DO ANALYSTS REMOVE EARNINGS MANAGEMENT WHEN FORECASTING EARNINGS?

by

JASON C. PORTER

(Under the Direction of Jennifer J. Gaver)

ABSTRACT

Recent evidence suggests that analysts anticipate the effects of earnings management when creating their earnings forecasts. However, these studies offer conflicting stories about how analysts use this information. Burgstahler and Eames (2003) suggest that analysts incorporate earnings management into their forecasts to improve their accuracy, while Abarbanell and Lehavy (2003) suggest that analysts remove earnings management to provide useful information to investors.

This paper investigates which view is more consistent with the data. I find evidence consistent with analysts *including* the effects of earnings management in their forecasts. Additional tests suggest that the asymmetries in the forecast error distribution documented by Abarbanell and Lehavy (2003) are due to managers' 'last minute' earnings manipulations instead of analysts' attempts to remove the effects of earnings management.

INDEX WORDS: Analyst forecasts, analyst forecast error, earnings management, last minute manipulations.

DO ANALYSTS REMOVE EARNINGS MANAGEMENT WHEN FORECASTING EARNINGS?

by

JASON C. PORTER

B.S., Brigham Young University, 2001

M.Acc., Brigham Young University, 2002

A Dissertation Submitted to the Graduate Faculty Of the University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2006

DO ANALYSTS REMOVE EARNINGS MANAGEMENT WHEN FORECASTING EARNINGS?

by

JASON C. PORTER

Major Professor: Jennifer J. Gaver

Committee: Benjamin C. Ayers
Stephen P. Baginski
Eric Yeung

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
August 2006

DEDICATION

To my wife, Carrie: *For always believing, even when I could not.*

AND

To all my teachers, particularly those at Georgia: *For helping me turn my dreams into reality.*

ACKNOWLEDGMENTS

In the scientific community, we often talk about standing on the shoulders of giants. This dissertation certainly fits that description. I am grateful to have learned at the feet of the 'giants' that make up the faculty of the J. M. Tull School of Accounting, particularly those that make up my dissertation committee: Jennifer Gaver (Chair), Benjamin Ayers, Stephen Baginski, and Eric Yeung.

Words cannot express my gratitude to those who see in us what we cannot see in ourselves, then push us to reach our potential. In a small way, however, I want to thank Jenny Gaver for her support and guidance throughout my time at Georgia, especially during this past year. I am grateful for her watchful eye over my first stumbling steps into the realm of academic research and that she never let me slow down or give up, no matter how much I sometimes wanted to. Most importantly, I am grateful for her patience with an ignorant ugly duckling doing his best to become a swan.

I also wish to express special thanks to Ken Gaver, Steve Baginski, and Michael Bamber who taught three of the seminars that opened my mind to the world of accounting research. Each had a special lesson to teach, and I am grateful for their willingness to share with me. Special thanks also go to Eric Yeung for his patience in helping me work through the econometric issues of this dissertation. I thank Silvia Madeo for her support and guidance before leaving Georgia. I am grateful to Doug Prawitt, Kay Stice, and my other teachers at Brigham Young University for convincing me to continue my education. I express gratitude to Linda Bamber, Steve Baginski, Mark Dawkins, and Progyan Basu for helping me improve my teaching. Finally, thanks to

Marsha, Paula, Julie, Karen, and Regina for taking care of the details I would never have remembered.

I am grateful to my fellow PhD students for their help and encouragement. Special thanks go to Pennie for helping me get through the first two years and to Chad and Sean for providing comments that have helped me clarify my thinking on this and other projects. Thanks also to Danny, George, Sarah, K.C., John, Isabel, and James for providing examples of how to get through the courses, paperwork, and other hoops that are part of any degree. Finally, thanks to Trey, Jeremy, and Andrew for helping me keep things in perspective during this past year.

I thank my wife for all of her help and support. Without her encouragement I would never have started this program, let alone finished it. I am also grateful to my children, Emily and Joshua, for respecting my need to work, even when they wanted to play. Thanks to my parents and grandparents for teaching me the value of an education and providing a sympathetic ear when things went wrong, and to my brother and sister for providing encouragement when I most needed it.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Statement of Issues

A large body of research finds that analysts are rewarded when their forecasts are accurate (Mikhail, Walther and Willis 1999 and Stickel 1992). Accuracy is measured as the deviation of a forecast from reported earnings. If analysts attempt to accurately forecast earnings, then forecast error should be symmetrically distributed around zero. However, Abarbanell and Lehavy (2003) find that this is not the case. The distribution of analyst forecast errors shows a higher number of small positive than small negative values, consistent with firms managing earning to beat their analyst forecast, and the left tail of the distribution is longer and thicker than the right tail, consistent with firms 'taking a bath.' Abarbanell and Lehavy speculate that these asymmetries arise because analysts are removing the effects of earnings management from their forecasts. On the other hand, Burgstahler and Eames (2003) show that the distribution of analyst forecasts matches the distribution of earnings, including the 'chink' around zero documented by Burgstahler and Dichev (1997) as evidence of earnings management. They argue that the similarity of these two distributions arises because analysts forecast reported earnings. This dissertation investigates which view (analysts removing or including the effects of earnings management) is more consistent with the data.[1]

[1]For the purposes of this dissertation, I make no attempt to differentiate between accrual and 'real' manipulations of earnings.

To be sure, a forecasting target other than reported earnings is inconsistent with analysts' incentives for accuracy. However, research suggests that analysts are also rewarded when their forecasts are informative (Barth, Kasznik and McNichols 2001, Huang, Willis and Zhang 2005, Irvine 2004, and Lang, Lins and Miller 2004). Informativeness is the ability of the forecast to provide insight into future firm performance. Analysts may be willing to sacrifice accuracy for informativeness, and vice-versa. For example, an accurate forecast of next year's reported earnings might not be informative if reported earnings contain large transitory elements. An analyst in this situation must assess whether the personal benefits of accurately forecasting next year's reported earnings exceed the benefits of providing information by removing the transitory elements.

There is already evidence that analysts remove the transient components of earnings when making their forecasts (Bradshaw and Sloan 2002). The question is whether analysts also attempt to remove the *managed* component of earnings from their forecasts, as claimed by Abarbanell and Lehavy (2003). Earnings management is difficult to assess, even by market participants as sophisticated as analysts (Fischer and Verrecchia 2000). However, to the extent that analysts understand managerial incentives and opportunities to manage, they can make their forecast more informative by estimating and removing earnings management. On the other hand, analysts may simply incorporate their knowledge of earnings management into their earnings forecasts in order to improve their forecasting accuracy, as suggested by Burgstahler and Eames (2003).

