their earnings implications when determining pricing. These results suggest that market participants use available information beyond the face of the financial statements when pricing pension accounting information.

In a financial institution setting, Beaver et al. (1989), Barth et al. (1996), and Venkatachalam (1996) examine the significance of footnote disclosures related to nonperforming loans in explaining the variation of bank valuations. Beaver et al. (1989) find that supplemental disclosures in the banking industry with respect to various characteristics of the loan portfolio provides incremental explanatory power beyond that provided by the allowance for loan losses on the face of the financial statements, and Barth et al. (1996) find that differences between market and book values of common equity can be explained in a predictable way as a function of the differences between fair value estimates of financial instruments under SFAS 107 included in the footnotes and their related book values. Venkatachalam (1996) examine the value relevance of banks' derivatives disclosures provided under SFAS 199 and find that the fair value estimates for derivatives, which are not recorded on the balance sheet, explain cross-sectional variation in bank share prices. Taken together, these prior studies suggest that the market incorporates value relevant information provided elsewhere in the financial statements.

With respect to identifying and incorporating the information suggested by a difference in nonfinancial and financial firm performance, Hodder et al. (2008) argue that investors are more likely to incorporate intuitively appealing information into their judgments. Brazel et al. (2012) suggest that general business or industry knowledge is sufficient to understand inconsistencies between nonfinancial and financial information, compared to the accounting knowledge required to understand comparisons between different financial information. These arguments and the results of these studies are consistent with an efficient market hypothesis, which suggests that market participants would incorporate value relevant information as soon as it becomes available.

In contrast to the above argument positing efficient markets, proximity theory, transparency theory, and the market's previously identified weakness in recognizing signals of less persistent earnings suggest that the market may not efficiently incorporate the information. Transparency theory suggests that "information will not be used unless it is both available and readily processable" (Hirst and Hopkins 1998), while proximity theory suggests that "information organization can influence whether individuals infer associations between certain observations or measures" (Brazel et al. 2012). Therefore, for information to be efficiently used by the market, it must be provided to investors in a clear and systematic manner. Within accounting research, numerous studies have examined how the transparency and organization of financial information can influence investor behavior.

Studies by Hirst and Hopkins (1998) and Maines and McDaniels (2000) examine the effect of transparency of comprehensive income on the judgments of investors. Hirst and Hopkins (1998) examine whether clear reporting of comprehensive income and its components facilitates detection of earnings management by buy-side financial analysts. The study finds that

a clear presentation of comprehensive income and its components within the income statement, compared to its presentation within the statement of stockholders' equity or throughout the footnotes, is effective in improving the transparency of the information and reducing the analysts' valuation judgments. Maines and McDaniels (2000) analyze the impact of different comprehensive income presentational formats, either as a statement of comprehensive income or included in the statement of stockholders' equity, on investors' use of information when valuing a firm's performance. The authors find that although the participants across all treatment groups appropriately evaluate the information related to comprehensive income, specifically the level of volatility of unrealized gains, nonprofessional investors' judgments of corporate and management performance are influenced by that information only when it is presented as a separate statement of comprehensive income. The results of these studies suggest that in a specific setting, comprehensive income, the organization of information affects if and how the information is utilized by financial statement users.

Hodge et al. (2010) and Lipe and Salterio (2002) examine the effects of transparency and proximity in more general accounting contexts. Hodge et al. (2010) evaluate the effects of the placement of forecast-relevant financial information on nonprofessional investors' forecasting abilities. The study finds that nonprofessional investors exhibit lower levels of absolute forecast errors and less forecasts dispersions when complimentary financial information is on a single page (exhibits high proximity) versus across multiple pages (exhibits low proximity). Lipe and Salterio (2002) evaluate the effects of performance judgments due to the organization of a balanced scorecard. The findings suggest that managers react to consistent signals of performance only when they are included in the same category and not when the consistent signals are distributed across multiple categories of the scorecard. These studies provide further

support that an individual's incorporation and interpretation of information is affected by its placement and ease of use.

Nonfinancial information can exhibit a lack of transparency and proximity that may hinder investor's ability to incorporate the information. Generally, only one year's of nonfinancial information is reported in a firm's annual filing (Brazel et al. 2012), and as the disclosure of nonfinancial information is not required by generally accepted accounting principles, the information may not be consistently disclosed across periods (Simpson 2010). Therefore, nonfinancial information may lack availability and/or usability. In addition, although financial information is generally all contained with the financial statements, nonfinancial information can be interspersed throughout a firm's filing (Brazel et al. 2012). The lack of proximity between financial and nonfinancial performance measures can impede investors from appropriately assimilating information suggested by a difference between the two types of measures.

Even if market participants identify a difference between nonfinancial performance measures and financial performance measures, prior research has shown that the market improperly incorporates information that signals a difference in persistence of earnings. Sloan (1996) examines the different earnings persistence implications for cash earnings and accrual earnings, and the market's ability to discern that difference. The study finds that although accrual earnings are less persistent than cash earnings, the markets overestimate the persistency of accruals and underestimate the persistency of cash flows, which allows for a trading strategy that gains abnormal returns. Xie (2001) extends the conclusions in Sloan's paper by showing that the mispricing of accruals earnings is largely due to abnormal accruals, and Richardson et al. (2005)

identify that the overestimation of accruals persistence can consistently be shown across different degrees of accrual reliability.

Although other market efficient arguments have been suggested to explain this apparent anomaly, prior research continues to provide support that the market is not efficient in recognizing and interpreting signals of earnings persistence (Richardson et al. 2006, Resutek and Lwellen 2012). Therefore, if the difference in nonfinancial and financial performance measures suggests a difference in the persistence of earnings as suggested by my first hypothesis, the markets may not incorporate this information efficiently. Consistent with this expectation, a study of nonprofessional investors finds that including a nonfinancial performance measure that is inconsistent with a financial performance measure, which would indicate poorer future performance, did not change the participants' investment decisions (Brazel et al. 2012). In fact, half of the participants consider the difference between financial and nonfinancial information to be a positive signal when the nonfinancial information is transparent[6].

Prior research suggests that the market should incorporate the future performance information provided by the difference in nonfinancial and financial information due to the relative ease of comparability of the information and the market's ability to previously incorporate information outside of the face of the financial statements. However investors' ability to process the information may be impaired because this information may lack transparency and proximity and/or the information is improperly processed by the market as it is related to persistence of firm performance. Therefore, the competing theories do not provide clear support as to whether the markets will efficiently incorporate the information. If investors

[6] In this study, the nonfinancial performance indicators were considered transparent if the participants were provided a chart which compared the percentage change in nonfinancial information and financial information. The information was considered not to be transparent when such a chart was not provided, but the underlying information was provided throughout the case materials.

are inefficient (efficient) at understanding and incorporating the implications of the information, there should be an association (no association) between the difference in performance measures and future abnormal returns. Therefore, I predict the following hypothesis (in the alternative form):

H3: The difference in financial and nonfinancial information will be negatively associated with future abnormal stock returns.

CHAPTER 3

RESEARCH METHODOLOGY AND DESIGN

A. Sample Selection and Data Sources

I examine the value relevance of the difference between nonfinancial performance measures and financial performance measures for a sample of Compustat firms from 1987 through 2011. The first year of the study is 1987 since it is the first year that the cash flow statement was included in financial statements until 1987 (FASB 1987). Information related to cash flow from operations is required for the calculation of the accrual control variable. Compustat provides the data necessary to compute the primary variable of interest (the difference in nonfinancial and financial information), future earnings, and control variables such as firm market value, accruals measure, and book-to-market value used in my regression equations and analysis. Control variables related to the stock market such as abnormal future stock returns and a measure of firm beta are obtained from the Center of Research and Security Prices (CRSP).

B. Regression Analysis Design

Since quarterly disclosures provide little nonfinancial data (Brazel et al. 2009), all analyses are performed with annual performance data. I estimate all regression equations with pooled cross-sectional time-series data. The standard errors of the coefficient estimates are adjusted for panel-level heteroskedasticity (White's *t*-statistic). I utilize a fixed effects model to control for any omitted variables related to firm-specific unobserved heterogeneity[7][8], and year

[7] As I include firm-specific indicator variables in my regression analysis, industry-specific indicator variables would be perfectly collinear and therefore cannot be included in the model.

[8] For each regression analyses, I performed a Hausman test to determine if a fixed effects (FE) or random effects (RE) model should be utilized. Results for all Hausman tests suggest that the RE model is inconsistent; therefore, FE models were used for all analyses.

indicator variables are included in all regressions to control for the effect of economy-wide economic factors on firm performance.

C. Measure of the Difference in Nonfinancial and Financial Measures

All of my regression analyses are based on a measure of the difference in nonfinancial and financial measures. Consistent with Brazel et al. (2009), a firm's number of employees represents the nonfinancial information, while a firm's net sales represents the financial information. To determine whether the nonfinancial information is consistent with the financial information, I subtract the percentage change in net sales minus the percentage change in employees[9]. Additionally, I industry-adjust this measure by the median difference in each year as there may be industry-wide differences (Brazel et al. 2009). A higher (lower) value of this difference suggests that the firm's financial performance was greater (worse) than the firm's nonfinancial performance relative to its industry.

