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THE FLORIDA STATE UNIVERSITY

COLLEGE OF BUSINESS

THE CREDIBILITY OF MANAGEMENT FORECASTS DURING CORPORATE MERGERS AND ACQUISITIONS

By

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I dedicate this dissertation to my wife Sylvia, and my children John Christopher and Kelly, who have provided me with support, patience, and understanding in pursuit of this degree.

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THE CREDIBILITY OF MANAGEMENT FORECASTS
DURING CORPORATE MERGERS AND ACQUISITIONS

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Prior studies in the area of management forecasts contain one common characteristic, they assess voluntary earnings disclosures during normal operating periods, when the incentive structure is generally routine and ongoing. This research tests whether voluntary earnings disclosures released during non-normal operating periods (specifically mergers and acquisitions) differ from disclosures released during normal operating periods in terms of credibility. McNichols (1989), Baginski et al. (1994), and Frankel et al. (1995) find that forecasts are unbiased relative to subsequently revealed earnings and that these forecasts tend to contain more bad news than good news. Other studies such as DeAngelo (1986), DeAngelo (1988), Collins and DeAngelo (1990), and Perry and Williams (1994) assess mandatory earnings releases during non-normal operating periods. Findings from these studies indicate that incentives for management of earnings exist during these non-normal operating periods. Credibility, therefore, is an issue during these non-normal operating periods,

and it serves as the basis for linking these two streams of research.

Tests are performed which focus on the bias of management forecasts for acquired firms during merger and acquisition activities through analysis of forecast error. In addition, bias tests are performed that introduce firm-specific control by permitting a test of the relative forecast error for the same firm in normal versus non-normal operating periods. Additionally, tests are performed which assess the relative information content of management earnings forecasts during normal and non-normal operating periods. An alternative test pair matches observations along a normal/non-normal dimension comparing the information content of the management forecast during non-normal operating periods to actual earnings of the same firm during normal operating periods.

With respect to bias in the forecast during non-normal operating periods, results show a significantly negative forecast error which is indicative of managers exerting greater upward earnings management on the forecast. When bias is examined for the same firms during normal versus non-normal operating periods, a significantly negative forecast error is shown to exist for the firms during non-normal operating periods, thus indicating the presence of positive forecast bias.

Turning to the assessment of information content in management forecasts during mergers and acquisitions, results suggest that management forecasts during mergers and acquisitions possess incremental information

content, relative to actual earnings, and that this information content acts as an information-enhancing signal to the investor. Investors use this information to positively affect stock prices in the market. When the same firms are pair-matched along a normal/non-normal dimension, results suggest the presence of information content in the management forecasts during non-normal operating periods, relative to normal operating periods. Further, investors do not discount this information but instead use the information to positively affect stock prices in the market.

This study will help to fill a void that exists in the current accounting literature by linking management earnings forecasts to periods of non-normal operations, such as merger and acquisition activities. With the re-emergence of recent mergers and acquisitions taking place, we are finding that the merger and acquisition activity of the 1980's was not just a phenomenon exclusive to that era. The implications of this study, therefore, have practical applications to today's environment.

CHAPTER 1

INTRODUCTION

A recurring phenomena in information dissemination is the voluntary release of earnings forecasts by firm managers. Interest in voluntary forecasts has increased, in part, because of the Securities and Exchange Commission's (SEC) fluctuating position on forecast desirability. The SEC's interest in management forecasts is driven by the potential market impact voluntary releases may contain.

Prior research in the study of voluntary earnings disclosures finds that managers release information that is unbiased relative to subsequently revealed earnings. These releases tend to contain more bad news than good news [McNichols (1989), Baginski et al. (1994) and Frankel et al. (1995)], and are found to contain information content [Patell (1976), Waymire (1984), Pownall and Waymire (1989) and McNichols (1989)]. Although forecast release is costly, credible disclosure will occur if sufficient incentives exist. These incentives include bringing investor/manager expectations in line [Ajinkya and Gift (1984)], removing the need for expensive sources of additional information [Diamond (1985)], reducing the cost of capital to the firm [Diamond and Verrecchia (1987)], and reducing

potential lawsuits [Lees (1981)].

All of the aforementioned empirical studies have one common characteristic, they assess voluntary earnings disclosures during normal operating periods, when the incentive structure is generally routine and ongoing. The research question addressed in this study is:

Does the credibility of voluntary earnings disclosures released during non-normal operating periods (specifically mergers and acquisitions) differ from disclosures released during normal operating periods?

This question links earnings management to voluntary disclosures of earnings. For several years researchers have found that some degree of earnings management may exist in mandatory disclosures. I argue that incentives leading to earnings management may manifest in earnings forecasts. If the potential exists for voluntary management forecasts to be managed, then to what extent do investors rely upon the forecast information? This question is important because if voluntary forecasts contain information content, as is found in current literature, then users of these voluntary earnings releases may be reacting to biased information.

In addressing this research question, I rely upon literature that indicates different incentive structures during non-normal operating periods that may lead to earnings management. DeAngelo (1986) shows that managers have incentives during management buyouts to manage earnings

downward in attempts to reduce the buyout compensation. Collins and DeAngelo (1990) show that earnings management occurs during proxy contests, and market reaction to earnings during these contests is different than during normal operating periods. DeAngelo (1990) finds that managers have incentives during merger activities to manage earnings upward so as to convey to current stockholders that the potential merger will not adversely affect their investment. Perry and Williams (1994) find that management of accounting earnings occurs in the year preceding "going private" buyouts.

This study assesses the effect that merger and acquisition activities have on management forecast credibility. In accomplishing this, the presence of earnings forecast management is tested by using bias and accuracy measures along with the market reaction to the forecast during the merger and acquisition activities (non-normal operating periods). The study focuses on acquired firms involved in both completed and non-completed mergers[1] during the period 1983-1987.[2] Results are compared to forecasts

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[1]Firms falling into the completed/non-completed categories will be assigned an indicator variable for later partitioning. Whether a firm is ultimately acquired is unknown at the forecast date.

[2]Several studies in the area of finance such as Asquith (1983), Jensen and Ruback (1983), Bradley (1980), Malatesta (1983), and Asquith, Brunner, and Mullins (1990) find that acquired firms receive substantial premiums during and after merger and acquisition activities. As will be discussed later in the study, these acquired firms are not only prime candidates for using forecasts to signal potential future earnings, but there may exist greater pressure on the

released in periods for which no merger and acquisition activities take place (normal operating periods). By drawing upon the earnings management literature, conclusions are drawn, based upon statistical analysis, regarding the tendency of managers to manage earnings forecasts more during non-normal operating periods than during normal operating periods. If it is established that managers have tendencies to manage forecasts during non-normal operating periods, this would have implications for voluntary disclosures in general (since current literature finds voluntary disclosures to be unbiased). There would be potential implications for managers of firms which are the target of merger or acquisition activity, along with investors in these firms.

Following a review of relevant literature in Chapter 2, several hypotheses are developed and presented in Chapter 3 concerning the bias and information content of management forecasts. Chapter 4 describes the data to be used, and the proposed research methodology for testing the hypotheses is discussed and presented. Chapter 5 provides results of the empirical testing. Chapter 6 concludes the dissertation.

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management of these firms to manage forecasts so that the highest possible premium is obtained during the acquisition.

CHAPTER 2

LITERATURE REVIEW

Management Forecast Literature

The legal environment for voluntary management forecast disclosure has changed over the past twenty years. Prior to 1973, forecast release was greatly discouraged by the SEC. In addition, firms filing reports with the SEC were forbidden to include forecast data. In 1973, the mandate for exclusion of forecasts was lifted by the SEC. Then, in 1978, the SEC started to encourage firms to submit voluntary management disclosures.[3] During 1979, the SEC moved to protect firms that released voluntary disclosures, through passage of the Safe Harbor Rule. This rule protects firms releasing earnings forecasts from potential liability, so long as the disclosures were made in good faith.

Early studies, such as Patell (1976), studied the impact of management forecasts in the pre-1979 period before the Safe Harbor Rule. The Patell study was one of the first to conclude that such forecasts contain

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[3]The SEC provided guidance on the form and substance of such disclosures via the Securities Act Release (No. 5992).

information content. Other studies, such as Ajinkya and Gift (1984), began to explore why managers would release forecast information. Findings showed that managers voluntarily disclose earnings forecasts to correct market expectations about future earnings, and that the market revises its expectations according to management forecast signals. Still other studies, such as Waymire (1984) and Pownall and Waymire (1989), sought to provide evidence on the credibility of management disclosures in relation to mandatory disclosures or analyst forecasts. Results indicated that management forecasts are not discounted by investors relative to earnings announcements.

Later studies were conducted in a post-1979 environment, after the creation of the Safe Harbor Rule. Studies such as McNichols (1989), Baginski et al. (1994), and Frankel et al. (1995) not only found that management forecasts contain information content, but forecasts are predominantly "bad news." This finding is relevant since it suggests that managers are not likely to favorably bias earnings forecasts, as early researchers [Patell (1976) and Penman (1980)] had suggested. The fact that this systematic bias is not present is also documented in studies such as Basi, Carey and Twark (1976), Imhoff and Pare (1982), Hassell and Jennings (1986), Waymire (1986), and Baginski (1987).

A basis for the prediction of credible forecast release is that managers possess sufficient incentives to release unbiased information. Ajinkya and

Gift (1984) argue that managers have incentives to align investors' expectations with their own to assist in the reduction of market transactions costs. Diamond (1985) finds that credible forecasts remove the investors' more costly search of information from private sources, such as analysts. Diamond and Verrecchia (1987) find that credible forecasts help reduce the cost of capital to the firm. Lees (1981) shows that credible forecasts are directly linked to reducing potential lawsuits. He argues that the more credible the forecast, the less likely that potential lawsuits will result.

The above literature documents that management forecasts of earnings during normal operating periods have been found to be credible sources of information to investors. In addition, it provides documentation as to why managers have incentives to disclose credible forecasts.

Earnings Management Objectives

The following are studies which have provided us with some evidence on managed earnings in mandatory disclosures. I use these studies as the basis for analysis of voluntary disclosures. In addition, I discuss the objective of earnings management and analyze potential incentives for managing earnings.

Schipper (1989) describes earnings management from an informational perspective as distinguished from an economic perspective (sometimes called "true income"). This distinction matters because it has

implications for interpreting results of earnings management research. Under a "true income" perspective, there is some economic income number that may very well be distorted by earnings management; however, there exists another source of distortion as well, the rules of accrual accounting and Generally Accepted Accounting Principles (GAAP) may lead to income numbers that contain some degree of error. As a result, the true income perspective would imply that earnings are noisy measures of an economic income benchmark. Managing these earnings, therefore, changes properties of the noise (i.e., amount, bias, or variance). The degree to which these properties change may have an impact upon those who rely on the economic income measure. To the extent that the managed earnings are viewed as additional noise, users may discount the value of this information. On the other hand, if managed earnings are viewed as a value-enhancing signal, users might be less inclined to discount the importance of the earnings numbers.