1.2 Summary of Tests of How Analysts Treat Anticipated Earnings Management

To address the issue of how analysts incorporate earnings management into their forecasts, I collect a sample of annual IBES consensus forecasts from 1988-2004. I use this sample to replicate the analysis of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003). Using Burgstahler and Eames' (2003) method, I find that the earnings and analyst forecast distributions are almost identical, including a pronounced chink above zero consistent with earnings management. This evidence suggests that analysts include the effects of earning management in their forecasts. In contrast, when I replicate Abarbanell and Lehavy's (2003) method, I find evidence of a chink above zero and of a longer and fatter left than right tail in the analyst forecast error distribution. This evidence suggests that analysts remove the effects of earnings management when issuing their forecasts. These results underscore the ambiguity regarding analysts' use of their earnings management information and the need to resolve this ambiguity. Next, I use a model suggested by Elgers, Lo and Pfeiffer (2003) to test the predictive value of current discretionary accruals (a proxy for earnings management) on upcoming earnings and on analysts' forecasts of those earnings. If analysts include the effects of earnings management in their forecasts, there should be no difference between the predictive value of discretionary accruals and the weight they are given by analysts. However, if analysts remove the effects of earnings management from their forecasts, then current discretionary accruals will be weighted less by analysts than expected from their predictive ability. I find no difference in the weighting of discretionary accruals, which suggests that analysts include the effects of earnings management in their forecasts.

I supplement these findings using the Vuong (1989) test to determine whether analyst forecasts are more strongly correlated with reported or restated earnings (a proxy for premanaged earnings). If analysts include the effects of earnings management in their forecasts, then analysts' forecasts will be more highly correlated with reported than with restated earnings, and vice versa if analysts remove the effects of earnings management. The results of this analysis support my original findings that analysts include the effects of earnings management in their forecasts.

1.3 Summary of Tests of Last Minute Earnings Management

Although my preliminary results support the findings of Burgstahler and Eames (2003), they do not explain the asymmetries in the forecast error distribution documented by Abarbanell and Lehavy (2003). Brown (1998) notes that managers adjust their earnings numbers in response to analysts' forecasts, and proposes that asymmetries in the forecast error distribution are due to this 'last minute' earnings management by managers. Under this scenario, analysts attempt to forecast reported earnings, but additional earnings management performed after analysts have released their forecasts allows many firms to either beat the forecast by a small amount or 'take a bath.' To test this explanation for the asymmetries in the forecast error distribution, I use a sample of management forecasts of annual earnings to proxy for the planned earnings level prior to analysts' final forecast. I then calculate the difference between reported earnings and management forecasts to proxy for last minute earnings manipulations. When the analyst forecast is higher than the management forecast, I find that managers engage in additional manipulations in order to meet-or-beat expectations, consistent with the predictions of Brown (1998).

1.4 Organization

The dissertation proceeds as follows. Chapter two reviews the relevant literature. Chapter three describes the data, including the sample selection procedure, and provides descriptive statistics. Chapter four presents the results of replicating the tests in Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) using the current sample. Chapter five develops and tests a model to evaluate the weight placed on discretionary accruals by analysts. Chapter six describes the Vuong (1989) test and presents these results. Chapter seven develops and tests the 'last minute manipulation' explanation for the asymmetries in the forecast error distribution. Chapter eight offers concluding remarks.

CHAPTER 2

LITERATURE REVIEW

2.1 The Importance of Analysts and their Forecasts

A large body of accounting research focuses on financial analysts, their forecasts, and the market reaction to those forecasts. A search of the Social Science Research Network reveals the word ‘analyst’ or ‘analysts’ in the titles of 71 working papers posted during the past year and 243 during the past three years. Analysts are mentioned in the abstracts of 689 additional papers. A similar search of the *Accounting Review*, the *Journal of Accounting Research*, and the *Journal of Accounting and Economics* produces 57 published papers using ‘analyst’ or ‘analysts’ in the title and 52 more that mention analysts in the abstract. These papers address diverse topics, including the rewards analysts receive from issuing forecasts (Huang et al. 2005), the probable causes for analyst forecasting bias (Kadous, Kirsche and Sedor 2004), the differential abilities of analysts in forecasting stock price (Bradshaw and Brown 2006), and the type of information analysts have difficulty forecasting (Plumlee 2003 and Weber 2005). This underscores the importance of analysts, and their forecasts, in the accounting literature.[2]

Researchers use analysts as proxies for sophisticated investors, because of their reputation as investing experts, in tests of value relevance (see, for example, Abarbanell 1991, Abdel-Khalik and Espejo 1978, and Barron et al. 2002) and tests of market efficiency (see, for example, Bradshaw 2004, Bradshaw, Richardson and Sloan 2001, Morse and Stephan 1991, Plumlee 2003,

---

[2]Additional discussion of the analyst forecast literature can be found in Brown (1993), and Kothari (2001).

Ramnath 2002, and Weber 2005). Researchers also use analysts' forecasts as proxies for investors' earnings expectations in studies that investigate voluntary disclosure, earnings management, and value relevance (e.g. Degeorge, Patel and Zeckhauser 1999, Frankel and Lee 1998, and Waymire 1984). Analysts' forecasts are preferred to time-series models because they are more accurate. Brown and Rozeff (1978) find that analysts' forecasts are more accurate than the predictions from most commonly used time-series models of earnings at that time. These time-series models use only the information available at the end of the prior fiscal period (Brown 1993), ignoring information that emerges during the current period (Abdel-Khalik and Espejo 1978, Barron et al. 2002, Crichfield, Dyckman, and Lakonishok 1978). Analysts have an information advantage because they incorporate this additional information (Barron et al. 2002 and Brown and Rozeff 1978).

In addition to their importance to researchers, analysts' forecasts are important sources of information to investors (Abarbanell and Bernard 2000, Elgers, Lo and Pfeiffer Jr. 2001, Irvine 2000, Irvine 2004, Lang, et al. 2004, Pinello 2005, and Weber 2005). Recent evidence by Brown and Caylor (2005) and Degeorge, Patel and Zeckhauser (1999) suggests that analysts' importance to investors has increased, since their forecasts have become the primary benchmark for company performance.

Because of their importance to both researchers and investors, it is essential to understand the characteristics, incentives, and other factors that affect analysts and their forecasts. Several recent studies explore this area. Clement (1999) finds that analysts' forecast accuracy is positively associated with their experience and the size of their brokerage and negatively associated with number of industries and companies they follow (see also Mikhail, Walther and Willis 2003). Other studies, such as Jacob, Lys and Neale (1999), find that innate ability plays in important role in analysts' ability to generate earnings forecasts and stock recommendations. More recent studies focus on the information analysts use in creating their forecasts. Studies such as Barron et al. (2002) and Barron, Kim, Lim and Stevens (1998) discuss the information environment of analysts and how analysts use that information, while Kim, Lim and Shaw (2001) examine the idiosyncratic information contained in individual forecasts. Kadous et al. (2004) focus on the existence of analyst optimism and how to resolve it.