Employees are used as the nonfinancial metric as it is a common variable included for firms across multiple industries as compared to other nonfinancial metrics which are industry specific (Brazel et al. 2009). Additionally, Dechow et al. (2011) argue that employee information is not likely misstated, which suggests that it should be a valid signal of performance without management distortion. Also, employee growth is found to have a strong positive correlation with revenue growth (Brazel et al. 2009), which suggests that the nonfinancial and financial signals are expected to move concurrently[10].

Two limitations with respect to using employees as the nonfinancial measure are that (1) employees can be downsized in order to improve firm performance and (2) outsourcing of

[9] The difference in the percentage change in net sales and the percentage change in employees is mathematically equivalent to the percentage change in the ratio of revenue per employee.

[10] The results of Table 2 below show a consistent strong positive correlation between employee growth and revenue growth with p-values of less than 1% for both the Pearson and Spearman correlations.

employees may cause a large discrepancy between the nonfinancial and financial metrics when earnings are expected to be persistent. Dechow et al. (2011) suggest that management may attempt to mask poor financial performance by reducing headcount to improve the overall profitability; however, if the true financial performance is an indicator of future performance, this circumstance would again suggest poorer future performance. Brazel et al. (2009) argue that "although firms can lay off employees to improve profitability, it is not probable that the layoffs would correspond with a significant increase in revenue." Therefore, even for firms who have substantial employee layoffs, a large difference in the percentage change in employees and the percentage change in revenues, may suggest a lack of persistence in future firm performance.

With respect to outsourcing, these events are generally consistent across an industry, so by industry-adjusting the difference variable, I remove the effects of industry-wide differences (Brazel et al. 2009). In addition, in their study of the difference in nonfinancial and financial performance measure in fraud firms, Brazel et al. (2009) find that results were unchanged when firms identified as having outsourced labor were removed, and results that used nonfinancial metrics other than employees were consistent with those using employee data.

D. Analyzing the Value Relevance of the Difference in Nonfinancial and Financial Measures

Consistent with Simpson (2010), to test the value relevance of the difference in nonfinancial and financial information, I perform the following regression analysis:

$$EPS_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 EPS_{it} + \beta_5 Size_{it} + \varepsilon_{it+1} \quad (1)$$

where EPS_{it+1} represents firm i's earnings per share (EPS), scaled by stock price, for period $t + 1$, *Growth_Diff* represents the industry-adjusted difference in the percentage change in net sales and the percentage change in number of employees for firm i at period t, *Emp_Growth* represents the

percentage change in number of employees for firm *i* at period *t*, *Sales_Growth* represents the percentage change in net sales for firm *i* at period *t*, EPS_t represents firm *i*'s earning per share, scaled by stock price, for period *t*, and *Size* is the log of firm *i*'s market capitalization for period *t*.

With this regression, I can determine the value relevance, if any, of the difference in nonfinancial and financial metrics for predicting future firm performance, after controlling for the information in the individual components (employee growth and net sales growth), persistence of earnings, and the firm size. If, as predicted, the growth difference is an indicator of less persistent future performance, I would expect the coefficient, β_1, to be significantly negative; however, if the growth difference is not indicator of less persistent future performance, I would expect the coefficient, β_1, to not be significantly different from zero.

E. Analyzing the Life Cycle Effect on the Value Relevance of the Difference in Nonfinancial and Financial Measures

To test whether the life cycle stage of a firm has an effect on the value relevance of the difference in nonfinancial and financial information, I further specify Equation (1) by including indicator variables for firms in their early stage (*Young*) and their later stage (*Mature*) as well as interaction variables of those indicators with my growth difference variables. Specifically I perform the following regression analysis:

$$\begin{aligned} EPS_{it+1} = {} & \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Young_{it} * Growth\_Diff_{it} + \beta_3 Mature_{it} * Growth\_Diff_{it} + \\ & \beta_4 Emp\_Growth_{it} + \beta_5 Sales\_Growth_{it} + \beta_6 Young_{it} + \beta_7 Mature_{it} + \beta_8 EPS_{it} + \\ & \beta_9 Size_{it} + \varepsilon_{it+1} \end{aligned} \quad (2)$$

For this regression, the definitions for EPS_{it+1}, *Growth_Diff*, *Emp_Growth*, *Sales_Growth*, and *Size* are all consistent with Equation (1). To classify the firm-year

observations into life cycle stages, I use the following four variables first used by Hribar and Yehuda (2008):

1. *Annualized Sales Growth = Net Sales$_t$/Net Sales$_{t-2}$,*

2. *Capital Expenditures = (Capital Expenditures$_t$+ R&D Expense$_t$)/Total Assets$_t$,*

3. *Net Capital Transactions = (Change in Stockholders' Equity$_t$ – Net Income$_t$)/Total Assets$_t$,* and

4. *Firm Age* = Number of years since the first year that its data is available on CRSP.

For in their early (late) life cycle stage are expected to have higher (lower) sales growth, higher (lower) capital expenditures, lower (higher) net capital transactions, and lower (higher) firm age. To provide an overall life cycle variable, I determine the firm's percentile ranking in each category by industry and year[11]. I rank by both industry and year so that I can determine which firms have extreme values in each category relative to other firms in their industry. In sensitivity analysis, I performed the percentile ranking in each category by year alone and found my results quantitatively equivalent. I then create an overall life cycle variable by summing the percentile rankings of net capital transactions and firm age and subtracting the percentile rankings of sales growth and capital expenditures. Based on this variable, firms in the early (later) stages should have a lower (higher) score. Lastly, to determine which firms should be indicated as "young" or "mature", I rank the life cycle variable into deciles by year. Firms in the lowest (highest) ranking are classified as "young" ("mature").[12]

[11] In prior literature, the firms were quintile ranked by category each year, and then the rankings were added to determine an overall life cycle variable (Anthony and Ramesh 1992). With this method, no difference is given for firms in the bottom of a ranking compared to the top of ranking, where percentile ranking does incorporate any differences. In sensitivity tests, I also quintile rank my firms by percentile ranking and find qualitatively consistent results. I also reperform my analysis by summing the quintile and decile rankings (consistent with Anthony and Ramest 1992) and find consistent results.

[12] Although I deem firms in the lowest (highest) ranking as young (mature), I do not predict the actual life cycle stage of the firm. Instead, this variable compares the firm's phase relative to other firms, and therefore firms in the lowest (highest) ranking are relatively younger (older) than other firms in the sample.

With this regression, I can determine the life cycle effect on the value relevance of the difference in nonfinancial and financial metrics for predicting future firm performance. If, as predicted, the growth difference for young (mature) firms is a weaker (stronger) indicator of less persistent future performance, I would expect β_2 (β_3) to be significantly positive (negative); however, if life cycle has no impact on the growth difference as an indicator of future performance, I would expect the coefficients, β_2 and β_3, to not be significantly different from zero.

F. Analyzing the Market's Reaction to the Difference in Nonfinancial and Financial Measures

To evaluate the market's efficiency at assimilating information related to the difference in nonfinancial and financial performance measures, I first perform the following regression analysis:

$$Returns_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 Beta_{it} + B_5 Size_{it} + \beta_6 Book\text{-}to\text{-}Market_{it} + \beta_7 Returns_{it} + \varepsilon_{it+1} \quad (3)$$

$Returns_{it+1}$ represent the size-adjusted buy-and-hold return for firm *i* beginning with the fifth month after year-end. The size-adjusted return is calculated as firm *i*'s realized return from CRSP minus the corresponding mean return for all CRSP firms in the same market capitalization decile at the end of year *t* (Rajgopal et al. 2003a). The lag in the returns period allows for the nonfinancial and financial information to become publicly available (Resutek and Lwellen 2012). If the market does not efficiently assimilate the information related to the difference in the performance measures, full implications of the earnings information might not be assimilated until analysts subsequently review and adjust their forecasts or until earnings for the next period are announced (Bernard and Thomas 1989). Therefore, I perform the regression analysis with 3-, 6-, 9-, and 12-month return periods (Chordia and Shivakumar 2005).

Similar to the previous regressions, I control for the information provided in the separate components of the growth difference variable through Emp_Growth_{it} and $Sales\_Growth_{it}$. In addition, I control for the three risk factors that affect stock returns determined by Fama and French (1992) as well as momentum of returns (Resutek and Lwellen 2012). I calculate $Beta_{it}$ as the CAPM beta estimated from a regression of raw monthly returns on the CRSP value-weighted monthly return index over a period of 60-months ending four months after each firm's year-end[13], $Size_{it}$ as the log of firm *i*'s market capitalization measured four months after each firm's year-end, and $Book\text{-}to\text{-}Market_{it}$ as the log of the ratio of book value of common equity to the market value of common equity measured four months after each firm's year-end (Rajgopal et al. 2003a). $Returns_{it}$ represent the prior period's size-adjusted stock returns and vary in length depending on the return window of the dependent variable.

The magnitude of the coefficient on the growth difference variable are used to determine if the market is efficient with incorporating the information inherent within a difference in nonfinancial and financial performance measures. Specifically, if the market is efficient at assimilating the information when made available in the financial statements, I would expect β_1 to not be statistically significant from zero; however, if the market is inefficient with processing the information, I would expect the coefficient to be significantly negative.