The informational perspective on earnings management assumes managers have private information which they can use when they choose elements from a feasible set of reporting rules, under a given set of contracts that determine sharing rules among stakeholders. No concept of earnings as a true value is needed. This study utilizes these concepts to assess the effect that potential earnings management has on the conveyance of information to the users of voluntary disclosures.

Trueman and Titman (1988) explore conditions under which firms manage earnings to create an impression of lower income variance. Their model assumes lenders infer a lower variance of cash flows from the managed income stream and adjust downward their required rates of returns accordingly. This study implies that the presence of asymmetric information is a condition for earnings management. Schipper (1989) states that a cause for this asymmetric information is "blocked communication." In other words, if managers could communicate all their private information without creating costs, we would resolve the need for earnings management. Managers, however, withhold substantial amounts of information due to the existence of proprietary costs of disclosure or other institutional constraints. To the extent this withholding of information occurs, only "partial communication" is transmitted from managers to users. If my study finds evidence of managed earnings forecasts, an explanation for such management might be the presence of asymmetric information due to this concept of "blocked communication."

Earnings management may also persist because of contractual tradeoffs; earnings management could be eliminated but it is not worth the cost. For example, Dye (1988) provides a model in which current shareholders have a positive demand for earnings management that benefits them at the expense of future shareholders. This might be another explanation of managed earnings forecasts if discovered in my study.

Other explanations of discovery of potential earnings management in my study center around start-up firms. Schipper (1989) proposes that start-up firms dislike compensation arrangements that decrease accounting net income. This argument implies that such firms may choose to forego potentially valuable incentive effects to manage earnings increases. This idea is predicated on the notion that when the start-up firm wishes to go public, the amounts to be raised in a public offering of common stock are influenced by the history of reported earnings.

Management Forecasts During Non-Normal Operating Periods

To develop a rational link to the credibility issue of voluntary management disclosures during non-normal operating periods, we can utilize extant literature as it relates to mandatory disclosures during non-normal operating periods and the research related to earnings management.

DeAngelo (1986) conducts a study of management buyouts of public stockholders. She finds that management buyouts engender potentially severe conflicts of interest for insider-managers, who have both a fiduciary duty to negotiate fair value for the publicly-held shares and are themselves the purchasers of those shares. Although managers virtually always engage an independent investment banker to evaluate the offer terms, the typical management buyout nonetheless generates litigation by public stockholders who claim their compensation is inadequate. Because the courts and

investment bankers employ earnings-based valuation methods to assess fair value, managers have incentives to understate reported income in attempts to reduce the buyout compensation. DeAngelo (1988) studies the incentives surrounding a proxy contest. In this scenario, dissidents within the firm seek to replace inefficient management. The dissidents attempt to point to poor accounting earnings as the basis for the need to change management. Incumbent managers can achieve earnings improvement via the exercise of their accounting discretion. This is a case where current managers have an incentive to manage earnings since it will benefit them at the expense of future managers. If incumbent managers overstate earnings, victorious dissidents will have their own future earnings performance penalized by prior management's accounting choices (i.e., via increased amortization charges). To improve future reported profitability, newly elected dissident managers have incentives to take an earnings 'bath'. They can blame the resultant substandard earnings on prior management, and these earnings provide a low benchmark for dissidents' future earnings performance.

Collins and DeAngelo (1990) extend DeAngelo (1988) by studying the market reaction to earnings announcements of firms engaged in a proxy contest. Although evidence of earnings management is found to occur during the contest, market reactions to earnings announcements is found to be more pronounced during the contest than during normal pre-contest

periods. These findings suggest information content of earnings is present during proxy contests and this information content is greater from that contained in earnings during normal operating periods. The implication of the information content of earnings in this study is that investors do not perceive the managed earnings numbers as additional noise but instead perceive them as a valuable signal to be used in their investment decision.

Perry and Williams (1994) extend DeAngelo's (1986) work. The study concentrates on accounting accruals surrounding the years that sample firms endeavor to go private. Whereas DeAngelo (1986) assumed that a firm's total accruals include discretionary and nondiscretionary components, with the nondiscretionary component assumed to be zero, Perry and Williams (1994) point out that this view fails to take into account the level of the firm's economic activity in the managed year. Perry and Williams, therefore, insert variables to account for the nondiscretionary accruals. This, along with a larger sample of firms are the prime differences over the DeAngelo (1986) study. Findings suggest that accounting accruals are manipulated downward in the year preceding the buyout, thus adding further evidence of management incentives to manage earnings during non-normal operating periods.

Summary

The above discussion illustrates that, with respect to the mandatory

release of earnings, managers possess a different incentive structure during periods of non-normal operating periods than during normal operating periods. Therefore, credibility becomes an issue during these non-normal periods. Because credibility may differ between these two periods, market reaction may differ as well. It is, therefore, important to assess the effect of credibility in terms of bias contained in the voluntary earnings disclosure, along with any information content contained in the disclosure.

The preceding serves as a basis for studying potential differences in voluntary disclosures during normal operating periods and non-normal operating periods. The differences in incentive structure, credibility, and market reaction indicated by the extant literature on mandatory disclosures in non-normal periods and studies of earnings management are utilized in development of the hypotheses that follow.

CHAPTER 3

HYPOTHESES DEVELOPMENT

Hypotheses About Bias of Management Forecasts

As previously noted, recent studies of management earnings forecasts [Waymire (1986), Hassell and Jennings (1986), and McNichols (1989)] do not find evidence of bias in voluntary management disclosures. If managers forecast unbiased expectations of earnings, then we would expect the average forecast error (defined as the difference in the actual earnings per share and the management forecast of earnings per share) to be statistically indistinguishable from zero.

These studies of management forecasts must be considered along with the earnings management literature. For instance, voluntary disclosures facilitate additional information to the investor at an acquisition cost lower than the investor would otherwise pay for the information. However, if only partial communication flows from management to investors and acquiring full communication is costly, there exists asymmetric information and the potential for earnings management in the earnings forecast.

If the same degree of earnings management (whether positive or negative) exists in both the forecast of earnings and actual earnings, there should be no difference in forecast error. If, however, the ability to perform earnings management is anticipated but not realized, some difference of forecast error would be present. For instance, as was noted in DeAngelo's (1988) study, managers may have an incentive to manage earnings upward. This could be communicated earliest by means of a voluntary forecast. If management is subsequently unable to manage earnings to the level portrayed in the forecast, a negative forecast error would exist. On the other hand, management may have an incentive to manage earnings downward, as shown in Perry and Williams' (1994) study. In this event, to the extent that actual earnings cannot be managed downward to the level portrayed in the forecast, a positive forecast error would exist.

If the same degree of earnings management occurs in both the forecast and actual earnings numbers, no difference in forecast error should exist. If greater upwards earnings management of the forecast occurs (or less actual earnings management), a negative forecast error should exist. If greater downwards earnings management of the forecast occurs (or less actual earnings management), a positive forecast error should exist. Thus, the first hypothesis tests for the existence of forecast error. The null hypothesis tested is:

H1: Average management forecast error (actual EPS-management forecast of EPS) equals zero for acquired firms during merger and acquisition activities.

The expectation for this first hypothesis is that a negative forecast error will occur. The rationale for this expectation relates to the current literature relative to mandatory earnings releases during non-normal operating periods. If this results, we then have some indication of bias that exists in voluntary forecasts during non-normal operating periods, and can then proceed to examine any information content contained in the forecast.

Introducing a firm-specific control (i.e., a forecast for the same firm in a normal period) allows a test of the relative forecast error in the normal versus non-normal operating periods. If firms display the same degree of earnings management in normal versus non-normal periods, the expectation is that there will be no difference in forecast error. If, however, there exist different incentives to manage earnings (either upward or downward) during non-normal periods, as suggested by current literature, then a positive or negative forecast error would result. Stated in the null form:

H2: The average forecast error for acquired firms during merger and acquisition activities equals the average forecast error for the same firms during normal operating activities.

Since this hypothesis compares the same firms' forecasts during two

different periods of time, one might expect that there would be no difference in the two forecasts. However, since one of the forecasts is from a normal operating period and the other from a non-normal operating period, a difference would be expected because of the findings regarding mandatory earnings releases during non-normal operating periods. These findings indicate the potential for biased reported earnings during non-normal operating periods. Also, the test of H2 reduces to a test of H1 if forecast error in management forecasts released during normal operating periods is zero on average. In order to adequately assess this, the forecast error will be broken down for both normal operating periods and non-normal operating periods.

Hypothesis About Information Content of Accounting Earnings and Management Forecasts

If mandatory disclosures of earnings contain some degree of earnings management, then voluntary disclosures may possess the potential for such earnings management as well. As was stated earlier, investors may react to managed earnings in one of two ways; they may discount the information as additional noise, or they may view this information as enhancing the properties of the signal (i.e., in terms of amounts or variance). DeAngelo (1990), for instance, finds that investors react in a manner consistent with the latter explanation in that managed earnings possess positive information

content.

Research during the course of the past two decades has shown that accounting earnings possess information content. However, DeAngelo [(1988),(1990)], and Collins and DeAngelo (1990) find that the information content of earnings announcements is different during non-normal operating periods. Specifically, Collins and DeAngelo (1990) find a greater market reaction to earnings during non-normal periods (i.e., proxy contests) than during normal periods. They argue that earnings released during a proxy contest are more informative than the pre-contest earnings of the same firms. They interpret these results as indicating that the prominent role of reported earnings in the corporate governance process reflects their increased usefulness to investors attempting to evaluate managerial performance and/or predict the contest outcome.

If investors interpret managed earnings forecasts as just additional noise, the market would discount this information. If, however, investors view the managed earnings forecast as a positive (or negative) signal from management, the market would not discount the information. The expectation for information content of management forecast in non-normal operating periods would revolve around these two notions.

These alternative notions suggest the following null hypothesis:

H3: The information content of management forecasts during merger and acquisition activity is equal to the information content of management forecasts during normal operating periods.

Using DeAngelo (1990) as a basis, the expectation for this hypothesis is that there will be a significantly positive degree of information content in the forecast of earnings during non-normal operating periods. This finding would indicate that investors perceive information released by management during non-normal operating periods to be informative.

CHAPTER 4

RESEARCH DESIGN

Sample Considerations

The sample consists of management forecast point estimates made during the period 1983-1987 meeting the following criteria:

1) The management earnings forecast was recorded by the Dow Jones News Retrieval Service (DJNRS).

2) Sufficient merger and acquisition data is available from the Mergerstat Review, published by Merrill Lynch Business Brokerage and Valuation.[4] Study firms include acquired firms involved in mergers or acquisitions during the study period.

3) Security price data is available from the CRSP tape for the acquired firm making the forecast.

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[4]Firms which meet the following criteria are selected:
1) The purchase price is greater than $100 million.
2) The target firm is not a foreign company.
3) The target is not a bank or other lending institution.