Of particular relevance to this dissertation are studies that address whether analysts include or remove anticipated earnings management when issuing their forecasts. For example, Lang, et al. (2004) find that, in the absence of traditional monitoring forces, earnings management decreases for firms followed by analysts. This is consistent with analysts' forecasts providing information regarding the earnings manipulations to investors. Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) also suggest that analyst have the ability to anticipate earnings management. Abarbanell and Lehavy (2003) suggest that analysts then remove the effects of earnings management from their forecasts. Burgstahler and Eames (2003), however, suggest that analysts include anticipated earnings management in their forecasts. A recent working paper by Liu (2005) finds evidence that the relation between analysts and managers is dynamic, with each trying to guess what number the other will report. This evidence is consistent with Burgstahler and Eames' (2003) suggestion that analysts include earnings management in their forecasts.

2.2 Analyst Incentives

Several studies investigate analysts' incentives for accuracy. Stickel (1992), examines the characteristics of the 'All-American Research Team,' an elite group of U.S. financial analysts. He finds that members of the team generate more accurate forecasts than other analysts and argues that analysts have incentives to improve their accuracy in order to become part of the team. A related study by Leone and Wu (2002) finds that analyst accuracy is one of the primary determinants of analyst rankings by Institutional Investor. Both of these studies also provide indirect evidence that membership in the All-American Research Team and higher Institutional Investor rankings are associated with higher compensation. Mikhail et al. (1999) find that accurate analysts enjoy greater job security since turnover is negatively related to forecast accuracy. Finally, Brown (1997) provides evidence that analysts' forecast accuracy has steadily increased over time, consistent with analysts striving for accuracy in their forecasts.

Although the accounting literature has focused primarily on analysts' incentives to provide accurate forecasts, they also have other incentives. Recent studies have begun to examine the impact of analysts' incentive to provide useful information to investors through their earnings forecasts. Huang et al. (2005), for example, show that managers disclose more information to analysts who provide bold forecasts.[3] In addition, Irvine (2004) documents an increase in bonuses for analysts that incorporate useful information (i.e. information different from that used by other analysts) in their forecasts.

A set of related studies discusses analysts' role in creating information for market participants. The first of these, Kim and Verrecchia (1994), suggests that sophisticated market participants, such as analysts, can use their expertise to generate idiosyncratic information about the firm from public information. Barron et al. (1998) model analysts' information environment

---

[3]Analysts tend to 'herd' when making their forecasts (i.e. each analyst closely follows the forecast provided by the previous analyst). Bold forecasts are defined as forecasts that differ from the herd without greatly increasing their forecast error, thereby providing new information to investors.

and argue that analysts exploit their environment to create new information. Kim et al. (2001) provides indirect support for this theory by suggesting that analysts have idiosyncratic information that is eliminated by researchers when they use the average forecast. Mikhail, Walther and Willis (2003) provide empirical evidence that experienced analysts help reduce post-earnings announcement drift by almost 18 percent, consistent with analysts producing useful information for the market. Similarly, Barth, et al. (2001) studies the relation between analysts' incentives and their coverage of firms with high levels of intangible assets. They find that, on average, analysts focus their efforts on firms with large amounts of intangible assets. Barron, Byard, Kile and Riedl (2002) finds that analysts focus on firms with high levels of intangible assets in order to provide useful information to investors.

In many instances, analysts' accuracy and informativeness incentives will converge, and the most accurate forecast will also be the most informative. However, in some situations analysts will be forced to choose between accuracy and informativeness. For example, the SEC argues that earnings management clouds what would otherwise be accurate information about company performance (see Levitt 1998). When firms manage earnings, accuracy incentives encourage analysts to include the effects of earnings management in their forecasts and provide a more accurate prediction of reported earnings. Informativeness incentives, on the other hand, encourage analysts to remove the effects of earnings management and provide investors with an estimate of pre-managed earnings.

2.3 The Difficulty of Anticipating Earnings Management

Anticipating earnings management is difficult because it requires an understanding of managers' underlying goals, which are unobservable (Fischer and Verrecchia 2000). In one period, managers might manage earnings upward in order to maximize their bonuses (Guidry, Leone and Rock 1999 and Healy 1985), while in the next period those same managers might manage earnings downward to minimize taxes (Enis and Ke 2003). Other goals might include smoothing earnings (Chandar and Bricker 2002, Gaver, Gaver and Austin 1995, and Herrmann, Inoue and Thomas 2003), manipulating stock price (Beneish and Vargus 2002, and McVay, Nagar and Tang 2006), continuing their employment (DeFond and Park 1997), avoiding debt covenant violations (Dichev and Skinner 2002), providing information about upcoming events (Arya, Glover and Sunder 2003 and Subramanyam 1996), or avoiding regulatory scrutiny (Gaver and Paterson 2004). These different, and often conflicting, goals make it difficult to determine how, or even if, managers will manipulate their earnings in a particular period.

Research supports the notion that investors struggle to understand and predict earnings management. Sloan (1996) and Xie (2001) compare the relative strength of the information content of the earnings components and the weight investors place on that information. They find that the average investor has difficulty weighing current earnings management when setting stock price. Similarly, Bartov, Givoly and Hayn (2002) examine the stock price reaction to firms that meet-or-beat market expectations and find evidence that the market gives a premium to these firms, even when the likelihood of earnings management is high. This suggests that analysts can provide useful information to the market if they can remove the effects of earnings management from their forecasts.

There are two reasons to believe that analysts can at least partially anticipate earnings management (Schipper 1989). Compared to the average investor, analysts have greater access to information and greater ability to interpret this information. Because of their association with big brokerage firms, analysts often have information not accessible to the average investors (e.g.

historical databases and computing programs) (Clement 1999). In addition, Huang et al. (2005) suggest that analysts on good terms with management receive inside information unavailable to other market participants (Bamber and Cheon 1998 and Das, Levine and Sivaramakrishnan 1998 also find evidence consistent with analysts receiving inside information not available to other investors).[4] Analysts also seem better able than the average investor to use publicly available information to create idiosyncratic information and improve their overall information set about a firm. Kim and Schroeder (1990) argue that analysts can interpret information about earnings-based bonus plan incentives in order to anticipate earnings management, and Balsam, Bartov and Marquardt (2002) suggest that sophisticated investors react more quickly to earnings management than the average investor (see also Barron et al. 1998, Kim et al. 2001, and Kim and Verrecchia 1994). Based on the evidence from these studies, I assume that analysts have insight into firms' earnings processes that allows them to anticipate earnings management. However, these papers do not address what analysts do with their information about earnings management.

2.4 Do Analysts Include or Remove the Effects of Earnings Management?

Recent studies by Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) suggest that analysts anticipate earnings management when creating their forecasts. However, these authors differ in their conclusions regarding how analysts use their estimates of earnings management. Burgstahler and Eames (2003) contend that analysts include the effects of earnings management in order to forecast reported earnings more accurately. They examine the distribution of analyst forecasts and find that it is similar to the earnings distribution. Both

[4] Gintschel and Markov (2004) suggest that RegFD eliminated this source of extra information.

distributions show a chink above zero, caused by a higher number of firms reporting positive earnings than those reporting negative earnings. Burgstahler and Dichev (1997) argue that this shape is symptomatic of earnings management. Burgstahler and Eames (2003) interpret the similarities between the distributions as evidence that analysts target reported earnings when making an earnings forecast, which includes earnings management.