To ensure that my results are not being driven by other known accounting anomalies, I further specify Equation (3) as follows:

$$\begin{aligned} Returns_{it+1} = {} & \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 Beta_{it} + \\ & B_5 Size_{it} + \beta_6 Book\text{-}to\text{-}Market_{it} + \beta_7 Returns_{it} + \beta_8 Accruals_{it} + \beta_9 SUE_{it} + \\ & \beta_{10} Inf_{it} + \varepsilon_{it+1} \end{aligned} \quad (4)$$

[13] In estimating beta, I require that monthly return data be available for a minimum of 10 months (Rajgopal 2003a).

To control for the accrual anomaly (Sloan 1996), I include $Accruals_{it}$, which represents earnings per share minus cash from operations per share for firm *i*, scaled by firm *i*'s stock price at time *t* (Doyle et al. 2006). To control for the post-earnings announcement drift anomaly, I include *SUE*, which represents standardized unexpected earnings, computed as in Chordia and Shivakumar (2003). Specifically, the numerator of *SUE* is earnings per share for firm *i* less the earnings per share for the same quarter in the previous year, and the denominator is the standard deviation of this measure of unexpected earnings over the past eight quarters[14]. Lastly, I control for the inflation illusion by including Inf_{it}, which represents the percentage change in the Consumer Price Index over the previous year measured four months after each firm's year-end (Chordia and Shivakumar 2003). The period for which I calculate inflation is consistent with the return window for the regression being run. Again, I examine the magnitude of the coefficient on the growth difference variable to determine if the market is efficient with incorporating the information inherent within a difference in nonfinancial and financial performance measures.

G. Analyzing a Trading Strategy Based upon the Market's Reaction to the Difference in Nonfinancial and Financial Measures

Based on the results from my regression analysis, I perform a series of zero-investment portfolio analyses to assess the overall magnitude of abnormal returns received from a portfolio trading on this inefficiency. For each year, I rank firms in deciles based upon their adjusted growth difference at the beginning of the year. Therefore, firms with the lowest (highest) difference in nonfinancial and financial performance measures are in the lowest (highest) rankings, and based on previous regression results, firms in the lowest (highest) rankings are expected to have positive (negative) abnormal returns. I then take a long (short) position in firms

[14] Alternatively, Rangan and Sloan (1998) and Narayanamoorthy (2006) scale the numerator of *SUE* by the current market value and the previous quarter's stock price, respectively, rather than the standard deviation of past seasonally differenced earnings. I incorporate these additional measures of *SUE* in sensitivity analyses.

in the lowest (highest) rankings, and I perform univariate procedures to determine if the average abnormal return for each position and the overall zero-investment position is significant.

In order to calculate a firm's abnormal return for a given year, I subtract the firm's realized returns from the returns of a reference portfolio. In my analyses, I utilize three sets of reference portfolios based on prior literature (Barber and Lyon 1997; Savor and Lu 2009; Fue et al. 2013).

My first set of reference portfolios are ten size-based portfolios. At the beginning of each year, size deciles are created on the basis of market value of equity. The return for each of the ten size reference portfolios is calculated as the average returns across all securities in a particular size decile. My second set of reference portfolios are ten book-to-market portfolios that are recalculated at the beginning of each year. For each year, I rank all firms in the population on the basis of book-to-market ratios. Book-to-market deciles are then created based on these rankings, and the returns on these ten portfolios are calculated in a similar manner to the size-based portfolios.

My final reference portfolios are based on both firm size and book-to-market ratio. First, at the beginning of each year, I rank all firms on the basis of their market value of equity. Size quintiles are then created based on these rankings[15]. Second, within each size quintile, firms are sorted into quintiles on the basis of their book-to-market ratios at the beginning of the year. The realized returns for these 25 portfolios are calculated in a similar manner to the size-based portfolios[16]

[15] In Barber and Lyon (1997), firms are first partitioned into size deciles rather than quintiles. However, based on my smaller sample size, quintiles are necessary to ensure each portfolio included multiple firms.

[16] Barber and Lyon (1997) argue that reference portfolios are subject to measurement error and biases. Therefore, they suggest identifying specific control firms based on size and book-to-market ratios when determining abnormal returns. During my sensitivity analysis, I reperform my trading strategy analyses using three sets of control firms. All results are qualitatively similar.

CHAPTER 4

RESULTS

A. Data Summary and Descriptive Statistics

Table 1
Descriptive Statistics

Panel A: Full Sample

	Mean	Standard Deviation	20th Percentile	Median	80th Percentile
Total_Assets $_{it}$	2,122.564	9,661.000	38.014	251.747	1,304.180
Market_Value $_{it}$	5.576	2.082	3.558	5.527	7.194
Price $_{it}$	20.200	88.045	4.000	13.438	29.500
Growth_Diff $_{it}$	0.007	0.283	-0.135	0.001	0.138
Emp_Growth $_{it}$	0.073	0.250	-0.069	0.028	0.209
Sales_Growth $_{it}$	0.121	0.298	-0.051	0.077	0.298
EPS $_{it}$	0.657	4.103	-0.330	0.500	1.510
EPS $_{it+1}$	0.666	4.101	-0.380	0.520	1.565
3-month Return $_{it+1}$	0.005	0.279	-0.176	-0.017	0.146
6-month Return $_{it+1}$	0.002	0.417	-0.271	-0.042	0.195
9-month Return $_{it+1}$	0.001	0.572	-0.351	-0.066	0.234
12-month Return $_{it+1}$	0.016	0.783	-0.466	-0.098	0.295

Table 1 continued

Panel B: Firms in the Highest Quintile of Growth Difference

	Mean	Standard Deviation	20th Percentile	Median	80th Percentile
Total_Assets $_{it}$	1,470.706	7,907.000	23.572	141.488	677.004
Market_Value $_{it}$	5.234	1.945	3.372	5.142	6.709
Price $_{it}$	19.620	191.079	3.094	10.196	24.875
Growth_Diff $_{it}$	0.360	0.291	0.182	0.254	0.592
Emp_Growth $_{it}$	0.010	0.239	-0.154	0.000	0.192
Sales_Growth $_{it}$	0.414	0.411	0.146	0.316	0.863
EPS $_{it}$	0.614	8.030	-0.480	0.310	1.150
EPS $_{it+1}$	0.546	6.857	-0.540	0.280	1.190
3-month Return $_{it+1}$	0.003	0.313	-0.212	-0.026	0.166
6-month Return $_{it+1}$	-0.006	0.485	-0.322	-0.610	0.213
9-month Return $_{it+1}$	-0.008	0.687	-0.419	-0.098	0.253
12-month Return $_{it+1}$	-0.010	0.836	-0.501	-0.114	0.305

Panel C: Firms in the Lowest Quintile of Growth Difference

	Mean	Standard Deviation	20th Percentile	Median	80th Percentile
Total_Assets $_{it}$	1,427.002	6,073.000	26.580	156.235	799.093
Market_Value $_{it}$	5.144	2.008	3.223	5.025	6.699
Price $_{it}$	15.670	24.279	3.070	9.525	23.000
Growth_Diff $_{it}$	-0.333	0.251	-0.526	-0.240	-0.173
Emp_Growth $_{it}$	0.268	0.366	0.000	0.168	0.602
Sales_Growth $_{it}$	-0.020	0.274	-0.234	-0.022	0.197
EPS $_{it}$	0.241	2.159	-0.620	0.150	1.030
EPS $_{it+1}$	0.306	3.783	-0.670	0.180	1.120
3-month Return $_{it+1}$	0.009	0.325	-0.194	-0.022	0.159
6-month Return $_{it+1}$	0.003	0.441	-0.299	-0.050	0.216
9-month Return $_{it+1}$	0.006	0.631	-0.392	-0.079	0.262
12-month Return $_{it+1}$	0.022	0.719	-0.414	-0.071	0.306

Table 1 continued

Variable Definitions
Total_Assets $_{it}$ is firms *i* 's total assets, in millions, at its fiscl year end, *t* .
Market_Value $_{it}$ is the log of firms *i* 's market capitalization at its fiscal year end, *t* .
Price $_{it}$ is firms *i* 's stock price at its fiscl year end, *t* .
Growth_Diff $_{it}$ is the difference in firm *i* 's percentage change in sales and percentage change in employees.
Emp_Growth $_{it}$ is firms *i* 's percentage change in employees at its fiscal year end, *t* .
Sales_Growth $_{it}$ is firms *i* 's percentage change in sales at its fiscal year end, *t* .
EPS $_{it}$ is firms *i* 's earnings per share at its fiscal year end, *t* .
EPS $_{it+1}$ is firms *i* 's earnings per share for the following fiscal year, *t* +1.
3-month Return $_{it+1}$ is the three-month size-adjusted buy-and-hold return for firm *i* beginning with the fifth month after its fiscal year end, *t* . The size-adjusted return is calculated as firm *i* 's realized return from CRSP minus the corresponding mean return for all CRSP firms in the same market capitalization at its year end, *t* .
6-month Return $_{it+1}$ is the six-month size-adjusted buy-and-hold return for firm *i* beginning with the fifth month after its fiscal year end, *t* . The size-adjusted return is calculated similar to the three-month return.
9-month Return $_{it+1}$ is the nine-month size-adjusted buy-and-hold return for firm *i* beginning with the fifth month after its fiscal year end, *t* . The size-adjusted return is calculated similar to the three-month return.
12-month Return $_{it+1}$ is the twelve-month size-adjusted buy-and-hold return for firm *i* beginning with the fifth month after its fiscal year end, *t* . The size-adjusted return is calculated similar to the three-month return.