4) Earnings data is available from the Compustat tape for the acquired firm making the forecast.[5]

The overall sample consists of firms which make at least one management earnings forecast during the period 1983-87. This large sample is divided into two sub-samples; one sub-sample consists of firms during "normal" operating periods, while the other sub-sample consists of firms during "non-normal" operating periods. For sensitivity analysis, the non-normal firms are classified into two groups; one group consists of firms with any management forecasts made within ninety days either side of a merger and acquisition announcement, the other group consists of firms with management forecasts made within ninety days after a merger and acquisition announcement. The reason for the existence of these two groups is because it is unclear at what point during a merger and acquisition acquired firms may begin to manage earnings (i.e., before the announcement or after the announcement). Analysis of this issue is facilitated by the group separation. Non-normal firms, therefore, consist of acquired firms engaged in merger and acquisition activities.[6]

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[5]Earnings data is necessary for testing forecast bias (H2), but not for some tests of information content (H3). Tests of H2 discard firms with missing earnings data, but the observations are retained for tests of H3.

[6]Analysis of the Wall Street Journal is undertaken to determine those firms where the acquisition attempt was either "friendly" or "hostile." The purpose of this is to ascertain any credibility differences in these two types of acquisitions. A firm that is the target of a hostile acquisition might regard the

Tests of Hypotheses Regarding Bias of Management Forecasts

Test of Hypothesis 1

H1: Average management forecast error equals zero during merger and acquisition activities.

The management forecasts of earnings must be related to actual accounting earnings in order to determine if bias exists. McNichols (1989) analyzes bias through the determination of forecast error. Stated in statistical form the hypothesis is represented as follows:

$$\sum \frac{fe_i}{n} = 0$$

Where: fe_i = forecast error of firm i (forecast error = actual eps - management forecast of eps), deflated by the firm's stock price per share 180 days prior to the forecast.

In order to test hypothesis 1, firms engaged in non-normal operations are analyzed. Statistical analysis is performed on this sample in order to determine if the average forecast error is zero. McNichols (1989) and

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takeover attempt as threatening and may be more resistant. Any credibility distinctions between these types of acquisition are noted in the study.

DeAngelo (1988) conduct a t-test on their respective samples in addition to a Wilcoxon signed rank test. Lehmann (1975) reports that the Wilcoxon test has an efficiency of about 95% relative to a t-test for data that are normally distributed, and that the Wilcoxon test can be more efficient than the t-test for non-normal distributions. He also recommends the Wilcoxon test over tests based on sign alone (such as the binomial test), which are relatively inefficient for distributions whose central regions are close to normal. Therefore, this analysis consists of performing a t-test and a Wilcoxon signed rank test on the average cross-sectional differences between actual earnings per share and the management forecast of earnings per share.

Test of Hypothesis 2

H2: The average forecast error for firms during merger and acquisition activities equals the forecast error for firms during normal operations.

Stated in statistical form the hypothesis is represented as follows:

$$\sum \frac{fe_i}{n_{non\text{-}normal}} = \sum \frac{fe_i}{n_{normal}}$$

Although the above test provides direction of potential bias, it does not provide a relative measure of accuracy. A supplemental test to assess

the accuracy of the forecast is conducted by analyzing the absolute value of the forecast error.

To test hypothesis 2, the same firms are studied in both non-normal and normal operating periods. Forecast error during non-normal operations is compared to the forecast error for these same firms during normal operations. A required criteria for this test is that these firms have more than one forecast during the period under study, and that at least one forecast be contained in a normal operating period and at least one forecast be contained in a non-normal operating period. Similar statistical tests to those conducted in hypothesis 1 are utilized for hypothesis 2.

Test of Hypothesis Regarding the Information Content of Management Forecasts

Test of Hypothesis 3

The purpose of this test is to assess the relative information content of management earnings forecasts during normal and non-normal operations.

H3: The information content of management forecasts during merger and acquisition activities is equal to the information content of management forecasts during normal operating periods.

The following model is used to evaluate information content for hypothesis 3:

$$CAR_{it}=a+b_1 UE_{it}+b_2 D1_{it} UE_{it}+b_3 MB_{it} UE_{it}+b_4 B_{it} UE_{it}+b_5 MV_{it} UE_{it}+b_6 H_{it} UE_{it}+e_{it}$$

Where:
- CAR_{it} = Cumulative Abnormal Return forecast i, time t
- a = Intercept term
- UE_{it} = Unexpected Earnings for forecast i, time t
- $D1_{it}$ = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
- MB_{it} = Market to book value of equity as a proxy for growth and persistence
- B_{it} = Market model slope coefficient as a proxy for the firm's systematic risk
- MV_{it} = Market value of equity as a proxy for firm size
- H_{it} = Horizon of forecast, measured as days into the year prior to forecast
- e_{it} = error term for forecast i, time t

Normal firms represented by the dummy variable will consist of management forecasts made during normal operating periods. Non-normal firms represented by this variable will consist of firms engaged in merger or acquisition activities (either 90 days before and after the merger or acquisition announcement or 90 days after the announcement).

The coefficient, "a" measures the intercept. The coefficients b_3, b_4, b_5, and b_6 are contributions to the ERC[7] by the control variables. b_1 is the ERC for all firms in the sample (during normal time periods and during

[7]ERC is defined as the effect of a dollar of unexpected earnings on stock returns, typically measured as a slope coefficient in the regression of abnormal stock returns on scaled unexpected earnings.

non-normal time periods), and b_2 represents the incremental ERC for non-normal operations. Therefore, b_2 captures the difference in the information content for firms during normal and non-normal operations.

Unexpected Earnings (UE_i) is measured as the difference between the management earnings forecast (MF_i) and security market participants' expectations for earnings proxied by consensus analyst following as per IBES (EX_i). This measurement is made in the same quarter as the management forecast. The unexpected earnings are scaled by the firm's stock price (P_i) 180 days prior to the forecast:[8]

$$UE_i = \frac{(MF_i - EX_i)}{P_i}$$

To investigate the effects of the information content of management forecasts on the ERC, there must be some control for variables shown by prior studies to be determinants of the ERC. The variables investigated are persistence [Easton and Zmijewski (1989)], growth [Collins and Kothari (1989)], systematic risk [Collins and Kothari (1989)], size [Lipe (1990)], and horizon [Pownall and Waymire (1989)].

The market to book value of equity at the beginning of each year

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[8]In addition to scaling the unexpected earnings by the firm's stock price 180 days prior to the forecast, a sensitivity analysis is performed scaling the unexpected earnings by EX_i. This is done because there may be some study firms in the process of merger or acquisition activities during this 180 day period. An alternative deflator would resolve any bias created by this scenario.

for each observation is used as a proxy for earnings growth and persistence. Teoh and Wong (1993) find that future earnings are affected by growth opportunities. The higher the market to book ratio, the larger the expected earnings growth. A positive relation is expected between the ERC and the persistence and growth proxy.[9]

The firm's systematic risk is proxied by the market model beta. This same proxy is used by Collins and Kothari (1989). There have been mixed results with regard to this proxy. Collins and Kothari (1989) find a significant negative relation between risk and the ERC while Easton and Zmijewski (1989) find no significant relation.

Firm size is proxied by the market value of equity at the beginning of the year for each observation. Past studies are inconsistent with regard to the effect size has on the ERC. Lipe (1990) finds the variable to be significantly positive while Easton and Zmijewski (1989) find size to be insignificant. The variable is included since Atiase (1985) finds that firm size is a fair proxy for the information environment. For instance, firm size (proxied by such items as assets, investments, revenues, etc.) may be a substitute for the richness of the information which a firm is able to convey to an investor. Larger firms may denote greater information richness to

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[9]In addition, a sensitivity analysis is conducted using market and book values at t-1. The reason is that if any study firms are involved in merger or acquisition activities early in the year, using beginning of year values may distort results.

certain investors as opposed to smaller firms.[10]

Horizon of the management forecast is reflected as the number of days into the year that the forecast is made. Prior studies such as Pownall and Waymire (1989) find that forecasts disclosed later in the year tend to contain more information than those disclosed earlier in the year.

For each disclosure sample, an abnormal return (AR_{it}) is generated for event days -1, 0, and +1, where day 0 is defined as the date of the forecast disclosure identified by the DJNRS. The market model is utilized along with the CRSP equally-weighted market index and regression parameters are estimated between days -290 and -91.[11] Abnormal returns are then summed to calculate a cumulative abnormal return (CAR_{it}). Hypothesis 3 is tested by examining the coefficient associated with the unexpected earnings of forecasts, b_2, during non-normal operations. There are two possible conclusions; the forecast may be noisy, which in this event, $b_2<0$, or it will possess an information-enhancing signal to the investor, which will result in $b_2>0$.

Alternative Test of Hypothesis 3

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[10]A sensitivity analysis is conducted using market value of equity for period t-1 for the same reason explained in the previous footnote for market to book value.

[11]A sensitivity analysis is conducted using market adjusted returns.

Control variables are used in the regression testing the previous hypothesis to account for expected differences in ERC. Control variables may be avoided if observations are pair matched on the normal/non-normal dimension. Under this scenario, it is possible to compare the management forecast during non-normal operating periods to the management forecast during normal operating periods if the assumption that $ERC_{normal} = ERC_{non\text{-}normal}$ is made.[12, 13] The forecast comparison consists of the non-normal sample of firms during non-normal time periods versus the same non-normal sample of firms during normal time periods. The following regression can be utilized to perform the test:

$$CAR_{it}=a+b_1 UE_{it_n}+b_2 D1_{it_n} UE_{it_n}+e_{it}$$

Where: CAR_{it} = Cumulative Abnormal Return firm i, time t
a = Intercept term
UE_{itn} = Unexpected Earnings for firm i, time t
$D1_{itn}$ = Dummy variable taking a value of 1 for unexpected earnings associated with management forecasts during merger and acquisition activities and 0 for unexpected earnings associated with management forecasts during normal activities for the same firm
e_{it} = error term for firm i, time t

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[12]For sensitivity purposes, an additional analysis is performed using ranked unexpected earnings to mitigate non-linearity in the earnings/returns relation (Cheng, Hopwood, and Mckeown (1992)).

[13]Pownall and Waymire (1989) along with Pownall, Wasley, and Waymire (1993) find mixed evidence with regard to this assumption.

The coefficient b_1 expresses the information content of unexpected earnings, while coefficient b_2 captures the difference in the information content between management forecasts in non-normal periods and in normal periods. Calculation of unexpected earnings for management forecasts is as previously defined.

Pair matching of the same firm is conducted. This method permits the direct evaluation of the information content of the unexpected earnings associated with management forecasts in normal versus non-normal operating periods. Previously defined event periods are used in the test of this hypothesis. Event day 0 is defined as the date of disclosure identified by the DJNRS. The intent of this test is to examine whether the market interprets the voluntary forecast during non-normal operating periods as containing incremental information content relative to normal operating periods. If the forecast does contain incremental information content, the expectation is that $b_2 > 0$; if no incremental information content is present, the expectation is that $b_2 \leq 0$.