Abarbanell and Lehavy (2003) take a different view. They argue that analysts remove the effects of earnings management from their forecasts in order to make their forecasts more informative. They examine the distribution of analyst forecast errors, and find two asymmetries. First, there is a chink above zero and second, the left tail is longer and thicker than the right tail. Abarbanell and Lehavy (2003) argue that these asymmetries occur because analysts remove the effects of earnings management in order to forecast pre-managed earnings.

Brown (1998) also discusses the effects of earnings management on analysts forecasts. Consistent with Burgstahler and Eames (2003), he suggests that analysts attempt to include the effects of earnings management in their forecasts. However, since analysts provide their forecasts before the final earnings announcement, managers have the opportunity to perform 'last minute' manipulations in response to the final analyst forecast. Because managers always have the final word, analysts cannot fully anticipate earnings management. Brown (1998) proposes that the asymmetries in the analyst forecast error distribution are caused by last minute manipulations by managers in response to the final analyst forecasts rather than by analyst error or analysts' attempts to remove the effects of earnings management. Consistent with Brown's theory, Liu (2005) examines analysts' forecasts and earnings announcements and finds evidence of a dynamic relationship in which analysts and managers attempt to anticipate what number the other will report. More specifically, analysts attempt to anticipate managers' earnings manipulations in order to improve their forecast accuracy, while managers attempt to anticipate analysts' forecasts in order to meet-or-beat market expectations.

2.5 Summary

In summary, analysts play an important role in both the capital markets and the academic literature. Researchers have attempted to define and understand the characteristics, incentives, and other forces that affect analysts and their forecasts. This literature suggests that analysts strive for both accuracy and informativeness when issuing their forecasts. However, since analysts have greater ability anticipate earnings management than the average investor, analysts can be forced to choose between these two goals when firms engage in opportunistic earnings management. Analysts favoring accuracy will include anticipated earnings management in their forecasts; analysts favoring informativeness will remove earnings management from their forecasts. The results of Burgstahler and Eames (2003) suggest that analysts include the effects of earnings management, and the findings of Abarbanell and Lehavy (2003) imply the opposite. Alternatively, Brown (1998) suggests that analysts attempt to include earnings management but miss last minute manipulations made in response to their forecasts. This study investigates which set of findings is more consistent with the data.

CHAPTER 3

SAMPLE SELECTION

3.1 Description of Sample Selection Procedures

The initial sample consists of the last available mean consensus forecast of annual earnings forecasts for all December year-end, U.S. firms in the IBES summary database during the period 1988-2004. The use of annual forecasts with December year-ends results in a sample of firms with similar reporting periods, a necessary assumption of the model developed in section 5.1.[5] The sample period begins in 1988 in order to obtain accrual data from the Statement of Cash Flows (Hribar and Collins 2002). Finally, the IBES summary database is used for consistency with both Abarbanell and Lehavy (2003) and Elgers, Lo and Pfeiffer (2003).

From this initial sample, I remove any IBES consensus forecast formed more than 30 days prior to year end in order to reduce the risk of stale forecasts being included (Brown 1997 and Brown and Han 1992). I then control for outliers by winsorizing earnings per share, analyst forecasts, and analyst forecast errors to the 1st and 99th percentile of each distribution, consistent with Abarbanell and Lehavy (2003). The resulting sample of 34,990 firm-year observations is used to replicate the distribution analyses of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003). I refer to this set of observations as the 'full sample.'

In chapter five, I regress upcoming earnings and analysts forecasts on the components of current earnings. These tests require both forward looking data (one year ahead earnings and

[5]The restriction to December year-end firms is necessary to satisfy the assumption of the model (developed in chapter 5) that the cross-sections have a common reporting period.

analyst forecasts) and data necessary for calculating cash flow from operations, nondiscretionary accruals, and discretionary accruals. These additional requirements limit the sample to 16,593 observations. I refer to this set of observations as the 'restricted sample.' Table 3.1 contains a summary of the sample selection procedure.

3.2 Summary Statistics

Tables 3.2, 3.3, and 3.4 present summary counts and statistics for both the full and restricted samples. Table 3.2 presents a breakdown of the number of observations by year. Column one presents the results for the full sample and column two for the restricted sample. Although the distributions are similar, two differences should be mentioned. First, the restricted sample has a smaller percentage of observations from 1988 than the full sample (0.5% versus 3.4%). This difference is most likely due to missing data in the Compustat database, since 1988 was the first year in which the cash flow data required for the calculation of discretionary accruals was available. Second, the restricted sample has no observations in 2004. This is due to the additional requirement that all observations in the restricted sample have earnings and analyst forecast data for the upcoming year. For the remainder of the distribution, the samples follow a similar pattern. More specifically, both samples show a relatively steady increase through 1998. After 1998, the number of observations drops slightly, then slowly begins to increase. The similarity of the two distributions suggests that the additional sample screens used to create the restricted sample do not introduce differential bias across the sample years.

Table 3.3 presents an analysis of analyst following. Interestingly, the full sample shows that many 'consensus' forecasts were made by only one analyst. The main difference between the full and restricted samples is that fewer firms in the restricted sample are followed by only one analyst. This is most likely due to the forward looking data requirement in the restricted sample, because analyst coverage is likely to be more sporadic for firms followed by only one analyst. Through the remainder of the distribution, both samples follow a gently decreasing curve. As with the yearly breakdown, the overall similarity between the distributions suggests that the sample screens do not introduce differential bias across the levels of analyst following.

Table 3.4 presents the distribution of observations by 2-digit SIC code. Again, the general industry representation is consistent between the full and restricted samples. The only exception is the lack of depository institutions (SIC code 60) in the restricted sample compared to a large number of these observations in the full sample. However, it is necessary to remove financial institutions from the restricted sample in order to estimate discretionary accruals using the Jones' (1991) model. The similarities suggest that the sample screens do not introduce differential bias across SIC codes, except where necessary to calculate the modified-Jones model (see section 5.4 for more details).

Table 3.5 presents summary statistics for the samples. The variables are defined as follows: total assets is Compustat data item 6; the number of analysts is the number that participated in creating each consensus forecast, as reported by IBES; EPS is the actual earnings per share reported by IBES; the analyst forecast is the mean consensus forecast reported by IBES; and analyst forecast error is actual earnings per share less the consensus analyst forecast, deflated by beginning of the period stock price and multiplied by 100. Panel A of table 3.5 presents statistics for the full sample and panel B presents results for the restricted sample. Several points are noted. First, the full sample consists of larger firms than the restricted sample (average total assets of $7,227.8 versus $6,139.8 million; $p < 0.001$ for a two-tailed test of the difference, untabulated). Second, the analyst following is lower for the full sample than for the restricted sample (average analyst following of 7 versus 8.7; $p < 0.001$).