After eliminating all firms without the necessary data available to calculate all variables needed for my analyses, my final sample includes 47,954 firm-year observations for 8,533 unique firms. Table 1 shows the descriptive statistics for the full sample of firms (Panel A) as well as the firms with the highest and lowest quintile rankings annually based on growth difference, or the difference between their percentage change in sales and their percentage change in employees (Panel B and C, respectively).

Firms in both subsets of the sample appear to be smaller with respect to both asset value and market value compared to those firms not in the extremities of the difference quintiles. For the full sample, the mean total assets is $2,122.56 million, while the mean total assets for firms with the highest (lowest) growth difference is $1,470.71 ($1,427.00) million (p-values < 1% when comparing the means of the subsamples to the full sample). For measures of equity value, the full sample has an average log of market value of 5.58 and an average stock price of $20.20, while the firms with the highest (lowest) growth difference have an average log of market value of 5.23 (5.14) and an average stock price of $19.62 ($15.67) (p-values < 1% when comparing the means of the subsamples to the full sample). Although firms with the highest growth difference appear smaller than the full sample, on all three size variables, they appear to be larger than firms in the lowest difference growth rank (p-value = .891 when comparing mean total asset and p-values <1% when comparing mean market value and price).

As would be expected, the average industry-adjusted growth difference for the full sample of 0.7% is in between the average growth differences for the two extremes of 36.0% for the highest growth difference and -33.3% for the lowest growth difference (p-value < 1% for comparisons of all mean growth differences). The positive average difference for both the full sample and the sample in the highest growth difference appears to be attributed to an increase in

sales (12.1% and 41.4%, respectively) offset by a relatively lower increase in employees (7.3% and 1.0%, respectively), on average. Conversely, the negative average difference for the sample in the lowest growth difference appears to be attributed to a decrease in sales (-2.0%) coinciding with an increase in employees (26.8%), on average.

The average earnings per share for both the current period and for the future period are positive for the full sample and both subsamples. However, in magnitude, the full sample has the largest average current period EPS ($0.66) and future period EPS ($0.67) of all three samples (p-value < 1% for comparisons of all mean growth differences). Additionally, both the current period EPS and future period EPS for firms with the highest growth difference ($0.61 and $0.55, respectively) (p-value < 1%) are greater than the same variables for firms with the lowest growth difference ($0.24 and $0.31, respectively) (p-value = 0.013). Although the magnitude for the EPS variables is greater for high growth difference firms compared to low growth difference firms, the future period earnings per share is lower than the current period suggesting earnings will be lower in the future for firms with a high growth difference, while for firms with a low growth difference the future period earnings per share is higher than the current period earnings suggesting earnings will be improved for those firms. These descriptive statistics may suggest that a negative relation exists between the growth difference in financial and nonfinancial performance and future firm performance as hypothesized.

The descriptive statistics with respect to earnings per share suggest that firms with higher growth differences will be poorer performers in the future, and the descriptive statistics with respect to future realized returns suggest that this information is incorporated into firm valuations throughout the following fiscal year. Firms with the highest growth difference have the lowest size-adjusted realized returns across all four reporting windows with three of the four windows

having negative returns, on average, while firms with the lowest growth difference have the highest size-adjusted realized returns for all four windows with all returns being positive[17]. These results suggest that market participants incorporates the information regarding future firm performance that may be signaled by a difference in financial and nonfinancial information, but this information may not be completely incorporated when the financial statements are originally issued but rather throughout the following reporting period.

Taken together, preliminary descriptive statistics may suggest that the growth difference between a financial and nonfinancial measure may be an indicator of future performance and that equity market participants may identify this signal inefficiently.

B. Correlation Matrix

[17] When comparing the average size-adjusted returns for the full sample and the subsample with the highest growth difference, the p-values for the three-, six-, nine-, and twelve-month return windows are 0.946, 0.474, 0.730, and 0.065, respectively. When comparing the average size-adjusted returns for the full sample and the subsample with the lowest growth difference, the p-values for the three-, six-, nine-, and twelve-month return windows are 0.520, 0.993, 0.629, and 0.0875, respectively. When comparing the average size-adjusted returns for the subsample of firms, the p-values for the three-, six-, nine-, and twelve-month return windows are 0.631, 0.061, 0.057, and 0.059, respectively.

Table 2
Correlation Matrix

	Growth_ Diff $_{it}$	*Emp_ Growth* $_{it}$	*Sales_ Growth* $_{it}$	*EPS* $_{it}$	*EPS* $_{it+1}$	*3-month Return* $_{it+1}$	*6-month Return* $_{it+1}$	*9-month Return* $_{it+1}$	*12-month Return* $_{it+1}$
Growth_ Diff $_{it}$		-0.411***	0.608***	0.006	-0.013***	-0.008	-0.006	-0.006	-0.009*
Emp_ Growth $_{it}$	-0.311***		0.454***	0.036***	0.014***	-0.022***	-0.024***	-0.030***	-0.034***
Sales_ Growth $_{it}$	0.486***	0.530***		0.048***	0.019***	-0.021***	-0.021***	-0.028***	-0.035***
EPS $_{it}$	0.054***	0.187***	0.220***		0.766***	-0.009*	-0.012**	-0.014***	-0.017***
EPS $_{it+1}$	-0.0386***	0.113***	0.138***	0.675***		0.054***	0.062***	0.061***	0.054***
3-month Return $_{it+1}$	-0.003	-0.010**	-0.010*	0.027***	0.174***		0.679***	0.546***	0.460***
6-month Return $_{it+1}$	-0.012**	-0.013**	-0.015**	0.050***	0.231***	0.688***		0.781***	0.661***
9-month Return $_{it+1}$	-0.010**	-0.028***	-0.027***	0.062***	0.252***	0.571***	0.808***		0.835***
12-month Return $_{it+1}$	-0.012**	-0.033***	-0.038***	0.075***	0.259***	0.496***	0.698***	0.846***	

*, **, *** represent significance at a 10%, 5%, and 1% level, respectively.
Values above (below) the diagonal represent the Pearson (Spearman) correlation.

Table 2 continued

Variables Definitions
$Total\_Assets_{it}$ is firm i's total assets, in millions, at its fiscal year end, t.
$Market\_Value_{it}$ is the log of firm i's market capitalization at its fiscal year end, t.
$Price_{it}$ is firm i's stock price at its fiscal year end, t.
$Growth\_Diff_{it}$ is the difference in firm i's percentage change in sales and
Emp_Growth_{it} is firm i's percentage change in employees at its fiscal year end, t.
$Sales\_Growth_{it}$ is firm i's percentage change in sales at its fiscal year end, t.
EPS_{it} is firm i's earnings per share at its fiscal year end, t.
EPS_{it+1} is firm i's earnings per share for the following fiscal year, t+1.
3-month Return $_{it+1}$ is the three-month size-adjusted buy-and-hold return for firm i beginning with the fifth month after its fiscal year end, t. The size-adjusted return is calculated as firm i's realized return from CRSP minus the corresponding mean return for all CRSP firms in the same market capitalization at its year end, t.
6-month Return $_{it+1}$ is the six-month size-adjusted buy-and-hold return for firm i beginning with the fifth month after its fiscal year end, t. The size-adjusted return is calculated similar to the three-month return.
9-month Return $_{it+1}$ is the nine-month size-adjusted buy-and-hold return for firm i beginning with the fifth month after its fiscal year end, t. The size-adjusted return is calculated similar to the three-month return.
12-month Return $_{it+1}$ is the twelve-month size-adjusted buy-and-hold return for firm i beginning with the fifth month after its fiscal year end, t. The size-adjusted return is calculated similar to the three-month return.

Table 2 represents a matrix depicting the correlation between a firm's growth difference and its employee growth, sales growth, earnings per share for the current period and the future period, and multiple future realized return windows. As the growth difference variable is calculated as the growth in sales minus the growth in employees, I would expect a positive relation between growth difference and sales growth and a negative relation between growth difference and employee growth. The results suggest that the correlations are signed consistent with my expectations and all correlations are significant at a 1% level.

With respect to the EPS variables and the return variables, the correlations are consistent with the descriptive statistics. Specifically, the growth difference is negatively related to the future period's earnings per share for both the Pearson and Spearman correlations. Additionally, the growth difference is negatively related to all four return windows; however, the relation is only significant for one (three) of the windows in the Pearson (Spearman) correlation. Therefore, the market may not fully incorporate the implications of the growth difference variable when the information is first introduced in the financial statements. Taken together, these results again suggest that a larger growth difference suggests weaker future firm performance, but market participants do not appear to efficiently identify this signal. As correlation analysis does not control for other firm-specific characteristics, such as level of risk, I perform multivariate regression analysis to further substantiate these results.