CHAPTER 5

EMPIRICAL RESULTS

This chapter presents the analyses of tests of the hypotheses and discussion of empirical results. First, a discussion of the sample is presented. Second, empirical test results are described, and finally, conclusions are discussed.

Sample

The sample for this dissertation is summarized in Table 5.1. A sample of 5,061 annual and quarterly earnings forecasts was obtained from the Dow Jones News Retrieval Service. Lack of Compustat (CRSP) data for part or all of the 1983-1987 test period caused 577 (248) forecasts to be discarded for the full sample. The final sample consists of 4,236 total forecasts. 118 of these forecasts were issued within 90 days after the merger and acquisition announcement, 266 forecasts were issued either within 90 days before or within 90 days after the merger and acquisition announcement. 35 firms issued forecasts in both normal periods and non-normal (i.e., merger and acquisition) periods (90 days after the merger and acquisition announcement criterion), and 55 firms issued forecasts in both

normal and non-normal periods using the 90 days before and after the merger and acquisition announcement sample criterion.[14] Because of the sample criterion placed on the previous two samples that the firm issue a forecast in both a normal and non-normal period, the number of firm forecasts is greatly reduced. This reduction in sample forecasts may lead to results that would tend to be less generalizable and less powerful than they might otherwise be with the availability of a larger sample.

Empirical Test of Hypothesis One

H1: Average management forecast error (actual EPS-management forecast of EPS) equals zero for acquired firms during merger and acquisition activities.

The first hypothesis examines whether management forecasts exhibit bias. Waymire (1986), Hassell and Jennings (1986), and McNichols (1989) do not find evidence of bias in voluntary management disclosures. However, Schipper (1989), Trueman and Titman (1988), and Dye (1988), suggest that there may be incentives to manage earnings in a biased manner.

The model used to assess the presence of forecast bias is similar to

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[14]Twelve sample firms where identified in this study where the merger/acquisition was not completed. When the following tests were conducted including these firms, no significant differences were realized. These firms, therefore, were included in the following tests and results.

that used by McNichols (1989). Forecast error of each firm under study is determined by the actual eps minus the management forecast of eps, and deflated by the firm's stock price 180 days prior to forecast. Tests of hypothesis one are conducted on two samples; one sample consists of a total of 118 acquired firms in which the management forecast was made within a window extending to 90 days after the merger and acquisition announcement. The second sample consists of 266 acquired firms in which the management forecast was made within a window 90 days before to 90 days after the merger or acquisition announcement. If the same degree of earnings management occurs in both the forecast and actual earnings numbers, no forecast error should exist. If greater upwards earnings management of the forecast occurs (or less actual earnings management), a negative forecast error should exist. If greater downwards earnings management of the forecast occurs (or less actual earnings management), a positive forecast error should exist.[15]

Table 5.2 contains the results of the tests of hypothesis one for the sample of 118 acquired firms making forecasts during the 90 days after the merger and acquisition announcement sample. Table 5.2 shows that the mean forecast error of -.14 is statistically different from zero at the .10

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[15]Analysis of the Wall Street Journal indicated that there existed one firm contained in these samples that was described as a "hostile" takeover. An analysis excluding this firm was conducted and results were not significantly different versus including the firm in the analysis.

level based on a t-statistic of -1.85. This means that management forecasts reflect a greater positive earnings than actual earnings during non-normal operating periods, thus indicating the presence of positive forecasting bias during non-normal periods. Using the distribution-free sign rank test, significance is observed at the .01 level. The t-test statistic contains magnitude effects, while the ranks test statistic eliminates the magnitude effects. Because of the spread in the magnitude variation among firms, some difference is seen in the degree of significance in comparing these two tests. The results of these statistical tests are consistent with the notion of greater upwards earnings management of the forecast relative to the actual earnings. Therefore, for the sample of acquired firms making forecasts during the 90 days after the merger and acquisition announcement sample, the results lead to rejection of hypothesis one that average management forecast error equals zero.

Table 5.3 contains the results of tests of hypothesis one for the sample of 266 acquired firms making forecasts during the window 90 days before to 90 days after the merger and acquisition announcement sample. Table 5.3 shows the mean forecast error of -.21 is significantly different from zero at the .05 level. As in the case of the first sample, positive forecast bias is noted during non-normal operating periods. Using the distribution-free sign rank test, significance is observed at the .01 level. The result is once again consistent with the notion of greater upwards

earnings management of the forecast relative to the actual earnings. Therefore, for the acquired firms making forecasts during the window 90 days before to 90 days after the merger and acquisition announcement sample, the results lead to rejection of hypothesis one that average management forecast error equals zero.

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Empirical Test of Hypothesis Two

H2: The average forecast error for acquired firms during merger and acquisition activities equals the average forecast error for the same firms during normal operating activities.

Hypothesis two examines whether the introduction of a firm-specific control has a bearing on the average forecast error. This test is developed by comparing forecasts of the same firms in both a normal and non-normal operating period. This allows for a test of the relative forecast error in the two different operating periods. If firms display the same degree of earnings management in normal versus non-normal periods, the expectation is that no forecast error will exist. If, however, there exist greater incentives to manage earnings (either upward or downward) during non-normal periods relative to normal periods, as suggested by current literature, then a greater positive or negative forecast error would result. A model similar to that used in hypothesis one is employed. Forecast error is determined as previously defined in hypothesis one. Tests are conducted on

the average forecast error for acquired firms during merger and acquisition activities minus average forecast error for the same acquired firms during normal operating activities. As in hypothesis one, two samples are utilized; one group represents those acquired firms issuing a forecast within 90 days after the merger and acquisition announcement, and the other group represents those acquired firms issuing a forecast within 90 days before or within 90 days after the merger and acquisition announcement.[16]

Because results associated with the tests of this hypothesis may be influenced by a change in accounting principles that a firm undergoes between issuing a forecast in normal operating periods versus issuing a forecast in non-normal operating periods, a search for any such changes was made of all firms in both of these samples. No firms were found to have undergone any changes in accounting principles between the forecast periods.

Year effects may also play a role in any results of the tests of this hypothesis. For instance, if the normal/non-normal distinction is not found to be independent of the year of forecast, then additional steps need to be taken to control for any earnings uncertainty differences across years that may be distorting results.

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[16]As noted in footnote 5, tests of H2 discard firms with missing earnings data. However, all sample firms contained earnings data necessary for tests of this hypothesis, therefore, it was not necessary to discard any firms from tests of H2.

Table 5.4 provides the results of a chi-square test of the independence of the normal/non-normal partition and year of forecast for each of the samples used in the tests of this hypothesis. For the sample of firms issuing a forecast during normal operations and within 90 days after a merger and acquisition announcement a chi-square coefficient of 7.95 is obtained. For the sample of firms issuing a forecast during normal operations and within 90 days before or within 90 days after a merger and acquisition announcement a chi-square coefficient of 8.03 is obtained. With a critical value of 6.63, each of these samples is significant at the .01 level, rejecting the notion that the normal/non-normal distinction is independent of forecast years. A regression analysis is therefore used to control for year effects as a result of this finding. This process is described below.

Before attempting to control for potential bias results by analyzing year effects, I first conduct tests for the presence of bias in the sample firms. Table 5.5 provides results for the sample of firms issuing a forecast during both a normal operating period and within 90 days after a merger and acquisition announcement. Panel A of this table shows a mean forecast error derived from the average differences between normal/non-normal operating periods of -.09 that is significantly different from zero at the .03 level based on a t-statistic of -1.98. Using the distribution-free sign rank test, significance is observed at the .01 level. This result suggests rejection of the hypothesis that the average forecast errors during these two periods

are the same.

However, it was earlier stated that the test of this hypothesis reduces to a test of H1 if forecast error in management forecasts released during normal operating periods is zero on average. For this reason, Panels B and C break the analysis of this sample down by forecasts issued in non-normal and normal operating periods, respectively. Panel B contains the results for forecasts issued during the non-normal operating period for this sample. This panel shows a mean forecast error of -.07 that is significantly different from zero at the .01 level based on a t-statistic of -2.33. The sign rank test also indicates significance at a .01 level. Panel C contains the results for forecasts issued during the normal operating period for this sample. This panel shows a mean forecast error of .02 that is not significantly different from zero based on a t-statistic of .48. The sign rank test is also not significant at conventional levels. These results indicate that average forecast error during normal operating periods is not significantly different from zero, therefore, the test of H2 reduces to a test of H1 for this sample. The implication of this test is that during periods of normal operating periods there is, on average, no bias indicated in the forecast error of study firms. During non-normal operating periods, however, there appears to be positive bias in the forecast of earnings relative to the actual earnings.

Table 5.6 provides a similar analysis as the previous table for the

sample of firms issuing a forecast during normal operating periods and within 90 days before or 90 days after a merger and acquisition announcement. Panel A , which represents the difference between forecasts in normal versus non-normal operating periods, indicates a mean forecast error of -.07 that is significantly different from zero at the .01 level, based on a t-statistic of -2.41. The sign rank test indicates significance at the .01 level. Panel B, which represents the forecast error of disclosures issued in non-normal operating periods, shows a mean forecast error of -.04 that is significantly different from zero at the .01 level, based on a t-statistic of -2.32. The sign rank test indicates significance at the .01 level. Panel C, which represents the forecast error of disclosures issued in normal operating periods, shows a mean forecast error of .03 that is not significantly different from zero, based on a t-statistic of .57. The sign rank test is also not significant at conventional levels. These results indicate that average forecast error during normal operating periods is not significantly different from zero, therefore, as in the case of the first sample, the test of H2 reduces to a test of H1 for this sample as well.

Tables 5.7 and 5.8 represent tests that control for the impact that year effects may have on bias found in the preceding tests. The following model is used in performing these tests:

$$fe_{it} = a + b_1 D1 + b_2 Y84 + b_3 Y85 + b_4 Y86 + b_5 Y87 + e_{it}$$

Where: fe_{it} = forecast error for forecast i, time t

a = intercept term
D1 = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
Y84-Y87 = Year effect impact on years 1984-1987
e_{it} = error term for firm i, time t

The null in the above model is that $b_1 = 0$.

Table 5.7 reports results for the sample of firms issuing forecasts during normal operating periods and within 90 days after the merger and acquisition announcement. The table shows a b_1 coefficient of -.05 that is significantly different from zero at the .02 level, based on a t-statistic of -2.22, thereby causing rejection of the null for this sample. This indicates that the forecast error for non-normal firms is negative, thereby providing evidence of systematic bias of forecasts during non-normal operating periods. With respect to the coefficients representing year effects, the coefficient representing 1984 is -.12 and is significantly different from zero at the .01 level, based on a t-statistic of -2.38. The coefficient representing 1987 is -.18 and is significantly different from zero at the .05 level, based on a t-statistic of -1.95. The remaining coefficients representing years 1985, and 1986 have values of -.05 and -.02, respectively, and are not significantly different from zero at conventional levels based on respective t-statistics of -.38 and -.12.