In addition, table 3.5 provides preliminary evidence regarding the findings of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003). Abarbanell and Lehavy (2003) find evidence of the two asymmetries in the analyst forecast error distribution. First, they find a higher than expected number of small positive forecast errors caused by a number of firms meeting-or-beating earnings by a small amount, and second they find evidence of a longer and thicker left tail caused by a group of firms reporting earnings considerably lower than the analyst forecast. These patterns are consistent with earnings management and suggest that analysts are omitting earnings management from their forecasts. Supporting this, I find that the mean analyst forecast error is significantly negative for both samples ($p < 0.001$, untabulated) although the medians are significantly positive ($p < 0.001$). Similarly, the negative tail is larger than the positive tail, as shown by the more extreme values of the 25th percentile and minimum relative to the values of the 75th percentile and maximum.

Burgstahler and Eames (2003) find that the distributions of earnings and analyst forecasts are similar, with both including a chink above zero identified by prior research as evidence of earnings management (Burgstahler and Dichev 1997). This suggests that analysts include the effects of earnings management in their forecasts. However, I find that the mean earnings per share is significantly smaller than the mean analyst forecast in both the full and restricted samples (p-value for the two-tailed test of the difference is <0.001 and 0.051, respectively). Similarly, the median, percentile, minimum and maximum of the analyst forecast distribution appear to be larger than the earnings per share distribution. These differences are inconsistent with the findings of Burgstahler and Eames (2003). On the other hand, the positive 25th

percentile, mean, and median values indicate a chink above zero in the distributions of both earnings and analysts forecasts, consistent with the findings of Burgstahler and Eames (2003). Chapter four will discuss the properties of the earnings, analyst forecast, and analyst forecast error distributions in greater detail.

Table 3.1
Sample Selection Criteria

Table 3.1 summarizes the sample selection procedure. The initial sample comes from the IBES summary data base and consists of all annual earnings forecasts for US firms with a December year end from 1988-2004. The first set of restrictions remove the effects of stale forecasts, and the second set removes observations that lack the data necessary to construct the variables for the regression analysis described in section 5.1.

Initial sample of annual earnings per share forecasts for U.S. firms, with a December year end from 1988-2004	429,576
Less:	
Not last available forecast	(390,184)
Made more than 30 days before the period end	(4,402)
Observations used in the distribution tests	34,990
Observations with insufficient data for calculating discretionary accurals	(13,121)
Observations without forward looking or other data	(5,276)
Observations used in the regression tests	16,593

Table 3.2
Distribution of Observations Across Sample Years

Table 3.2 presents the number of observations in each of the sample years. Column one presents the results for the full sample used in the distributions tests, and column two for the restricted sample used to estimate the regressions.

Year	Full		Restricted	
	n	%	n	%
1988	1,207	3.4%	86	0.5%
1989	1,231	3.5%	621	3.7%
1990	1,246	3.6%	653	3.9%
1991	1,207	3.4%	684	4.1%
1992	1,393	4.0%	751	4.5%
1993	1,620	4.6%	820	4.9%
1994	1,877	5.4%	929	5.6%
1995	1,972	5.6%	1,101	6.6%
1996	2,297	6.6%	1,167	7.0%
1997	2,686	7.7%	1,272	7.7%
1998	2,782	8.0%	1,398	8.4%
1999	2,663	7.6%	1,374	8.3%
2000	2,586	7.4%	1,334	8.0%
2001	2,504	7.2%	1,383	8.3%
2002	2,510	7.2%	1,491	9.0%
2003	2,570	7.3%	1,529	9.2%
2004	2,639	7.5%	0	0.0%
Total	34,990	100.0%	16,593	100.0%

Table 3.3
Distribution of Observations by Analyst Following

Table 3.3 presents a breakdown of the full and restricted samples by analyst following. Column one presents the results for the full sample used in the distributions tests, and column two for the restricted sample used to estimate the regressions.

# of Analysts	Full		Restricted	
	n	%	n	%
1	6,309	18.0%	1,560	9.4%
2	4,668	13.3%	1,706	10.3%
3	3,729	10.7%	1,600	9.6%
4	2,934	8.4%	1,410	8.5%
5	2,341	6.7%	1,151	6.9%
6	2,003	5.7%	1,106	6.7%
7	1,674	4.8%	958	5.8%
8	1,353	3.9%	775	4.7%
9	1,164	3.3%	675	4.1%
10	1,020	2.9%	626	3.8%
11	900	2.6%	559	3.4%
12	777	2.2%	488	2.9%
13	685	2.0%	449	2.7%
14	625	1.8%	421	2.5%
15	527	1.5%	331	2.0%
16	496	1.4%	301	1.8%
17	463	1.3%	299	1.8%
18	382	1.1%	240	1.4%
19	377	1.1%	234	1.4%
20	315	0.9%	214	1.3%
21	276	0.8%	187	1.1%
22	235	0.7%	147	0.9%
23	254	0.7%	175	1.1%
24	226	0.6%	136	0.8%
25	208	0.6%	131	0.8%
26	155	0.4%	96	0.6%
27	149	0.4%	99	0.6%
28	111	0.3%	74	0.4%
29	131	0.4%	86	0.5%
30	96	0.3%	59	0.4%
31	73	0.2%	51	0.3%
32	80	0.2%	52	0.3%
> 32	254	0.7%	197	1.2%
Total	34,990	100.0%	16,593	100.0%

Table 3.4
Distribution of Observations by 2-Digit SIC Code

Table 3.4 presents the number of observations in each 2-digit SIC code. Column one presents the results for the full sample used in the distributions tests, and column two for the restricted sample used to estimate the regressions.

SIC code	Industry Description	Full		Restricted	
		n	%	n	%
10	Metal mining	225	0.6%	146	0.9%
12	Coal mining	49	0.1%	7	0.0%
13	Oil and gas extraction	1,157	3.3%	696	4.2%
14	Nonmetallic minerals, except fuels	82	0.2%	6	0.0%
15	Building construction	172	0.5%	50	0.3%
16	Heavy construction other than buildings	128	0.4%	54	0.3%
17	Construction - special trade contracts	46	0.1%	0	0.0%
20	Food	530	1.5%	333	2.0%
21	Tobacco	45	0.1%	0	0.0%
22	Textile mills	173	0.5%	124	0.7%
23	Apparel and other textiles	181	0.5%	96	0.6%
24	Lumber and wood products	177	0.5%	102	0.6%
25	Furniture and fixtures	134	0.4%	66	0.4%
26	Paper and allied products	526	1.5%	395	2.4%
27	Printing and publishing	429	1.2%	306	1.8%
28	Chemicals and allied products	2,849	8.1%	1,781	10.7%
29	Petroleum and coal products	328	0.9%	233	1.4%
30	Rubber and miscellaneous plastic products	329	0.9%	207	1.2%
31	Leather and leather products	95	0.3%	37	0.2%
32	Stone, clay, and glass products	227	0.6%	136	0.8%
33	Primary metal products	567	1.6%	385	2.3%
34	Fabricated metal products	403	1.2%	257	1.5%
35	Industry machinery and equipments	1,864	5.3%	1,181	7.1%
36	Electronic and other equipment	1,905	5.4%	1,167	7.0%
37	Transportation equipment	734	2.1%	506	3.0%
38	Instruments and related products	1,764	5.0%	1,035	6.2%
39	Miscellaneous manufacturing industries	249	0.7%	135	0.8%
40	Transportation	150	0.4%	100	0.6%
41	Local and interurban passenger transportation	11	0.0%	0	0.0%
42	Motor freight transportation and warehousing	336	1.0%	194	1.2%
44	Water transportion	167	0.5%	89	0.5%
45	Transportation by air	228	0.7%	111	0.7%
46	Pipelines, except for natural gas	32	0.1%	0	0.0%
47	Transportation services	112	0.3%	32	0.2%
48	Communications	1,363	3.9%	687	4.1%
49	Electric, gas, and sanitary services	1,714	4.9%	1,166	7.0%
50	Wholesale trade - durable goods	534	1.5%	319	1.9%