C. Value Relevance of the Difference in Nonfinancial and Financial Measures

Table 3
Value Relevance of the Difference in Nonfinancial and Financial Measures

Regression: $EPS_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 EPS_{it} + \beta_5 Size_{it} + \varepsilon_{it+1}$

	Coefficient	St. Error	t-stat
Intercept	-0.213	0.041	-5.18***
$Growth\_Diff_{it}$	-0.092	0.041	-2.27**
Emp_Growth_{it}	-0.047	0.039	-1.20
$Sales\_Growth_{it}$	0.054	0.046	1.18
EPS_{it}	0.932	0.181	5.16***
$Size_{it}$	0.026	0.004	7.15***
R - Square	0.211		

*, **, *** represent significance at a 10%, 5%, and 1% level, respectively.

The regression includes a fixed effect model and year indicator variables. The standard errors of the coefficient estimates are adjusted for panel-level heteroskedasticity (White's t-statistic).

Variable Definitions

EPS_{it+1} is firm *i*'s earnings per share, scaled by its stock price, for the following fiscal year, *t*+1.

$Growth\_Diff_{it}$ is the difference in firm *i*'s percentage change in sales and percentage change in employees at its fiscal year end, *t*.

Emp_Growth_{it} is firm *i*'s percentage change in employees at fiscal year end, *t*.

$Sales\_Growth_{it}$ is firm *i*'s percentage change in sales at fiscal year end, *t*.

EPS_{it} is firm *i*'s earnings per share, scaled by its stock price, at its fiscal year end, *t*.

$Size_{it}$ is the log of firm *i*'s market capitalization at its fiscal year end, *t*.

Table 3 provides the results for the first regression analysis in which I regress future earnings per share on the industry-adjusted growth difference after controlling for each component of the difference, namely employee growth and sales growth, the current period's earning per share, and a measure of firm size. The significantly negative coefficient related to the growth difference provides further evidence that a larger difference in financial performance compared to nonfinancial performance is an indicator of poorer future performance.

For the two components of the difference variable, employee growth and sales growth, their coefficient are not significantly different from zero; however, when the analysis is run without including the growth difference variable, both coefficients are significant (results not tabulated). These results suggest that the coefficients on the components suffer from an omitted variable bias when the growth difference variable is not included. This bias is also suggested by the correlation results in Table 2 as the growth difference variable is significantly correlated to each component as well as future earnings per share.

Lastly, I note that the significantly positive coefficients for both the current period's earnings per share and the measure of firm size is consistent with results documented in prior studies (Simpson 2010).

D. Life Cycle Effect on the Value Relevance of the Difference in Nonfinancial and Financial Measures

Table 4.1
Life Cycle Descriptive Statistics

Panel A: Full Sample

	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
$Total\_Assets_{it}$	2,122.564	9,661.000	59.559	251.747	1,121.318
$Market\_Value_{it}$	5.576	2.082	4.019	7.037	5.527
$Price_{it}$	20.200	88.045	5.500	13.438	27.090
$Growth\_Diff_{it}$	0.007	0.283	-0.088	0.001	0.096
Emp_Growth_{it}	0.073	0.250	-0.047	0.028	0.135
$Sales\_Growth_{it}$	0.121	0.298	-0.024	0.077	0.208
Cap_Ex_{it}	0.104	0.122	0.033	0.071	0.134
Net_Cap_{it}	0.032	0.190	-0.021	0.002	0.031
$Firm\_Age_{it}$	10.083	5.439	5.000	14.000	12.000

Panel B: Young Firms (in the Lowest Decile of Life Cycle)

	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
$Total\_Assets_{it}$	1,676.282	8,484.000	71.812	267.487	939.277
$Market\_Value_{it}$	5.887	1.935	4.503	5.942	7.202
$Price_{it}$	22.445	22.704	7.535	16.750	30.363
$Growth\_Diff_{it}$	0.069	0.315	-0.054	0.031	0.155
Emp_Growth_{it}	0.125	0.240	0.000	0.073	0.200
$Sales\_Growth_{it}$	0.233	0.325	0.060	0.162	0.320
Cap_Ex_{it}	0.164	0.128	0.083	0.133	0.211
Net_Cap_{it}	-0.018	0.152	-0.056	-0.015	0.008
$Firm\_Age_{it}$	6.652	3.857	4.000	5.000	9.000

Table 4.1 continued

Panel C: Mature Firms (in the Highest Decile of Life Cycle)

	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
$Total\_Assets_{it}$	2,090.891	12,681.000	34.596	135.310	874.027
$Market\_Value_{it}$	4.803	2.127	3.129	4.533	6.339
$Price_{it}$	13.916	24.641	3.125	7.430	17.140
$Growth\_Diff_{it}$	-0.063	0.282	-0.157	-0.035	0.052
Emp_Growth_{it}	0.008	0.262	-0.122	-0.017	0.071
$Sales\_Growth_{it}$	-0.015	0.267	-0.152	-0.020	0.087
Cap_Ex_{it}	0.042	0.062	0.011	0.026	0.051
Net_Cap_{it}	0.095	0.215	0.001	0.018	0.087
$Firm\_Age_{it}$	12.539	5.693	8.000	12.000	17.000

Variable Definitions

$Total\_Assets_{it}$ is firm i's total assets, in millions, at its fiscal year end, t.

$Market\_Value_{it}$ is the log of firm i's market capitalization at its fiscal year end, t.

$Price_{it}$ is firm i's stock price at its fiscal year end, t.

$Growth\_Diff_{it}$ is the difference in firm i's percentage change in sales and percentage change in employees at its fiscal year end, t.

Emp_Growth_{it} is firm i's percentage change in employees at its fiscal year end, t.

$Sales\_Growth_{it}$ is firm i's percentage change in sales at its fiscal year end, t.

Cap_Ex_{it} is the total of firm i's capital expenditures and research and development expense divided by its total assets at its fiscal year end, t.

Net_Cap_{it} is the difference in firm i's change in stockholder's equity and net income divided by its total assets at its fiscal year end, t.

$Firm\_Age_{it}$ is the number of years since firm i's data is available on CRSP.

As discussed in Chapter 2 with respect to hypothesis 2, the strength of the growth difference as a signal for poorer future performance may be affected by the firm's stage in its life cycle. Therefore, I assigned a relative life cycle stage to each firm based on the procedures described in Chapter 3 Section E. Table 4.1 shows life cycle descriptive statistics for the full sample (Panel A), firms estimated to be in the earliest stage of their life cycle (Panel B), and firms estimated to be in the latest stage of their life cycle (Panel C).

As would be expected firms estimated to be in their early life cycle stage have, on average, fewer total assets, greater sales growth, greater capital expenditures, fewer net capital transactions, and are younger in age compared to both the full sample and firms estimated to be in their late life cycle stage. Conversely, the firms estimated to be more mature have more total assets, less sales growth, less capital expenditures, more net capital transactions, and are older in age compared to both the full sample and firms estimated to be in early life cycle stage. Based on the descriptive statistics, younger firms tend to have greater market value and stock price compared to either the full sample or older firms, which may be due to the market's growth expectations for those firms.

Younger firms experience, on average, a positive growth difference (6.9%) due to positive sales growth offset by slightly less positive growth in employees. As discussed in Chapter 2, firms in the early stages of their life cycle experience their highest growth in revenue (Black, 1998; Stickney, 1990; Higuchi and Trout, 2008), and they maximize revenue growth through growth opportunities provided by sources outside of the firm (Anthony and Ramesh 1992, Black 1998). Such younger firms may not be expected to grow internally at the same rate as their sales growth, which would cause the positive growth difference. Therefore, a positive growth difference for younger firms may not be a signal for poorer future performance.

The more mature firms, however, experience a negative growth difference on average (-6.3%) due to negative sales growth and small increases in employees. Firms in the later stage of their life cycle are expected to experience low revenue growth without a corresponding growth in the business as it has passed its growth phases (Black, 1998; Stickney, 1990; Higuchi and Trout, 2008). Therefore, the negative growth difference for a mature firm would not be unexpected. Moreover, a significant positive growth difference would be unusual for a mature firm, and it may be a stronger signal of unsustainable financial growth.

To further examine the life cycle effect on the value relevance of a difference in nonfinancial and financial performance measures, I perform a multivariate regression analysis.

Table 4.2
Life Cycle Regression Analysis

Regression: $EPS_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Young_{it} * Growth\_Diff_{it} +$
$\beta_3 Mature_{it} * Growth\_Diff_{it} + \beta_4 Emp\_Growth_{it} + \beta_5 Sales\_Growth_{it} + \beta_6 Young_{it} +$
$\beta_7 Mature_{it} + \beta_8 EPS_{it} + \beta_9 Size_{it} + \varepsilon_{it+1}$

	Coefficient	St. Error	t-stat
Intercept	-0.386	0.068	-5.66***
$Growth\_Diff_{it}$	-0.127	0.062	-2.04**
$Young_{it} * Growth\_Diff_{it}$	0.053	0.043	1.23
$Mature_{it} * Growth\_Diff_{it}$	-0.058	0.034	-1.72*
Emp_Growth_{it}	-0.090	0.075	-1.20
$Sales\_Growth_{it}$	0.078	0.088	1.18
$Young_{it}$	-0.002	0.015	-0.12
$Mature_{it}$	-0.001	0.016	-0.08
EPS_{it}	0.925	0.179	5.17***
$Size_{it}$	0.035	0.010	3.58***
R - Square	0.217		

*, **, *** represent significance at a 10%, 5%, and 1% level, respectively.