Table 5.8 reports results for the sample of firms issuing forecasts during normal operating periods and within 90 days before or 90 days after

a merger and acquisition announcement. The table indicates a b_1 coefficient of -.06 that is significantly different from zero at the .01 level, based on a t-statistic of -2.34, causing rejection of the null for this sample. This indicates that the forecast error for non-normal firms is negative, thereby providing evidence of systematic bias of forecasts during non-normal operating periods. With respect to the coefficients representing year effects, the coefficient representing year 1984 is -.20 and significantly different from zero at the .05 level, based on a t-statistic of -1.94. The coefficient representing 1987 is -.32 and significantly different from zero at the .03 level, based on a t-statistic of -2.20. The remaining coefficients representing years 1985 and 1986 have values of -.06 and -.01, respectively, and are not significantly different from zero at conventional levels based on respective t-statistics of -.42 and -.08.

Tables 5.9 through 5.12 provide supplemental tests of accuracy for firms that forecast in both normal and non-normal operating periods. Prior tests provide direction of potential bias, they do not provide a relative measure of accuracy. These supplemental tests are conducted to assess the accuracy of the forecast by analyzing the absolute value of the forecast error.

Table 5.9 contains the results of the test of accuracy for the 35 acquired firms forecasting in both a normal operating period and a non-normal operating period 90 days after the merger and acquisition

announcement. Table 5.9 indicates a mean forecast error of .13 that is significantly different from zero at the .04 level, based on a t-statistic of 2.02. Using the distribution-free sign rank test, significance is observed at the .01 level. Results from the accuracy test of this sample, therefore, lead to rejection of the hypothesis that non-normal operating period management forecasts are equally as accurate as normal operating period management forecasts.

Table 5.10 contains the results from the test of accuracy for the 55 acquired firms forecasting in both a normal operating period and a non-normal operating period 90 days before and after the merger and acquisition announcement. Table 5.10 shows a mean forecast error of .08 that is significantly different from zero at the .02 level, based on a t-statistic of 2.28. Using the distribution-free sign rank test, significance is observed at the .01 level. Results from the accuracy test of this sample, therefore, lead to rejection of the hypothesis that non-normal operating period management forecasts are equally as accurate as normal operating period management forecasts.

Table 5.11 contains the results from the test of accuracy, controlling for year effects, for the 35 pair matched firms making forecasts 90 days after the merger and acquisition announcement. Table 5.11 indicates a b_1 coefficient value of .06 that is significantly different from zero at the .03 level, based on a t-statistic of 2.08. This causes rejection of the

null of $b_1 = 0$ and indicates that the forecast accuracy systematically differs during normal versus non-normal operating periods.

Table 5.12 contains the results from the test of accuracy, controlling for year effects, for the 55 pair matched firms making forecasts 90 days before to 90 days after the merger and acquisition announcement. Table 5.12 indicates a b_1 coefficient value of .05 that is significantly different at the .01 level, based on a t-statistic of 2.51. This causes rejection of the null $b_1 = 0$ and indicates that forecast accuracy systematically differs during normal versus non-normal operating periods.

The implication of these tests is that not only are forecasts positively biased, but they exhibit greater variance around earnings as well. As a result, bias tests understate the management of earnings in the earnings forecast.

Empirical Test of Hypothesis Three

H3: The information content of management forecasts during merger and acquisition activities is equal to the information content of management forecasts during normal operating activities.

Hypothesis three tests information content of management forecasts during non-normal operating periods relative to the information content of management forecasts during normal operating periods.

Investors may react to managed earnings in one of two ways; they may discount the additional information as noise, or they may view the information as enhancing the properties of the signal which the manager is communicating to the investor.

To test this hypothesis, CARs for the period (-1, +1) surrounding the forecast disclosure are regressed against several variables listed in Tables 5.13 through 5.16. Table 5.13 reports the results of using the sample of 118 acquired firms' forecasts issued within 90 days after the merger and acquisition announcement. Table 5.14 provides distributional characteristics of the variables included in table 5.13. Table 5.15 reports the results of using the sample of 266 acquired firms' forecasts issued within 90 days before or 90 days after the merger and acquisition announcement. Table 5.16 provides distributional characteristics of the variables included in table 5.15.

For Tables 5.13 and 5.15, the various coefficients are described. The first is the coefficient for the intercept term. The second is the coefficient (b_1) for the ERC variable for all normal operating period forecasts. The third is the coefficient (b_2) for the dummy variable taking a value of 0 for normal operating periods and 1 for non-normal operating periods. This variable represents the incremental ERC for non-normal operating periods. If earnings management during non-normal operating periods is discounted by investors as noise, this would be indicated by $b_2 < 0$. If earnings

management during non-normal operating periods possess information-enhancing content to the investor, this would be indicated by $b_2>0$. The fourth is the coefficient (b_3) for the market to book value of equity variable as a proxy for growth and persistence. The fifth is the coefficient (b_4) for the market model slope coefficient as a proxy for the firm's systematic risk. The sixth is the coefficient (b_5) for the market value of equity variable as a proxy for firm size. The seventh is the coefficient (b_6) for the time horizon of the forecast variable indicated by quarter in the year.[17]

Table 5.13 reports statistics for each of the variables from the first sample. Coefficient b_1 (ERC for normal operating period forecasts) has a value of .11 that is significantly different from zero at the .04 level, based on a t-statistic of 2.10. Coefficient b_2 (incremental ERC for non-normal operating period forecasts) has a value of .04 that is significantly different from zero at the .05 level, based on a t-statistic of 1.96.

The coefficient b_3 (proxy for growth and persistence) has a value of .12, which is not significantly different from zero at conventional levels, based on a t-statistic of .11. Teoh and Wong (1993) also use market to book values for a proxy of growth and persistence. Their results show a parameter coefficient of .14, which is also not significantly different from

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[17]Market adjusted returns were also utilized in tests for information content. Results using market adjusted returns yielded qualitatively similar results as those results reported in the following tables.

zero. Their mean and median market to book ratios are 2.086 and 1.583 respectively. These compare with mean and median values indicated on Table 5.14 of my study of 1.327 and 1.408 respectively. Teoh and Wong also study large firms and concede results may be biased if there are other determinants of ERC not fully captured that may vary systematically.

The coefficient b_4 (proxy for systematic risk) has a value of -.05, which also is not significantly different from zero at conventional levels, based on a t-statistic of -.31. Easton and Zmijewski (1989) also use the market model slope coefficient as a proxy for systematic risk. Their findings indicate beta coefficients ranging from -.01 to -.20 (due to multiple samples used in their study), but the relation between risk and ERC is not significant. Average mean and median values of their study are .711 and .704 respectively. These values compare with mean and median values indicated on Table 5.14 of my study of .827 and .929 respectively. Easton and Zmijewski contend that since their sample consists primarily of large firms, this biases the results because large firms typically are less risky.

Coefficient b_5 (proxy for firm size) has a value of .01, which is not significantly different from zero at conventional levels, based on a t-statistic of .22. Easton and Zmijewski (1989) also use market value of equity to proxy for firm size. They state that although stock returns have been shown in past studies to be negatively correlated with firm size, firm size may also be associated with other economic characteristics of the firm not

strictly interpretable as controlling for measurement error. Their study shows a positive correlation of .04 between ERC and firm size which is not significantly different from zero.

The coefficient b_6 (horizon of forecast) has a value of .02 which is not significantly different from zero at conventional levels, based on a t-statistic of .50. Pownall and Waymire (1989) find horizon to be significantly related to the ERC, however, what seems to drive their finding is the fact that 40% of the forecasts in their study are contained in the last quarter. An analysis of Table 5.14 of my study indicates that forecasts used in my study are spread more evenly throughout the year, thereby mitigating the influence of horizon on the ERC.

The findings revealed in Table 5.13 suggest that there is a difference in the information content of management forecasts during normal versus non-normal operating periods and that forecasts made during non-normal operating periods contain positive stock price effects. These results indicate that investors do not discount the importance of forecasts made during mergers and acquisitions.

Table 5.15 reports statistics for each of the variables from the second sample. Coefficient b_1 (ERC for normal operating period forecasts) has a value of .12 that is significantly different from zero at the .01 level, based on a t-statistic of 2.43. Coefficient b_2 (incremental ERC for non-normal operating period forecasts) has a value of .10 that is significantly

different from zero at the .03 level, based on a t-statistic of 2.10.

The coefficient b_3 (proxy for growth and persistence) has a value of .08, the coefficient b_4 (proxy for systematic risk) has a value of -.03, the coefficient b_5 (proxy for firm size) has a value of .01, and the coefficient b_6 (horizon of forecast) has a value of .02. None of these coefficients are significantly different from zero at conventional levels. As in the first sample, results of previous studies are used as a basis for explaining the reason for the non-significance of these additional variables in the model. Table 5.16 lists the distributional characteristics for these variables. Variable means and medians are similar to those found in the prior sample. The findings revealed in Table 5.15 for this sample are similar to those found for the first sample in Table 5.13.

Tables 5.17 through 5.20 provide results of a sensitivity analysis using market and book values at period t-1 for the two respective samples. Tables 5.17 and 5.19 report statistics associated with the two respective samples. Tables 5.18 and 5.20 report distributional characteristics of the variables that change over the prior test (i.e. coefficients b_3 and b_5).

Table 5.17 reports statistics for each of the variables from the first sample. Coefficient b_1 (ERC for normal operating period forecasts) has a value of .11 and significantly different from zero at the .04 level, based on a t-statistic of 2.07. Coefficient b_2 (incremental ERC for non-normal operating period forecasts) has a value of .04 and significantly different from zero at

the .05 level, based on a t-statistic of 1.96.

The coefficient b_3 (proxy for growth and persistence) has a value of .12, the coefficient b_4 (proxy for systematic risk) has a value of -05, the coefficient b_5 (proxy for firm size) has a value of .01, and the coefficient b_6 (horizon of forecast) has a value of .02. As in prior tests, none of these coefficients are significant at conventional levels. Distributional characteristics of this sample (Table 5.18), indicate values that are very similar to those found in the initial sample of these firms at time t (Table 5.14). The findings revealed in Table 5.17 suggest that results do not change when market and book values are lagged a year.

Table 5.19 reports statistics for each of the variables from the second sample. Coefficient b_1 (ERC for normal operating period forecasts) has a value of .12 and significantly different at the .02 level, based on a t-statistic of 2.33. Coefficient b_2 (incremental ERC for non-normal operating period forecasts) has a value of .10 and significantly different at the .04 level, based on a t-statistic of 2.10.

The coefficient b_3 (proxy for growth and persistence) has a value of .08, the coefficient b_4 (proxy for systematic risk) has a value of -.03, the coefficient b_5 (proxy for firm size) has a value of .01, and the coefficient b_6 (horizon of forecast) has a value of .02. As in prior tests, none of these coefficients are significant at conventional levels. Distributional characteristics of this sample (Table 5.20), indicate values that are very

similar to those found in the initial sample of these firms in time t (Table 5.16). Again, findings revealed in Table 5.19 suggest that results do not change when market and book values are lagged a year.