51	Wholesale trade - nondurable goods	254	0.7%	142	0.9%
52	Building materials, hardware, garden supply, etc.	61	0.2%	0	0.0%
53	General mechandise stores	61	0.2%	0	0.0%
54	Food stores	143	0.4%	72	0.4%
55	Automotive dealers and gasoline stations	78	0.2%	36	0.2%
56	Apparel and accessory stores	44	0.1%	0	0.0%
57	Home furniture, furnishings, & equipment stores	62	0.2%	0	0.0%
58	Eating and and drinking places	369	1.1%	216	1.3%
59	Miscellaneous retail	279	0.8%	135	0.8%
60	Depository institutions	4,812	13.8%	0	0.0%
61	Nondepository credit unions	385	1.1%	162	1.0%
62	Security and commodity brokers	285	0.8%	151	0.9%
63	Insurance carriers	1,947	5.6%	928	5.6%
64	Insurance agents, brokers, and services	221	0.6%	132	0.8%
65	Real estate	95	0.3%	16	0.1%
67	Holding and other investments, except trusts	757	2.2%	118	0.7%
70	Hotels and other lodging places	136	0.4%	49	0.3%
72	Personal services	61	0.2%	6	0.0%
73	Business services	3,039	8.7%	1,488	9.0%
75	Automotive repair, services, and parking	46	0.1%	0	0.0%
76	Miscellaneous repair services	11	0.0%	0	0.0%
78	Motion pictures	114	0.3%	20	0.1%
79	Amusement and recreation services	292	0.8%	154	0.9%
80	Health services	510	1.5%	262	1.6%
81	Legal services	1	0.0%	0	0.0%
82	Educational services	68	0.2%	5	0.0%
83	Social services	69	0.2%	7	0.0%
86	Membership organizations	0	0.0%	0	0.0%
87	Engineering, accounting, & related services	526	1.5%	257	1.5%
89	Services, Other	0	0.0%	0	0.0%
99	Not classified or no 2-digit code	249	0.7%	98	0.6%
Totals		34,990	100.0%	16,593	100.0%

Table 3.5

Summary Statistics for the Full, Reduced, and Compustat Samples during 1988-2004.

Table 3.5 presents summary statistics for the samples used in the study. The variables are defined as follows: total assets is Compustat data item 6; the number of analysts is the number that participated in creating each consensus forecast, as reported by IBES; EPS is the actual earning per share reported by IBES; the analyst forecast is the mean consensus forecast reported by IBES; and AFE is analyst forecast error, calculated as actual earnings per share less the analyst forecast, deflated by beginning of the period stock price and multiplied by 100.

Panel A presents summary statistics for the full sample used in the distribution tests. Panel B presents statistics for the restricted sample used in the regression tests. Assets are reported in millions and EPS and analyst forecast are reported in dollars. Forecast error is reported as a percentage of beginning of the period stock price.

Panel A: Full Sample

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
Total Assets	7,227.8	43,016.6	0.0	143.1	598.4	2,566.0	1,484,101.0
Number of Analysts	7.0	7.0	1.0	2.0	4.0	10.0	50.0
EPS	0.79	1.44	-4.59	0.15	0.74	1.47	5.63
Analyst forecast	0.84	1.33	-3.68	0.20	0.76	1.48	5.50
AFE	-0.66	4.17	-29.86	-0.25	0.01	0.20	9.09

Panel B: Restricted Sample

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
Total Assets	6,139.8	32,984.0	0.2	170.2	630.2	2,601.9	1,179,017.5
Number of Analysts	8.7	7.6	1.0	3.0	6.0	12.0	50.0
EPS	0.83	1.36	-4.69	0.20	0.74	1.47	5.59
Analyst forecast	0.85	1.29	-3.66	0.22	0.75	1.47	5.47
AFE	-0.27	2.82	-29.98	-0.15	0.02	0.18	9.16

CHAPTER 4

REPLICATIONS

4.1 Burgstahler and Eames (2003)

Burgstahler and Eames (2003) compare the distributions of earnings and analyst forecasts, and observe a chink immediately above zero in both distributions. This chink is caused by a higher number of small positive than small negative values, and was noted earlier by Burgstahler and Dichev (1997) who interpreted it as evidence of earnings management. Burgstahler and Eames observe that the distribution of analysts' forecasts, including the size and position of the chink, is almost identical to that of the earnings distribution, and conclude that this is because analysts include the effects of earnings management in their forecasts.

The distributions of earnings and analyst forecasts for my full sample of 34,990 observations are presented in figure 4.1. I define earnings as actual earnings reported by IBES and analyst forecasts as the mean consensus forecast reported by IBES. Both variables are deflated by the beginning of the period stock price. As in Burgstahler and Eames (2003), the two distributions are similar, with an obvious chink above zero. The analysis in table 4.1 confirms the statistical significance of the chinks. Column one presents the results of chi-square tests that compare the number of observations in various bins above zero to the number of observations in the corresponding bins below zero. Column two of table 4.1 presents the percentage of observations that fall into each concentric set of bins (that is, the total number of observations used to calculate the ratio presented in column one). Consistent with the visual and statistical evidence of the chink, the majority of observations fall within the [-0.1, 0.1] range and are mostly positive, as shown by the ratio presented in column one.

A comparison of the results in panels A and B of table 4.1 reveals further similarities between the two distributions. The percentages listed in column two are almost identical for the two distributions, and the pattern of the ratios of positive to negative observations in each set of bins, presented in column one, is also similar. However, the analyst forecast distribution shows greater evidence of the chink than does the earnings distribution, as shown by the higher value of the ratios presented in column one of panel B. This evidence is consistent with Burgstahler and Eames' (2003, page 256) conjecture that analysts sometimes anticipate earnings management that does not materialize.