The regression includes a fixed effect model and year indicator variables. The standard errors of the coefficient estimates are adjusted for panel-level heteroskedasticity (White's t-statistic).

Variable Definitions

EPS_{it+1} is firm i's earnings per share, scaled by its stock price, for the following fiscal year, t+1.

$Growth\_Diff_{it}$ is the difference in firm i's percentage change in sales and percentage change in employees at its fiscal year end, t.

Emp_Growth_{it} is firm i's percentage change in employees at fiscal year end, t.

$Sales\_Growth_{it}$ is firm i's percentage change in sales at fiscal year end, t.

EPS_{it} is firm i's earnings per share, scaled by its stock price, at its fiscal year end, t.

$Size_{it}$ is the log of firm i's market capitalization at its fiscal year end, t.

$Young_{it}$ is an indicator variable for firms ranked in the lowest decile of the annual life cycle rankings.

Table 4.2 provides the results for the regression analysis which includes the life cycle variables. For all variables used in the Table 3 analysis, the results are qualitatively similar. Specifically, the coefficient on the growth difference variable is significantly negative, while the coefficients on its two components, employee growth and sales growth, are insignificant. Also the coefficients on both control variables, current EPS and size, are significantly positive.

β_2 and β_3 are of the most interest in Table 4.2 as they are associated with the interactions between the life cycle indicators and the growth difference variables. β_2 shows the incremental effect to the association between the growth difference and future firm performance for young firms. Although not significant, the positive sign on the coefficient suggests that for younger firms, the growth difference variable is less of a signal of poorer future performance. Consistent with these results, the total magnitude of the association between the growth difference variable and future EPS ($\beta_1 + \beta_2$) is not significant (F-stat = 1.43).

β_3 shows the incremental effect to the association between the growth difference and future firm performance for mature firms. The negative sign on the coefficient suggests that for more mature firms, the growth difference variable is a stronger signal of poorer future performance. Consistent with these results, the total magnitude of the association between the growth difference variable and future EPS ($\beta_1 + \beta_3$) remains significant (F-stat = 4.37).

Taken together, these results seem to provide support for my second hypothesis[18]. Although the growth difference has been shown to provide information related to the future performance of a firm, the signal may not be consistent across all firms. For firms in the early stage of their life cycle, a difference between the financial and nonfinancial performance measures does not appear to be an indicator of future performance as this growth difference is

[18] All results are qualitatively similar if the young and mature indicator variables are based of decile rankings rather than quintile rankings.

not unexpected. For more mature firms, however, a significant growth difference is not expected, and therefore, this variable provides even stronger evidence of poorer future firm performance. Having identified a signal of future performance, I next perform analyses to determine if and when market participants incorporate this information into their firm valuations.

E. Market's Reaction to the Difference in Nonfinancial and Financial Measures

Table 5.1
Market's Reaction to the Difference in Nonfinancial and Financial Measures

Regression: $Returns_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 Beta_{it} + \beta_5 Size_{it} + \beta_6 Book\text{-}to\text{-}Market_{it} + \beta_7 Returns_{it} + \varepsilon_{it+1}$

	3-month return			6-month return		
	Coefficient	**St. Error**	**t-stat**	**Coefficient**	**St. Error**	**t-stat**
Intercept	0.127	0.032	3.99***	0.147	0.049	3.02***
Growth_Diff $_{it}$	-0.019	0.021	-0.91	-0.042	0.031	-1.34
Emp_Growth $_{it}$	0.001	0.023	0.03	-0.003	0.028	-0.12
Sales_Growth $_{it}$	0.010	0.026	0.37	0.004	0.032	0.14
Beta $_{it}$	0.022	0.009	2.34**	0.021	0.009	2.32**
Size $_{it}$	-0.011	0.003	-3.46***	-0.013	0.003	-2.69**
Book-to-Market $_{it}$	0.034	0.004	8.89***	0.046	0.032	7.29***
Returns $_{it}$	0.006	0.017	0.33	0.025	0.016	1.57
R Square	0.030			0.032		

Table 5.1 continued

	9-month return			12-month return		
	Coefficient	**St. Error**	**t-stat**	**Coefficient**	**St. Error**	**t-stat**
Intercept	0.152	0.083	1.84*	0.267	0.087	3.08***
$Growth\_Diff_{it}$	-0.099	0.057	-1.74*	-0.179	0.071	-2.52**
Emp_Growth_{it}	-0.041	0.056	-0.75	-0.106	0.072	-1.47
$Sales\_Growth_{it}$	0.066	0.061	1.07	0.126	0.078	1.62
$Beta_{it}$	0.027	0.012	2.15**	0.016	0.008	1.99*
$Size_{it}$	-0.015	0.008	-2.01*	-0.024	0.008	-2.88**
$Book\text{-}to\text{-}Market_{it}$	0.054	0.011	4.93***	0.032	0.012	2.67**
$Returns_{it}$	0.022	0.028	0.78	0.022	0.033	0.67
R Square	0.035			0.038		

*, **, *** represent siginficant at a 10%, 5%, and 1% level, respectively.

The regression includes a fixed effect model and year indicator variables. The standard errors of the coefficient estimates are adjusted for panel-level heteroskedasticity (White's t-statistic).

Variable Definitions

$Returns_{it+1}$ is the size-adjusted buy-and-hold return for firm i beginning with the fifth month after year-end. The size-adjusted return is calculated as firm i's realized return minus the corresponding mean return for all CRSP firms in the same market capitalization decile at the end of year t. The analysis includes holding periods of the return covering 3-, 6-, 9-, and 12-months.

$Growth\_Diff_{it}$ is the difference in firm i's percentage change in sales and percentage change in employees at fiscal year end, t.

Table 5.1 continued

Emp_Diff_{it} is firm i's percentage change in employees at fiscal year end, t.	
$Sales\_Diff_{it}$ is firm i's percentage change in sales at fiscal year end, t.	
$Beta_{it}$ is firm i's CAPM beta estimated from a regression of raw monthly returns on the CRSP value-weighted monthly return index over a period of 60 months ending four months after each firm's year-end.	
$Size_{it}$ is firm i's market capitalization measured four months after firm i's fiscal year end, t.	
$Book\text{-}to\text{-}Market_{it}$ is the log of the ratio of book value of common equity to the market value of common equity measured four months after firm i's fiscal year end, t.	
$Returns_{it}$ is firm i's prior-period size-adjusted stock return. The return window varies in length to correspond	

Table 5 includes the results for the analyses in which I regress future size-adjusted realized returns onto the growth difference variable after controlling for each of the components of the growth difference, employee growth and sales growth, and known risk factors and momentum. As it is unclear when the market will incorporate the information related to poorer future performance suggested by the growth difference variable, I perform the regression analysis with 3-, 6-, 9-, and 12-month return periods (Chordia and Shivakumar 2005).

For the 3- and 6-month return periods, the lack of significance with respect to any of the variables related to the difference in nonfinancial and financial information ($\beta_1 - \beta_3$) suggests that market participants do not appear to incorporate this signal into its valuation when the financial statements are first presented. Instead, the significance on the growth difference (β_1) for the 9- and 12-month return windows suggest that the information related to future weaker performance is not incorporate until the poorer EPS performance is realized.

Additionally, I note that the sign of all coefficients for the risk control variables (beta, size, and book-to-market) and the momentum variable (previous size-adjusted returns) are all consistent with prior literature (Rajgopal et al. 2003a, Resutek and Lwellen 2012), and with the exception of the momentum variable they are all significant.

To ensure that my results are not being driven by other known accounting anomalies, I further specify my model to include variables associated with the accrual anomaly, the post-earnings announcement drift anomaly, and the inflation illusion.

Table 5.2
Market's Reaction to the Growth Difference with Other Accounting Anomalies

Regression: $Returns_{it+1} = \beta_0 + \beta_1 Growth\_Diff_{it} + \beta_2 Emp\_Growth_{it} + \beta_3 Sales\_Growth_{it} + \beta_4 Beta_{it} + \beta_5 Size_{it} + \beta_6 Book\text{-}to\text{-}Market_{it} + \beta_7 Returns_{it} + \beta_8 Accruals_{it} + \beta_8 SUE_{it} + \beta_8 Inf_{it} + \varepsilon_{it+1}$

	3-month return			6-month return		
	Coefficient	**St. Error**	**t-stat**	**Coefficient**	**St. Error**	**t-stat**
Intercept	-0.005	0.033	-0.15	0.079	0.074	1.07
Growth_Diff $_{it}$	-0.015	0.022	-0.70	-0.036	0.030	-1.20
Emp_Growth $_{it}$	-0.001	0.024	-0.03	-0.005	0.029	-0.16
Sales_Growth $_{it}$	0.011	0.027	0.42	0.006	0.033	0.17
Beta $_{it}$	0.019	0.009	2.08**	0.017	0.009	1.92*
Size $_{it}$	-0.011	0.003	-3.59***	-0.015	0.005	-2.82**
Book-to-Market $_{it}$	0.044	0.006	7.15***	0.048	0.007	6.83***
Returns $_{it}$	0.002	0.017	0.11	0.024	0.016	1.53
Accruals $_{it}$	-0.041	0.013	-3.17***	-0.047	0.026	-1.83*
SUE $_{it}$	0.005	0.001	4.52***	0.006	0.002	2.90***
Inf $_{it}$	1.996	1.063	1.88*	-2.803	4.506	-0.62
R Square	0.036			0.040		