Tables 5.21 through 5.24 provide results of a sensitivity analysis using the consensus analyst following expectation (EX_i) as a deflator instead of stock price (P_i) for the two respective samples. Tables 5.21 and 5.23 provide statistics associated with the two respective samples. Tables 5.22 and 5.24 report distributional characteristics associated with unexpected earnings using price versus consensus analyst forecasts as deflators. The results do not change when consensus analyst forecasts are used to deflate earnings instead of price.

Alternative Test of Hypothesis Three

Hypothesis three utilizes control variables in the regression to account for expected differences in ERC. It is possible to avoid using control variables if observations are pair matched. Under this scenario, a comparison is made of the management forecast during non-normal operating periods versus the management forecast of the same firm during normal operating periods. The purpose of this test is to see if a difference in incremental information content exists between the two.

To test this hypothesis, CARs for the period (-1, +1) surrounding the management forecast disclosure identified by the DJNRS, are regressed

against the variables listed in tables 5.25 and 5.27.

Table 5.25 reports the results of using the sample of 35 acquired firms' forecasts within 90 days after the merger and acquisition announcement. Table 5.27 reports the results of using the sample of 55 acquired firms' forecasts within 90 days before or 90 days after the merger and acquisition announcement. Tables 5.26 and 5.28 report distributional characteristics for the unexpected earnings variables.

The intent of the tests indicated in tables 5.25 and 5.27 is to show if the market interprets the voluntary forecast during non-normal operating periods as containing information content. If it does, the expectation is that $b_2 > 0$; if no incremental information content is present, the expectation is that $b_2 \leq 0$. It should again be noted that UE is the difference between the management forecast and the IBES expectation, deflated by price 180 days prior to the forecast.

Table 5.25 reports statistics for each variable from the first sample. Coefficient b_1 (normal operating period forecasts), has a value of .09 and is significantly different from zero at the .04 level, based on a t-statistic of 1.98. Coefficient b_2 (non-normal operating period forecasts) has a value of .11 and is significantly different from zero at the .01 level, based on a t-statistic of 2.36. These results indicate that incremental information content is present in forecasts made during non-normal operating periods relative to forecasts made in normal operating periods. In other words,

investors do not discount the importance of earnings forecasts made during non-normal operating periods, but perceive these forecasts as having information content.

Table 5.27 reports statistics for each variable from the second sample. Coefficient b_1 (normal operating period forecasts), has a value of .15 and is significantly different from zero at the .02 level, based on a t-statistic of 2.14. Coefficient b_2 (non-normal operating period forecasts) has a value of .19 and is significantly different from zero at the .01 level, based on a t-statistic of 2.38. Again, results indicate that incremental information content is present in forecasts made during non-normal operating periods relative to forecasts made in normal operating periods, and that investors perceive these forecasts as having information content. These results support the findings of Pownall and Waymire (1989) who find that management forecasts are associated with larger magnitude stock price effects than actual earnings. Results, however, are contrary to the findings of Pownall, Wasley, and Waymire (1993) who find that forecasts are less informative than actual earnings.

Tables 5.29 and 5.30 provide results of a sensitivity analysis using ranked unexpected earnings. Cheng, Hopwood, and McKeown (1992) find that the use of ranked unexpected earnings may be useful to mitigate non-linearity in the earnings/returns relation. This methodology is employed in my study.

Table 5.29 reports statistics for each variable from the first sample. Coefficient b_1 (normal operating period forecasts), has a value of .0003 and is significantly different from zero at the .02 level, based on a t-statistic of 2.22. Coefficient b_2 (non-normal operating period forecasts) has a value of .0004 and is significantly different from zero at the .01 level, based on a t-statistic of 2.48. These results indicate that incremental information content is present in forecasts made during non-normal operating periods relative to forecasts made in normal periods when ranked unexpected earnings are utilized in the model.

Table 5.30 reports statistics for each variable from the second sample. Coefficient b_1 (normal operating period forecasts), has a value of .0002 and is significantly different from zero at the .03 level, based on a t-statistic of 1.96. Coefficient b_2 (non-normal operating period forecasts) has a value of .0003 and is significantly different from zero at the .01 level, based on a t-statistic of 2.38. Again, results are similar to those of the first sample.

Table 5.1
Sample Selection
Sample Years 1983-1987

	Number of Total Forecasts
Original Sample	5,061
Forecasts removed due to insufficient Compustat data	<577>
Forecasts removed due to insufficient CRSP data	<248>
Final overall sample	4,236
Number of Forecasts 90 Days After Merger Announcement	118
Number of Forecasts 90 Days Before/After Merger Announcement	266
Number of Common Normal/Non-normal Forecasts 90 Days after Merger Announcement	35
Number of Common Normal/Non-normal Forecasts 90 Days Before/After Merger Announcement	55

Table 5.2

Test of Hypothesis One - Management Forecasts Made Within 90 Days After Merger Announcement

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Table entry is average management forecast error deflated by the firm's stock price 180 days prior to forecast

Model: $$\sum \frac{fe_i}{n} = 0$$

---

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
118	-.14 (-1.85)[a]	-.01[b]	-.004	.301	.0029

[a] Significant at the .10 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

fe_i = forecast error of firm i (actual eps - management forecast eps).
n = number of 118 forecasts for acquired firms from Mergerstat data file for the period 1983-1987.

Table 5.3

Test of Hypothesis One - Management Forecasts Made Within 90 Days Before/After Merger Announcement

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Table entry is average management forecast error deflated by the firm's stock price 180 days prior to forecast

Model: $$\sum \frac{fe_i}{n} = 0$$

---

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
266	-.21 (-2.26)[a]	-.01[b]	-.002	.247	.0019

[a] Significant at the .05 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

fe_i = forecast error of firm i (actual eps - management forecast eps).
n = number of 266 forecasts for acquired firms from Mergerstat data file for the period 1983-1987.

Table 5.4

Chi-Square Analysis of Frequency Distribution of Forecasts

	Forecasts 90 Days After Merger Announcement		Forecasts 90 Days Before/After Merger Announcement	
Year	Nonnormal Forecasts	Pair-matched Normal Forecasts	Nonnormal Forecasts	Pair-matched Normal Forecasts
1983	6	4	9	10
1984	6	9	11	13
1985	8	7	12	9
1986	7	8	11	12
1987	8	7	12	11
Total	35	35	55	55
X^2	7.95[a]		8.03[a]	

[a] Significant at .01 level with a critical value of 6.63

Table 5.5

Test of Hypothesis Two - Management Forecasts Made Within 90 Days After Merger Announcement -- deflated by firm's stock price 180 days prior to the forecast

A.Table entry is average management forecast error difference between normal and nonnormal forecasts deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \left[\frac{fe_{innormal} - fe_{inormal}}{n} \right] = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
35	-.09 (-1.98)[a]	-.01[b]	-.005	.327	.0014

[a] Significant at the .03 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

B.Table entry is average management forecast error for nonnormal firms deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \frac{fe_{innormal}}{n} = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
35	-.07 (-2.33)[a]	-.01[b]	-.003	.315	.0009

[a] Significant at the .01 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

C.Table entry is average management forecast error for normal firms deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \frac{fe_{inormal}}{n} = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
35	.02 (.48)	.03	-.004	.257	.0014

fe = forecast error of firm i (actual eps - management forecast eps).
n = number of forecasts common to nonnormal and normal periods.

Table 5.6

Test of Hypothesis Two - Management Forecasts Made
Within 90 Days Before/After Merger Announcement
deflated by firm's stock price 180 days prior to the forecast

A. Table entry is average management forecast error difference between normal and nonnormal forecasts deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \left[\frac{fe_{innormal} - fe_{inormal}}{n} \right] = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
55	-.07 (-2.41)[a]	-.01[b]	-.005	.349	.0010

[a] Significant at the .01 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

B. Table entry is average management forecast error for nonnormal firms deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \frac{fe_{innormal}}{n} = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
55	-.04 (-2.32)[a]	-.01[b]	-.002	.288	.0015

[a] Significant at the .01 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

C. Table entry is average management forecast error for normal firms deflated by firms stock price 180 days prior to forecast.

Model: $$\sum \frac{fe_{inormal}}{n} = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
55	.03 (.57)	.02	-.002	.322	.0019

fe = forecast error of firm i (actual eps - management forecast eps).
n = number of forecasts common to nonnormal and normal periods.

Table 5.7

Test of Hypothesis Two -- Management Forecasts Made Within 90 Days After Merger Announcement Controlling for Year Effect

Model: $fe_{it} = a + b_1 D1 + b_2 Y84 + b_3 Y85 + b_4 Y86 + b_5 Y87 + e_{it}$

Coefficients (t-statistics)

n	a	b_1	b_2	b_3	b_4	b_5
70	-.04	-.05	-.12	-.05	-.02	-.18
	(-.47)	(-2.22)[a]	(-2.38)[b]	(-.38)	(-.12)	(-1.95)[c]

[a] Significant at the .02 level (two-sided test)
[b] Significant at the .01 level (two-sided test)
[c] Significant at the .05 level (two-sided test)

Where:
- fe_{it} = forecast error for forecast i, time t
- a = intercept term
- D1 = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
- Y84-Y87 = Year effect impact on years 1984-1987, relative to 1983
- e_{it} = error term for firm i, time t
- n = number of nonnormal and pair-matched normal forecasts

Table 5.8

Test of Hypothesis Two -- Management Forecasts Made Within 90 Days Before/After Merger Announcement Controlling for Year Effect

Model: $fe_{it} = a + b_1D1 + b_2Y84 + b_3Y85 + b_4Y86 + b_5Y87 + e_{it}$

Coefficients (t-statistics)

n	a	b_1	b_2	b_3	b_4	b_5
110	-.02	-.06	-.20	-.06	-.01	-.32
	(-.29)	(-2.34)[a]	(-1.94)[b]	(-.42)	(-.08)	(-2.20)[c]

[a] Significant at the .01 level (two-sided test)
[b] Significant at the .05 level (two-sided test)
[c] Significant at the .03 level (two-sided test)

Where:
- fe_{it} = forecast error for forecast i, time t
- a = intercept term
- D1 = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
- Y84-Y87 = Year effect impact on years 1984-1987, relative to 1983
- e_{it} = error term for firm i, time t
- n = number of nonnormal and normal pair-matched forecasts

Table 5.9

Test of Hypothesis Two - Management Forecasts Made Within 90 Days
After Merger Announcement deflated by firm's stock price
180 days prior to forecast
Absolute Value of Forecast Error

Table entry is average management forecast error difference
between normal and nonnormal forecasts

Model: $\sum [\frac{|fe_{innormal}| - |fe_{inormal}|}{n}] = 0$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
70	.13 (2.02)[a]	.01[b]	.001	.279	.0021

[a] Significant at the .04 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

fe = forecast error of firm i (actual eps - management forecast eps).
n = number of forecasts common to nonnormal and normal periods.