4.2 Abarbanell and Lehavy (2003)

Abarbanell and Lehavy (2003) observe that prior evidence of analyst optimism (see, for example, Kadous, Kirsche and Sedor 2004) is not consistent with analysts' incentives. For example, analysts who want to encourage managers to provide them with additional information are unlikely to antagonize them by issuing a forecast that managers cannot reach. In an attempt to explain this phenomenon, Abarbanell and Lehavy (2003) examine the distribution of analyst forecast errors. They find two asymmetries. First, although a considerable number of firms just beat the consensus analyst forecast, there is no corresponding group that just misses the forecast. This causes a chink in the distribution above zero. Abarbanell and Lehavy refer to this as the middle asymmetry. Second, although a group of firms misses the consensus analyst forecast by a large amount, few, if any, beat the forecast by a large amount. This causes the left tail of the distribution to be longer and thicker than the right tail. Abarbanell and Lehavy refer to this as the tail asymmetry. These asymmetries could be caused by earnings management to either meet-or-beat the forecast or to take a 'big bath' when the forecast cannot be met. In additional tests, Abarbanell and Lehavy (2003) find that the firms that create these asymmetries have higher levels of discretionary accruals, another clue that earnings management could be taking place. Based on these results, they conclude that analysts omit the effects of earnings management when issuing their earnings forecasts.

The forecast error distribution for my sample is presented in figure 4.2, panel A. I define analyst forecast error as earnings reported by IBES less the mean consensus forecast, deflated by beginning of the period stock price and multiplied by 100. This definition is consistent with Abarbanell and Lehavy (2003). Visual inspection shows a chink above zero, consistent with the findings of Abarbanell and Lehavy (2003). Panel B of figure 4.2 presents a graph of the percentiles of the distribution, which provides a clearer picture of the tails of the distribution. I observe a longer and thicker left tail, consistent with Abarbanell and Lehavy's (2003) tail asymmetry.

Table 4.2, column one, presents summary statistics for the analyst forecast error distribution from my sample and column two presents corresponding results from Abarbanell and Lehavy's (2003) sample. Although a direct comparison of the results is difficult due to differences in the sample selection criteria, the summary statistics appear to be consistent between the two studies. The breakdown of positive, negative, and zero analyst forecast errors is similar, as is the size of the samples. In addition, both samples have a negative mean analyst forecast error and a median forecast error that is either zero or close to zero. The most notable difference is the relative size of mean analyst forecast error, which is most likely caused by the more extreme negative values in the left tail of the full sample (shown in panel A of table 4.3). I attribute this to the fact that my sample is made up annual forecasts and Abarbanell and Lehavy (2003) use quarterly forecasts. Column three of table 4.6 presents the results for a sample of quarterly analyst forecast errors (discussed below). The mean analyst forecast errors and percentile values for that sample are closer to those reported by Abarbanell and Lehavy (2003).

Panel A of table 4.3 presents the percentiles of the forecast error distribution and the results of a Mann Whitney test of the tail asymmetry. Column one presents the results for the full sample and column two from Abarbanell and Lehavy (2003). The Mann Whitney test compares the absolute values of the 1st through 10th percentiles (the left tail) to those of the 90th through 99th percentiles (the right tail) of the distribution. Under the null hypothesis of a symmetric distribution, the amounts should be identical. I find a significant z-statistic, which indicates that one tail is longer and thicker than the other. An examination of the percentiles and the difference in corresponding percentiles confirms that the left tail is larger than the right tail.

Panel B, column one, presents chi-squared tests of the number of positive to negative observations in concentric bins around zero to test the significance of the chink above zero. The results are consistent with the visual evidence in figure 4.2. In addition, column two presents the percentages of observations falling into each set of bins. The higher percentage of observations in the bins around zero, the majority of which are positive, provides additional support for existence of the middle asymmetry.

4.3 Sensitivity Tests

4.3.1 Alternative samples

The tests reported here do not provide a direct replication of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) because the samples vary between studies. Although the similarities in the results presented in sections 4.1 and 4.2 to those of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) reduce this concern, I replicate my results using the median consensus forecast, the last available forecast (both consistent with Burgstahler and Eames 2003) and a sample of quarterly consensus forecasts (consistent with Abarbanell and Lehavy 2003). The median consensus forecast sample (n = 34,990) is constructed by substituting the median forecast for the mean forecast in the full sample. The last available forecast (n = 9,698) and quarterly consensus forecast (n = 128,612) samples are constructed using a sample of individual annual and consensus quarterly forecasts, respectively. All of the sample screens discussed in section 3.1 are then applied. For all three alternative samples, the distributions are similar to those presented in figures 4.1 and 4.2.

Table 4.4 presents the results of chi-squared tests of the middle asymmetry for the median and last available forecast samples. As in table 4.1, panel A presents results for the earnings distributions, while panel B presents results for the analyst forecast distributions. Table 4.5 presents analogous results using the sample of quarterly observations.[6] The results using these alternative samples are qualitatively similar to those presented in table 4.1.

Table 4.6 presents the tests for the two asymmetries in the analyst forecast error distribution for the three alternative samples. Column one presents the results for the median analyst forecast sample, column two for the last available forecast sample, and column three for the quarterly forecast sample. In each case, the findings are consistent with those from the

[6]The results from the quarterly sample are reported separately because the bin sizes for the chi-squared tests are smaller than those used for the median and last available forecast samples. This is due to the smaller size of the quarterly earnings announcements relative to annual earnings.

primary sample. The only exception is an insignificant z-statistic for the Mann-Whitney test of the tail asymmetry for the quarterly sample.

Prior research finds that using the IBES summary database may result in erroneous conclusions (Brown and Han 1992 and Payne and Thomas 2003). While the sample of last available forecasts partially addresses this issue, the use of only one analyst forecast might not result in a clear picture of market expectations, especially since analysts have differential abilities in predicting upcoming earnings (Clement 1999, Jacob, Lys and Neale 1999, and Mikhail, Walther and Willis 2003). Thus, the final alternative sample is made up of all individual analyst forecasts from the IBES detail database meeting the sample requirements from section 3.1. I collect a sample of 95,578 individual forecasts from the IBES detail database that meet all of the sample requirements. Except for an insignificant z-statistic for the Mann-Whitney test of the tail asymmetry, the results from this sample, presented in tables 4.7 and 4.8, are qualitatively similar to the results presented in tables 4.1 and 4.2.

4.3.2 Alternative variable definitions

Since discretionary accruals are calculated based on total earnings, rather than earning per share, the model developed in section 5.1 uses total earnings and analyst forecasts of total earnings rather than earnings per share and analyst forecasts of earnings per share. In order to ensure that these variables also reflect the spirit of the findings of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003), I recreate the earnings, analyst forecast, and analyst forecast error distributions after converting earnings per share to total earnings.

In this analysis, total earnings is defined as earnings before extra items (Compustat data item 123), and analyst forecasts of total earnings is defined as the mean consensus forecast from the IBES database multiplied by the total number of shares used to calculate EPS (Compustat data item 54). Both of these variables are then deflated by total assets. The earnings and analyst forecast distributions are shown in figure 4.3. As in figure 4.1, the distributions are almost identical, especially with respect to the chink above zero.