Table 5.2 continued

	9-month return			12-month return		
	Coefficient	**St. Error**	**t-stat**	**Coefficient**	**St. Error**	**t-stat**
Intercept	0.040	0.109	0.37	0.121	0.104	1.16
Growth_Diff $_{it}$	-0.092	0.059	-1.57	-0.161	0.075	-2.14**
Emp_Growth $_{it}$	-0.044	0.059	-0.75	-0.103	0.076	-1.36
Sales_Growth $_{it}$	0.067	0.064	1.05	0.120	0.082	1.47
Beta $_{it}$	0.027	0.014	1.98*	0.015	0.008	2.02*
Size $_{it}$	-0.018	0.009	-1.96*	-0.029	0.011	-2.68**
Book-to-Market $_{it}$	0.029	0.013	2.31**	0.027	0.014	2.01*
Returns $_{it}$	0.020	0.029	0.71	-0.022	0.032	-0.69
Accruals $_{it}$	-0.058	0.032	-1.83*	-0.099	0.027	-3.70***
SUE $_{it}$	0.008	0.002	3.81***	0.011	0.002	4.60***
Inf $_{it}$	-1.474	4.193	-0.35	-1.922	3.839	-0.50
R Square	0.042			0.044		

*, **, *** represent significance at a 10%, 5%, and 1% level, respectively.

The regression includes a fixed effect model and year indicator variables. The standard errors of the coefficient estimates are adjusted for panel-level heteroskedasticity (White's t-statistic).

Variable Definitions

Returns $_{it+1}$ is the size-adjusted buy-and-hold return for firm i beginning with the fifth month after year-end. The size-adjusted return is calculated as firm i's realized return minus the corresponding mean return for all CRSP firms in the same market capitalization decile at the end of year t. The analysis includes holding periods of the return covering 3-, 6-, 9-, and 12-months.

Growth_Diff $_{it}$ is the difference in firm i's percentage change in sales and percentage change in employees

Emp_Growth $_{it}$ is firm i's percentage change in employees at fiscal year end, t.

Sales_Growth $_{it}$ is firm i's percentage change in sales at fiscal year end, t.

Table 5.2 continued

$Beta_{it}$ is firm i's CAPM beta estimated from a regression of raw monthly returns on the CRSP value-weighted monthly return index over a period of 60 months ending four months after each firm's year-end.

$Size_{it}$ is the log of firm i's market capitalization measured four months after firm i's year-end, t.

$Book\text{-}to\text{-}Market_{it}$ is the log of the ratio of book value of common equity to the market value of common equity measured four months after firm i's year-end, t.

$Returns_{it}$ is firm i's prior-period size-adjusted stock return. The return window varies in length to correspond with the dependent variable.

$Accruals_{it}$ is firm i's earnings per share minus cash flows from operations per share, scaled by firm i's stock price at its fiscal year end, t.
quarter in the previous year, and the denominator is the standard deviation of this measure of unexpected earnings over the past eight quarters.

Inf_{it} is the percentage change in the Consumer Price Index over the previous year measured four months after firm i's fiscal year end, t.

Table 5.2 shows the results for the market reaction analysis after incorporating three known accounting anomalies. For the 3- and 6-month return windows, the results are qualitatively similar to those in Table 5.1. Specifically, the coefficient on the growth difference (β_1) and its components (β_2 and β_3) are not significantly different from zero, suggesting that market participants do not incorporate the difference as a signal of future firm performance. For the 9-month return window, the coefficient on the growth difference is no longer significant as previously noted in Table 5.1, but the coefficient remains significantly negative for the 12-month window. These results provide further evidence that the market does not incorporate the expectation of a poorer future performance for firms with a large growth difference when the financial statements are originally presented. Instead, they incorporate this information when the future weaker financial performance is realized in the following reporting period, and these results are not being drive by previously identified accounting anomalies.

F. Trading Strategy Based upon the Market's Reaction to the Difference in Nonfinancial and Financial Measures

Table 6.1
Trading Strategy Analysis

Panel A: Analysis Using Size-Based Reference Portfolios

	Low Growth Difference Portfolios		High Growth Difference Portfolios		Difference in High and Low Portfolios
3-month Abnormal Return $_{it+1}$	0.001		0.004		-0.003
	(0.149)		(0.889)		(0.641)
6-month Abnormal Return $_{it+1}$	0.005		-0.002		0.007
	(0.710)		(0.284)		(0.952)
9-month Abnormal Return $_{it+1}$	0.007		-0.005		0.011
	(0.767)		(0.472)		(1.296)
12-month Abnormal Return $_{it+1}$	0.008		-0.006		0.014
	(0.933)		(0.531)		(1.493)

Panel B: Analysis Using Book-to-Market-Based Reference Portfolios

	Low Growth Difference Portfolios		High Growth Difference Portfolios		Difference in High and Low Portfolios
3-month Abnormal Return $_{it+1}$	0.004		-0.002		0.006
	(0.687)		(0.341)		(1.080)
6-month Abnormal Return $_{it+1}$	0.005		-0.004		0.009
	(0.720)		(0.432)		(1.117)
9-month Abnormal Return $_{it+1}$	0.008		-0.007		0.015
	(0.840)		(0.601)		(1.336)
12-month Abnormal Return $_{it+1}$	0.009		-0.007		0.016
	(1.116)		(0.589)		(1.719*)

Table 6.1 continued

Panel C: Analysis Using Size- and Book-to-Market-Based Reference Portfolios

	Low Growth Difference Portfolios	High Growth Difference Portfolios	Difference in High and Low Portfolios
3-month Abnormal Return $_{it+1}$	0.003	-0.003	0.006
	(0.594)	(0.498)	(0.856)
6-month Abnormal Return $_{it+1}$	0.006	-0.005	0.011
	(0.856)	(0.474)	(1.154)
9-month Abnormal Return $_{it+1}$	0.008	-0.008	0.016
	(0.711)	(0.606)	(1.299)
12-month Abnormal Return $_{it+1}$	0.010	-0.008	0.018
	(1.125)	(0.617)	(1.815*)

* represents significance at a 10% level

t -statistics for tests of significance are in parantheses.

At the beginning of each year, I rank firms in deciles based upon adjusted growth difference. The results above show the average abnormal return for firms in the lowest and highest deciles each year. The last column provides the average abnormal return for a zero-investment portfolio in which I take a long (short) position in the portfolio of firms with the lowest (highest) growth difference. In order to calculate a firm's abnormal return for a given year, I subtract the firm's realized returns from the returns of a reference portfolio. Panel A shows the results when the reference portfolios are determined by size, Panel B shows the results when the reference portfolios are determined by book-to-market ratios, and Panel C shows the results when the reference portfolios are determined by both size and book-to-market ratios.

Table 6.1 continued

Variable Definitions

3-month Abnormal Return $_{it+1}$ is the three-month abnormal return for firm i beginning with the fifth month after its fiscal year end, t. The abnormal return is calculated as firm i's realized return less the realized return of a reference portfolios. Reference portfolios are determined by size (Panel A), book-to-market ratios (Panel B), or size and book-to-market ratios (Panel C).

6-month Abnormal Return $_{it+1}$ is the six-month abnormal return for firm i beginning with the fifth month after its fiscal year end, t. The abnormal return is calculated similar to the three-month return.

9-month Abnormal Return $_{it+1}$ is the nine-month abnormal return for firm i beginning with the fifth month after its fiscal year end, t. The abnormal return is calculated similar to the three-month return.

12-month Abnormal Return $_{it+1}$ is the twelve-month abnormal return for firm i beginning with the fifth month after its fiscal year end, t. The abnormal return is calculated similar to the three-month return.

With the results in Table 5.1 and 5.2 suggesting that the market may be inefficient with respect to understanding the implications of a difference between nonfinancial and financial performance measures, I perform a series of zero-investment portfolio analyses to assess the overall magnitude of abnormal returns received from a portfolio trading on this inefficiency. For each year, I rank firms in deciles based upon their adjusted growth difference at the beginning of the year. Therefore, firms with the lowest (highest) difference in nonfinancial and financial performance measures are in the lowest (highest) rankings, and based on previous regression results, firms in the lowest (highest) rankings are expected to have positive (negative) abnormal returns. I then take a long (short) position in firms in the lowest (highest) rankings.

In order to calculate a firm's abnormal return for a given year, I subtract the firm's realized returns from the returns of a reference portfolio. In my analyses, I utilize three sets of reference portfolios based on prior literature (Barber and Lyon 1997; Savor and Lu 2009; Fue et al. 2013).

My first set of reference portfolios are ten size-based portfolios. At the beginning of each year, size deciles are created on the basis of market value of equity. The return for each of the ten size reference portfolios is calculated as the average returns across all securities in a particular size decile. My second set of reference portfolios are ten book-to-market portfolios that are recalculated at the beginning of each year. For each year, I rank all firms in the population on the basis of book-to-market ratios. Book-to-market deciles are then created based on these rankings, and the returns on these ten portfolios are calculated in a similar manner to the size-based portfolios.