Table 5.10

Test of Hypothesis Two - Management Forecasts Made Within 90 Days Before/After Merger Announcement deflated by firm's stock price 180 days prior to forecast
Absolute Value of Forecast Error

Table entry is average management forecast error difference between normal and nonnormal forecasts

Model: $$\sum \left[\frac{|fe_{innormal}| - |fe_{inormal}|}{n} \right] = 0$$

n	Mean (t-statistic)	Median	Minimum	Maximum	Standard Deviation
110	.08 (2.28)[a]	.01[b]	.004	.385	.0017

[a] Significant at the .02 level (two-sided test).
[b] Significant at the .01 level using the non-parametric sign rank test.

fe = forecast error of firm i (actual eps - management forecast eps).
n = number of forecasts common to nonnormal and normal periods.

Table 5.11

Test of Hypothesis Two -- Management Forecasts Made
Within 90 Days After Merger Announcement
Controlling for Year Effect
Absolute Value of Forecast Error

Model: $|fe_{it}| = a + b_1D1 + b_2Y84 + b_3Y85 + b_4Y86 + b_5Y87 + e_{it}$

Coefficients (t-statistics)

n	a	b_1	b_2	b_3	b_4	b_5
70	.03	.06	.17	.09	.04	.22
	(.49)	(2.08)[a]	(2.48)[b]	(.52)	(.28)	(1.86)[c]

[a] Significant at the .03 level (two-sided test)
[b] Significant at the .01 level (two-sided test)
[c] Significant at the .05 level (two-sided test)

Where:
- fe_{it} = forecast error for forecast i, time t
- a = intercept term
- D1 = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
- Y84-Y87 = Year effect impact on years 1984-1987
- e_{it} = error term for firm i, time t
- n = number of nonnormal and pair-matched normal forecasts

Table 5.12

Test of Hypothesis Two -- Management Forecasts Made
Within 90 Days Before/After Merger Announcement
Controlling for Year Effect
Absolute Value of Forecast Error

Model: $|fe_{it}| = a + b_1D1 + b_2Y84 + b_3Y85 + b_4Y86 + b_5Y87 + e_{it}$

Coefficients (t-statistics)

n	a	b_1	b_2	b_3	b_4	b_5
110	.04	.05	.18	.09	.02	.15
	(.67)	(2.51)[a]	(1.96)[b]	(.36)	(.11)	(2.20)[c]

[a] Significant at the .01 level (two-sided test)
[b] Significant at the .05 level (two-sided test)
[c] Significant at the .03 level (two-sided test)

Where:
- fe_{it} = forecast error for forecast i, time t
- a = intercept term
- D1 = Dummy variable taking a value of 0 for normal operations and 1 for non-normal operations
- Y84-Y87 = Year effect impact on years 1984-1987
- e_{it} = error term for firm i, time t
- n = number of nonnormal and normal pair-matched forecasts

Table 5.13

Test of Hypothesis Three - Information Content of Management Forecasts During Normal/Non-Normal Operating Periods Within 90 Days After Merger Announcement

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

	Coefficients (t-statistics)							
n	a	b_1	b_2	b_3	b_4	b_5	b_6	AdjR^2
118	.09	.11	.04	.12	-.05	.01	.02	.014
	(.91)	(2.10)[a]	(1.96)[b]	(.11)	(-.31)	(.22)	(.50)	

[a] Significant at the .04 level (two-sided test).
[b] Significant at the .05 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = number of acquired firms' forecasts 90 days after merger announcement

Table 5.14

Distributional Characteristics for Table 5.13 Variables
n = 118

Variable	Minimum	Maximum	Mean	Median
Unexpected Forecast EPS for Normal Operating Periods	-.151	3.282	1.829	1.997
Unexpected Forecast EPS for Non-Normal Operating Periods	-.218	2.534	1.404	1.822
Market to Book Value of Equity	1.018	1.875	1.327	1.408
Market Model Slope Coefficient	.760	1.576	.827	.929
Market Value of Equity (000's)	404,819	1,027,828	726,892	709,458
Horizon of Forecast (Categorical Value)	26 (1st qtr.)	30 (2nd qtr.)	27 (3rd qtr.)	35 (4th qtr.)

Table 5.15

Test of Hypothesis Three - Information Content of Management Forecasts During Normal/Non-Normal Operating Periods Within 90 Days Before/After Merger Announcement

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

	Coefficients (t-statistics)							
n	a	b_1	b_2	b_3	b_4	b_5	b_6	AdjR^2
266	.07	.12	.10	.08	-.03	.01	.02	.018
	(.86)	(2.43)[a]	(2.10)[b]	(.11)	(-.31)	(.22)	(.50)	

[a] Significant at the .01 level (two-sided test).
[b] Significant at the .03 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = number of acquired firms' forecasts 90 days before and after merger announcement

Table 5.16

Distributional Characteristics for Table 5.15 Variables
n = 266

Variable	Minimum	Maximum	Mean	Median
Unexpected Forecast EPS for Normal Operating Periods	-.198	3.429	1.756	2.002
Unexpected Forecast EPS for Non-Normal Operating Periods	-.202	2.547	1.710	1.804
Market to Book Value of Equity	1.151	1.749	1.482	1.561
Market Model Slope Coefficient	.582	1.329	.747	.806
Market Value of Equity (000's)	387,492	1,089,769	754,330	708,427
Horizon of Forecast (Categorical Value)	77 (1st qtr.)	62 (2nd qtr.)	58 (3rd qtr.)	69 (4th qtr.)

Table 5.17

Test of Hypothesis Three - Information Content of Management Forecasts During Normal/Non-Normal Operating Periods Within 90 Days After Merger Announcement Utilizing Market and Book Values at Period t-1

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

	Coefficients (t-statistics)							
n	a	b_1	b_2	b_3	b_4	b_5	b_6	$AdjR^2$
118	.09	.11	.04	.12	-.05	.01	.02	.014
	(.91)	(2.07)[a]	(1.96)[b]	(.13)	(-.31)	(.22)	(.51)	

[a] Significant at the .04 level (two-sided test).
[b] Significant at the .05 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = Number of acquired firms' forecasts 90 days after merger announcement

Table 5.18

Distributional Characteristics for Table 5.17 Variables
$n = 118$

Variable	Minimum	Maximum	Mean	Median
Market to Book Value of Equity	1.047	1.692	1.505	1.621
Market Value of Equity (000's)	358,242	1,009,280	717,292	699,451

Only variables which change due to sensitivity analysis reflected in this table.

Table 5.19

Test of Hypothesis Three - Information Content of Management Forecasts During Normal/Non-Normal Operating Periods Within 90 Days Before/After Merger Announcement Utilizing Market and Book Values at Period t-1

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

	Coefficients (t-statistics)							
n	a	b_1	b_2	b_3	b_4	b_5	b_6	AdjR^2
266	.07	.12	.10	.08	-.03	.01	.02	.018
	(.86)	(2.33)[a]	(2.10)[b]	(.19)	(-.31)	(.21)	(.50)	

[a] Significant at the .02 level (two-sided test).
[b] Significant at the .04 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = Number of acquired firms' forecasts 90 days before and after merger announcement

Table 5.20

Distributional Characteristics for Table 5.19 Variables
n = 266

Variable	Minimum	Maximum	Mean	Median
Market to Book Value of Equity	1.072	1.804	1.519	1.527
Market Value of Equity (000's)	359,281	1,082,266	727,288	704,272

Only variables which change due to sensitivity analysis reflected in this table.

Table 5.21

Test of Hypothesis Three - Information Content of Management Forecasts During Normal/Non-Normal Operating Periods Within 90 Days After Merger Announcement Utilizing Consensus Analyst Forecasts Expectation (EX_i) as a Deflator

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

	Coefficients (t-statistics)							
n	a	b_1	b_2	b_3	b_4	b_5	b_6	AdjR^2
118	.09	.11	.04	.12	-.05	.01	.02	.014
	(.91)	(2.10)[a]	(2.02)[b]	(.11)	(-.31)	(.22)	(.50)	

[a] Significant at the .03 level (two-sided test).
[b] Significant at the .04 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = Number of acquired firms' forecasts 90 days after merger announcement

Table 5.22

Distributional Characteristics for Table 5.21 Variables
n = 118

Variable	Minimum	Maximum	Mean	Median
Unexpected EPS Using price as a Deflator	-.145	1.729	.604	.519
Unexpected EPS Using IBES as a Deflator	-.208	1.865	.715	.622

Only variables which change due to sensitivity analysis reflected in this table.

Table 5.23

Test of Hypothesis Three - Information Content of
Management Forecasts During Normal/Non-Normal
Operating Periods Within 90 Days Before/After Merger Announcement
Utilizing Consensus Analyst Forecasts Expectation (EX_i) as a Deflator

Model: $CAR_{it} = a + b_1 UE_{it} + b_2 D1_{it} UE_{it} + b_3 MB_{it} UE_{it} + b_4 B_{it} UE_{it} + b_5 MV_{it} UE_{it} + b_6 H_{it} UE_{it} + e_{it}$

		Coefficients (t-statistics)						
n	a	b_1	b_2	b_3	b_4	b_5	b_6	AdjR^2
266	.07	.12	.10	.08	-.03	.01	.02	.018
	(.86)	(2.33)[a]	(2.42)[b]	(.11)	(-.31)	(.22)	(.50)	

[a] Significant at the .02 level (two-sided test).
[b] Significant at the .01 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return forecast i, time t
a = Intercept term
UE_{it} = Management Forecast-IBES Expectation, price-deflated for forecast i, time t
$D1_{it}$ = Dummy Variable, 0 for normal operations 1 for non-normal operations
MB_{it} = Market to book value of equity as proxy for growth and persistence
B_{it} = Market Model slope coefficient as proxy for firm's systematic risk
MV_{it} = Market Value of equity as a proxy for firm size
H_{it} = Horizon of forecast as days into the year
e_{it} = error term for forecast i, time t
n = Number of acquired firms' forecasts 90 days before and after merger announcement

Table 5.24

Distributional Characteristics for Table 5.23 Variables
n = 266

Variable	Minimum	Maximum	Mean	Median
Unexpected EPS Using price as a Deflator	-.244	2.003	.715	.628
Unexpected EPS Using IBES as a Deflator	-.267	1.895	.566	.612

Only variables which change due to sensitivity analysis reflected in this table.

Table 5.25

Alternative Test of Hypothesis Three - Information Content of Unexpected Earnings During Non-Normal Operating Periods Versus Normal Operating Periods Within 90 Days After Merger Announcement

Model: $CAR_{it} = a + b_1 UE_{itn} + b_2 D1_{itn} UE_{itn} + e_{it}$

	Coefficients (t-statistics)			
n	a	b_1	b_2	$AdjR^2$
70	.14 (.93)	.09 (1.98)[a]	.11 (2.36)[b]	.031

[a] Significant at the .04 level (two-sided test).
[b] Significant at the .01 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return firm *i*, time t
a = Intercept term
UE_{itn} = Difference between management forecast and IBES expectation, price deflated 180 days prior to forecast for firm i, time t
$D1_{itn}$ = Dummy Variable, 0 for unexpected earnings associated with forecast during normal operating periods, 1 for unexpected earnings associated with forecast during non-normal operating periods
e_{it} = error term firm i, time t
n = number of common normal/nonnormal acquired firms' forecasts 90 days after merger announcement

Table 5.26

Distributional Characteristics for Table 5.25 Variables
n=70

Variable	Minimum	Maximum	Mean	Median
Unexpected EPS For Normal Firms	-.238	1.818	.547	.598
Unexpected EPS For Non-Normal Firms	-.229	1.711	.505	.519

UE is the difference between the management forecast and the IBES expectation, price deflated 180 days prior to the forecast.

Table 5.27

Alternative Test of Hypothesis Three - Information Content of Unexpected Earnings During Non-Normal Operating Periods Versus Normal Operating Periods Within 90 Days Before/After Merger Announcement

Model: $CAR_{it} = a + b_1 UE_{itn} + b_2 D1_{itn} UE_{itn} + e_{it}$

n	Coefficients (t-statistics) a	b_1	b_2	$AdjR^2$
110	.08 (.88)	.15 (2.14)[a]	.19 (2.38)[b]	.029

[a] Significant at the .02 level (two-sided test).
[b] Significant at the .01 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return firm i, time t
a = Intercept term
UE_{itn} = Difference between the management forecast and the IBES expectation, price deflated 180 days prior to forecast, for firm i, time t
$D1_{itn}$ = Dummy Variable, 0 for unexpected earnings associated with forecast during normal operating periods, 1 for unexpected earnings associated with forecast during non-normal operating periods
e_{it} = error term firm i, time t
n = number of common normal/nonnormal acquired firms' forecasts 90 days before and after merger announcement

Table 5.28

Distributional Characteristics for Table 5.27
n = 110

Variable	Minimum	Maximum	Mean	Median
Unexpected EPS For Normal Firms	-.218	1.927	.608	.644
Unexpected EPS For Non-Normal Firms	-.199	1.722	.630	.697

UE is the difference between the management forecast and the IBES expectation, price deflated 180 days prior to the forecast.

Table 5.29

Alternative Test of Hypothesis Three - Information Content of Unexpected Earnings During Non-Normal Operating Periods Versus Normal Operating Periods Within 90 Days After Merger Announcement Utilizing Ranked Unexpected Earnings

Model: $CAR_{it} = a + b_1 UE_{itn} + b_2 D1_{itn} UE_{itn} + e_{it}$

	Coefficients (t-statistics)			
n	a	b_1	b_2	$AdjR^2$
70	.1019 (.58)	.0003 (2.22)[a]	.0004 (2.48)[b]	.028

[a] Significant at the .02 level (two-sided test).
[b] Significant at the .01 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return firm i, time t
a = Intercept term
UE_{itn} = Difference between the management forecast and the IBES expectation, price deflated 180 days prior to forecast for firm i, time t
$D1_{itn}$ = Dummy Variable, 0 for unexpected earnings associated with forecast during normal operating periods, 1 for unexpected earnings associated with forecast during non-normal operating periods
e_{it} = error term firm i, time t
n = number of common normal/nonnormal acquired firms' forecasts 90 days after merger announcement

Table 5.30

Alternative Test of Hypothesis Three - Information Content of Unexpected Earnings During Non-Normal Operating Periods Versus Normal Operating Periods Within 90 Days Before/After Merger Announcement Utilizing Ranked Unexpected Earnings

Model: $CAR_{it} = a + b_1 UE_{itn} + b_2 D1_{itn} UE_{itn} + e_{it}$

	Coefficients (t-statistics)			
n	a	b_1	b_2	AdjR^2
110	.1110 (.77)	.0002 (1.96)[a]	.0003 (2.38)[b]	.029

[a] Significant at the .03 level (two-sided test).
[b] Significant at the .01 level (two-sided test).

CAR_{it} = Cumulative Abnormal Return firm i, time t
a = Intercept term
UE_{itn} = Difference between the management forecast and the IBES expectation, price deflated for 180 day prior to forecast for firm i, time t
$D1_{itn}$ = Dummy Variable, 0 for unexpected earnings associated with forecast during normal operating periods, 1 for unexpected earnings associated with forecast during non-normal operating periods
e_{it} = error term firm i, time t
n = number of common normal/nonnormal acquired firms' forecasts 90 days before and after the merger announcement

CHAPTER 6

CONCLUSIONS

This dissertation provides empirical evidence regarding the credibility of management forecasts of acquired firms during corporate mergers and acquisitions. Motivation to examine this issue comes from prior research which shows that management forecasts are unbiased relative to subsequently revealed earnings and that these forecasts tend to contain more bad news than good news [McNichols (1989), Baginski et al. (1994) and Frankel et al. (1995)]. These empirical studies have one common characteristic, they assess voluntary earnings disclosures during normal operating periods, when the incentive structure is generally routine and ongoing. Other studies assess mandatory earnings releases during non-normal operating periods [DeAngelo (1986), DeAngelo (1988), Collins and DeAngelo (1990) and Perry and Williams (1994)]. Findings from these studies indicate that incentives for management of earnings and/or forecasts exist during these non-normal operating periods. In effect, bias may be present. With respect, therefore, to mandatory earnings releases, the above streams of literature illustrate that managers possess a different incentive structure during periods of normal and non-normal operations. Credibility,

therefore, is an issue during these non-normal operating periods. This background serves as a basis for studying potential differences in voluntary disclosures during normal operating periods and mergers and acquisitions periods. Attention is focused on acquired firms during mergers and acquisitions because prior research finds that acquired firms receive substantial premiums during and after merger and acquisition activities and therefore are prime candidates for analysis [Asquith (1983), Jensen and Ruback (1983), Bradley (1980), Malatesta (1983) and Asquith, Brunner and Mullins (1990)].

The first hypothesis focuses on the bias of management forecasts. This hypothesis predicts that average management forecast error equals zero for acquired firms during merger and acquisition activities. The results found in this dissertation show that a significantly negative forecast error is prevalent for all samples used in the tests of this hypothesis, thereby resulting in rejection of the hypothesis. This finding of a negative forecast error suggests that managers exert greater upwards earnings management on the forecast during mergers and acquisitions, and therefore, forecasts during these non-normal operating periods tend to be positively biased.

The second hypothesis also focuses on the bias of management forecasts, but introduces a firm-specific control by permitting a test of the relative forecast error of the forecast for the same firm in normal versus merger and acquisition periods. If firms display the same degree of earnings

management in both of these periods, the expectation is that no forecast error would exist. Although my findings suggest rejection of hypothesis two, when the analysis is broken down to compare these same firms in separate normal operating periods and merger and acquisition periods, I find that average forecast error during normal operating periods is equal to zero, thereby reducing the test of H2 to a test of H1. This means that since there are no significant differences in the average forecasts during normal operating periods, analysis emphasis shifts to the merger and acquisition periods, and thus we revert back to H1. I also conduct independence tests on the sample for the study period and reject the notion that the normal/merger and acquisition distinction is independent of forecast years. As a result, I introduce a regression test to control for year effects. Analysis of regression results provide evidence of systematic bias of forecasts during mergers and acquisitions regardless of the existence of non-independence in forecast years.

Accounting literature finds that voluntary earnings releases contain information content [Patell (1976), Waymire (1984), Pownall and Waymire (1989) and McNichols (1989)]. If mandatory disclosures of earnings contain some degree of earnings management, as Schipper (1989) posits, then voluntary disclosures may possess the potential for such earnings management as well. Investors may discount such disclosures as additional noise, or they may view the forecast as informative. Hypothesis three

assesses the relative information content of management earnings forecasts during normal versus merger and acquisition periods. The prediction is that the information content of management forecasts during merger and acquisition activities is equal to the information content of management forecasts during normal operating periods. Findings suggest a rejection of this hypothesis. The results suggest that management forecasts during mergers and acquisitions possess incremental information content relative to normal operating periods. When sensitivity analyses are introduced for such things as lagging the market and book values to a t-1 period, using consensus analysts forecasts as a deflator instead of price, and using market adjusted returns, results do not change.

As an alternative test of hypothesis three, sample observations are pair matched along a normal/merger and acquisition dimension. In this manner, it is possible to compare the information content of the management forecast during mergers and acquisitions to management forecast of the same firms during normal operating periods. The expectation is that the coefficient associated with the variable measuring the incremental information content of the forecast during merger and acquisition activities will be greater than zero if information content is present, and less than zero otherwise. The results show that the coefficient is significantly greater than zero, thereby suggesting the presence of information content in management forecasts during merger and acquisition

activities relative to the management forecast of the same firms during normal operating periods. When sensitivity analysis is conducted utilizing ranked unexpected earnings, results do not change. These results are important because not only do they support findings of Pownall and Waymire (1989), who find that management forecasts are associated with larger magnitude stock price effects than actual earnings, but they indicate that investors interpret management forecasts during mergers and acquisitions as containing information content.

The implications of this study are that, during non-normal operating periods, management forecasts tend to be positively biased. In addition, investors do not discount this biased information but instead perceive it as containing information content.

There are several limitations of this study. Because of the resultant low R^2 values produced in the information content tests, unexpected earnings seem to be explaining very little of the variance contained in the models. Although there are statistically significant results, these results are compromised by the low explanatory values. Also, there may exist an alternative explanation for the existence of information content in the study. Acquired firms were analyzed during the merger and acquisition periods. The reason for studying these firms is because several studies in the area of finance find that acquired firms receive substantial premiums during and after mergers and acquisitions. The potential of receiving premiums during

a merger and acquisition may account for some of the informativeness of unexpected earnings during these time periods. In other words, there may exist some spurious correlation of events regarding the firms and periods studied. Another limitation revolves around the use of IBES in generating an expectation model. Because the timing of the analysts' projections of earnings may vary from a period before to a period after management's projections of earnings during the merger and acquisition, some measurement discrepancies may arise. This could result in minor inaccuracies in the measurement of unexpected earnings. This study also ignores the potential for risk-shifts among the firms studied. There exists the possibility that a shift in risk may have occurred for some of the firms studied when evaluating these firms during a merger and acquisition period versus a normal operating period. The effects of these potential risk-shifts on results, however, are unclear. Also, this study does not attempt to explain why management issues a forecast during a merger and acquisition period. Only results of these forecasts and the properties of the results are studied.

Future research in this area will be conducted to determine if acquiring firms in a similar merger and acquisition settings undergo similar results as acquired firms. Another issue would involve a similar analysis under different types of non-normal settings such as proxy contests, management buyouts, divestitures, etc. An extension of this study would

be to use data from the current decade, thereby creating greater meaningfulness to corporations undergoing mergers and acquisitions in today's market. In addition, future research would include a study of the act of forecasting during mergers and acquisition, i.e., why do mergers choose to issue a forecast during a merger and acquisition?

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