My final reference portfolios are based on both firm size and book-to-market ratio. First, at the beginning of each year, I rank all firms on the basis of their market value of equity. Size

quintiles are then created based on these rankings. Second, within each size quintile, firms are sorted into quintiles on the basis of their book-to-market ratios at the beginning of the year. The realized returns for these 25 portfolios are calculated in a similar manner to the size-based portfolios.

Tables 6.1 shows the results for the trading strategy analysis. The first column shows the average abnormal returns for a portfolio of firms with the lowest growth difference at the beginning of each year, and the second column shows the average abnormal returns for a portfolio of firms with the highest growth difference. The final column shows the average abnormal returns for a zero-investment strategy in which a long (short) position is taken for firms in the lowest (highest) growth difference portfolios. Each of the panels represents the results for a different reference portfolio. Panel A depicts the results for the size-based portfolios, Panel B depicts the results for the book-to-market-based portfolios, and Panel C depicts the results for the size- and book-to-market-based portfolios.

As expected, the average abnormal return for firms in the lowest growth difference decile is positive for all returns months across all panels although none of the returns are significantly positive. Except for the three-month return in Panel A, the average abnormal return for firms in the highest growth difference decile are negative. Similar to the lowest growth difference portfolios, none of the returns are significant. With the exception of the three-month return in Panel A, the abnormal return generated by a zero-investment strategy is positive. Consistent with Tables 5.1 and 5.2, in the 12-month return window when it appears market participants incorporate the realized poorer future performance, the abnormal return is significantly

positive[19]. The results from Table 6.1 suggest that, on average, a 1.4% – 1.8% abnormal return can be achieved by implementing the trading strategy.

To summarize all of the analysis performed, my results suggest that the difference between financial and nonfinancial measures is negatively related to future earnings per share; therefore, this difference can be used as a signal for weaker future performance. Additionally, I find that the strength of the signal is dependent on the firms' life cycle stage. The difference has the strongest (weakest) association with future performance for firms in their later (earlier) stages of their life cycle. Lastly, I find evidence suggesting that market participants do not incorporate this information related to future performance until the lower earnings are realized. Therefore, a trading opportunity exists in which a return can be obtained by taking a long (short) position in firms with a low (high) difference in their financial and nonfinancial measures.

G. Sensitivity Analysis

In order to assess the rigor of my analysis, I perform the following sensitivity analyses:

(1) To ensure that results are not driven by a small number of outlying observations that are not representative of the population and/or measured with errors, I run all of my regression results with decile rankings of all independent variables rather than continuous variables (Sloan 1996, Rajgopal et al. 2003a, Doyle et al. 2006). For the equation examining the value relevance of the growth difference (Table 3), the coefficient on the growth difference variable remains significantly negative, but the coefficients on its components, employee growth and sales growth, also become significant. Similarly, for the equation examining the effect of life cycle on the value relevance of the growth difference (Table 4.2), the coefficients on both employee growth and sales growth

[19] Although not indicated in the table, the 12-month abnormal return of 1.4% in Panel A is statistically significant at a 15% level.

become significant, while all other coefficients are qualitatively similar. For all return equations (Table 5.1 and Table 5.2), all results are qualitatively similar.

(2) It may be argued that the growth difference variable may be a stronger signal of future performance if its two components, employee growth and sales growth, have inconsistent signs. For example, the growth difference may be a better signal of weaker future performance if employees are decreasing while sales are increasing, compared to a firm with the same growth difference due to both sales and employees increasing by varying degrees. Therefore, I re-estimate my analysis in Table 3 in which I include separate indicator variables for firms with inconsistent components of the growth difference (i.e., (1) firms which have an increase in employees with a decrease in sales and (2) firms which have an increase in sales with a decrease in employees) and interaction variables between these indicators and the continuous growth difference variable. In untabulated results, neither the coefficients for the indicator variables nor the coefficients for the interaction variables are significantly different from zero.

(3) Besides industry-wide differences in the growth difference variable, which are eliminated through my adjusted measure, a firm may have an individual-specific ratio of employee growth to sales growth. Therefore, I calculate an additional measure of the growth difference in which I adjust the firm's yearly variable by its average growth difference, and I re-estimate all regression analyses. I find that all results are qualitatively similar with the additional measure of growth difference.

(4) As nonfinancial information may provide more or less information to the market based on the industry (Francis et al. 2003), I run separate regressions by industry to determine the effect on the strength of the growth difference as a signal of future firm performance.

I separate firms into Fama and French 48 industries. Of the 48 industries, regressions for 38 industries estimated a negative relation between the growth difference and future firm performance. Of these 38 industries, consumable products industries, such as the Food Products, Candy and Soda, and Tobacco Products, the retail and wholesale industries, and the restaurants and hotel industries exhibited the strongest relation between the growth difference and future financial performance. Of the 10 industries in which a negative relation was not identified, the relation was significantly positive for four industries: Construction Materials, Construction, Shipbuilding and Railroad Equipment, and Miscellaneous.

(5) It could be argued that my growth difference measure is simply another estimate for a firm's fundamental score. Therefore, I re-estimate my results for Table 3 including a measure of a firm's fundamental score as provided by Jackson et al. (2008). Including this additional variable does not qualitatively alter my original conclusions.

(6) Prior research has argued that "an inference of market efficiency is quite different if the return magnitude is within the bounds of expected trading costs or not" (Richardson et al. 2010). Therefore, I re-estimate my return regressions (Table 5.1 and Table 5.2) with the firm's stock price as a proxy for transaction costs (Doyle et al. 2006). The additional variable did not qualitatively change any of the results previously reported.

(7) To provide support that any inefficiency results are not actually related to different levels of risk rather than mispricing, I examine if abnormal returns with respect to the trading strategy is consistently positive in both up and down markets. Richardson et al. (2010) argue "a risk explanation would not be consistent with a stable return stream across overall market environments." For Table 6.1, for the 12-month zero-investment portfolios

estimated, I find that average abnormal return is positive for all of the years except 1998 and 2002, which had returns of -3.5% and -2.1%, respectively.

(8) When determining the abnormal return in a trading strategy, Barber and Lyon (1997) argue that reference portfolios are subject to measurement error and biases. Therefore, they suggest identifying specific control firms based on size and book-to-market ratios when determining abnormal returns. I re-performed my zero-investment trading strategies with three set of control firms. Specifically, I calculate a sample firm's abnormal return by comparing a sample firm's realized return to (1) the firm with the closest size as calculated as market value of equity at the beginning of the year, (2) the firm with the closest book-to-market ratio at the beginning of the year, and (3) the firm that is closest in both size and book-to-market ratio. In order to determine the specific control firm for the third set, I first identify all firms with a size between 70% and 130% of the sample firm. From this subsample, I then select the firm with the closest book-to-market ratio. Results are qualitatively similar when using control firms rather than reference portfolios when determining abnormal returns.

(9) Because I am utilizing dynamic models to perform my regression analyses, the coefficients may be biased in finite samples (Kiviet 1995). Therefore, I use GMM estimation to determine the bias, if any, in my results. All results using GMM estimation were qualitatively similar to those discussed in the paper.

CHAPTER 5

CONCLUDING REMARKS

Prior accounting research has focused on the value relevance of nonfinancial performance measures and financial performance measures separately. In this study, I examine the value relevance of the *difference* in those performance metrics. Specifically, I examine if a difference in nonfinancial and financial information is an indicator of less persistent earnings and therefore poorer future performance. Next, I examine if the strength of this signal is affected by the life cycle stage of a firm. Lastly, I examine the market's efficiency at processing the value relevant information provided by the difference in performance measures. I examine the association between that difference and future abnormal returns as well as examine if a trading strategy can be utilized to receive abnormal hedged returns.

My results suggest that the difference between financial and nonfinancial measures is negatively related to future earnings per share; therefore, this difference can be used as a signal for weaker future performance. Additionally, I find that the strength of the signal is dependent on the firms' life cycle stage. The difference has the strongest (weakest) association with future performance for firms in their later (earlier) stages of their life cycle. Lastly, I find evidence suggesting that market participants do not incorporate this information related to future performance until the lower earnings are realized. Therefore, a trading opportunity exists in which a return can be obtained by taking a long (short) position in firms with a low (high) difference in their financial and nonfinancial measures.

This study provides support for additional value relevant information provided in a firm's financial statements. Specifically it examines the value relevance of the difference in information provided within a firm's financial statements outside of a fraud context. In addition, this study

provides additional evidence of the market's efficiency or inefficiency of processing information. Current and potential investors can utilize the information in this study to better evaluate the overall performance of a firm, and this study provides support for the PCAOB which has suggested auditors examine the relationship between financial and nonfinancial measures when performing their audit procedures (PCAOB 2010).

A limitation of this study is that due to the annual disclosure of the nonfinancial measure used in the design, the study is limited to when the difference in performance measures can be obtained. Also, it is difficult to identify exactly when the market identifies and reacts to the information related to the difference in nonfinancial and financial information. Therefore, only an association study can be performed rather than an event study. Lastly, it may be hard to determine if the change in employee information should lead, lag, or be contemporaneously correlated with the financial information. Future research can seek to further refine the growth difference measure.

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