Figure 4.4 presents the distributions of analyst forecast errors, where analyst forecast error is defined as the difference between total earnings and the analyst forecast multiplied by the number of shares used to calculate EPS, deflated by total assets. This definition of analyst forecast error is used for comparison with the variables definitions used in figure 4.3. Panel A presents the distribution of analyst forecast errors and provides visual evidence of the chink above zero, consistent with the middle asymmetry. Panel B graphs the percentiles of the analyst forecast error distribution. Although the graph shows a much tighter distribution than in panel B of figure 4.2, there is still evidence that the left tail of the distribution is longer and thicker than the right tail. These results suggest that an analysis based on total earnings can be used to reconcile the results of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003).

4.3.3 Deflating

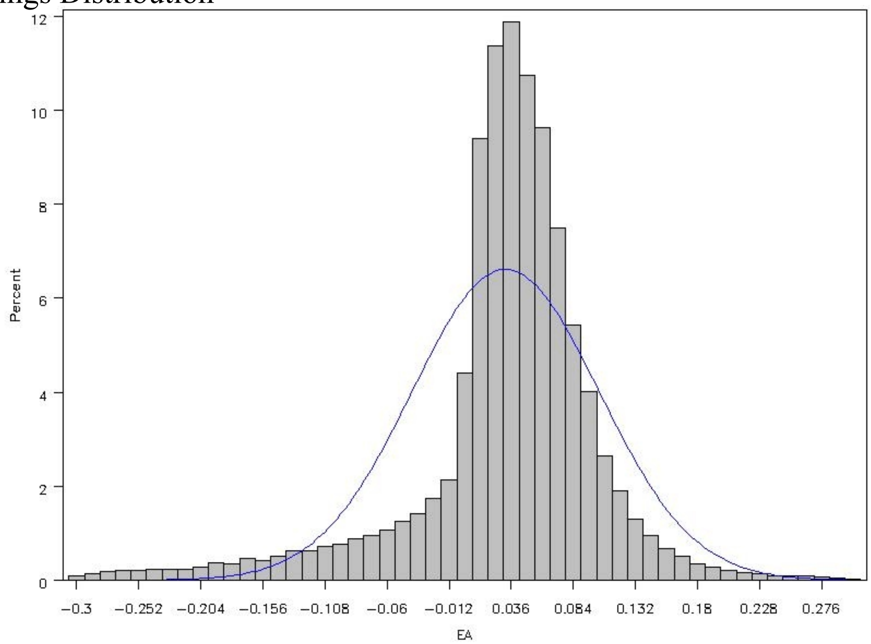
A recent study by Durtschi and Easton (2005) suggests that the evidence of a 'chink' in the earnings distribution is caused by the use of stock price as a deflator, rather than earnings management (as proposed by Burgstahler and Dichev 1997). They theorize that firms meeting-or-beating their benchmarks will have a higher stock price than firms missing their benchmarks. This will lead to larger denominators for the meet-or-beat firms and, consequently, will pull observations into the bins immediately above zero without any earnings management. Firms that miss the benchmarks, on the other hand, will have smaller denominators, which will tend to push the observations away from zero. In order to address the possibility that the results from the primary tests are caused by deflating, I replicated the tests without deflating by stock price. The results, presented in figures 4.5 and 4.6 are qualitatively similar to those presented in figures 4.1 and 4.2.

4.4 Summary

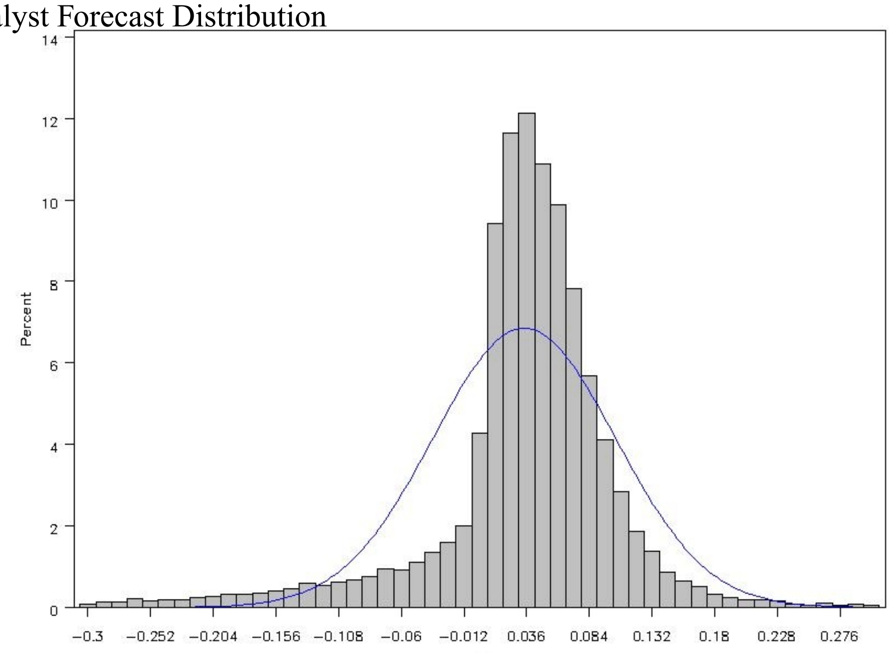
The similarities in the earnings and analyst forecast distributions suggest that analysts include the effects of earnings management when issuing their forecasts, consistent with the findings of Burgstahler and Eames (2003). Based on this finding, I would expect the analyst forecast errors to be caused by only random error, leading to an analyst forecast error distribution that is symmetric around zero. Instead, the forecast error distribution has its own chink above zero and a fat left tail, consistent with the findings of Abarbanell and Lehavy (2003), who claim that analysts remove the effects of earnings management from their forecasts. In the next chapter I attempt to resolve this discrepancy.

Figure 4.1
Distributions of Earnings per Share and Analysts' Forecasts of Earnings per Share

Panel A: Earnings Distribution



Panel B: Analyst Forecast Distribution



In figure 4.1, panel A presents the earnings distribution. Earnings are actual earnings per share reported by IBES. Panel B presents the analyst forecast distribution. Analyst forecasts are the mean consensus forecast reported by IBES. Both variables are deflated by beginning of the period stock price. The sample consists of the 34,994 annual earnings forecasts from IBES meeting the requirements presented in table 3.1.

Table 4.1
Results of Chi-Square Tests of the Ratio of Positive to Negative Observations in the Distributions of Earnings and Analyst Forecasts

*Table 4.1 presents tests of the statistical significance of the chink above zero for the earnings and analyst forecast distributions. Panel A presents the results for the earnings distribution and panel B for the analyst forecast distribution. The first column presents the ratio of positive to negative observations falling in concentric bins around 0. A chi-squared test is used to determine if there is a significant difference in the number of positive and negative observations. * indicates significance at the 5% level. In column two presents the percentage of observations falling in each bin width. A significant chink above zero is evidenced by a high percentage of observations falling close to zero.*

Panel A: The Distribution of Earnings Per Share

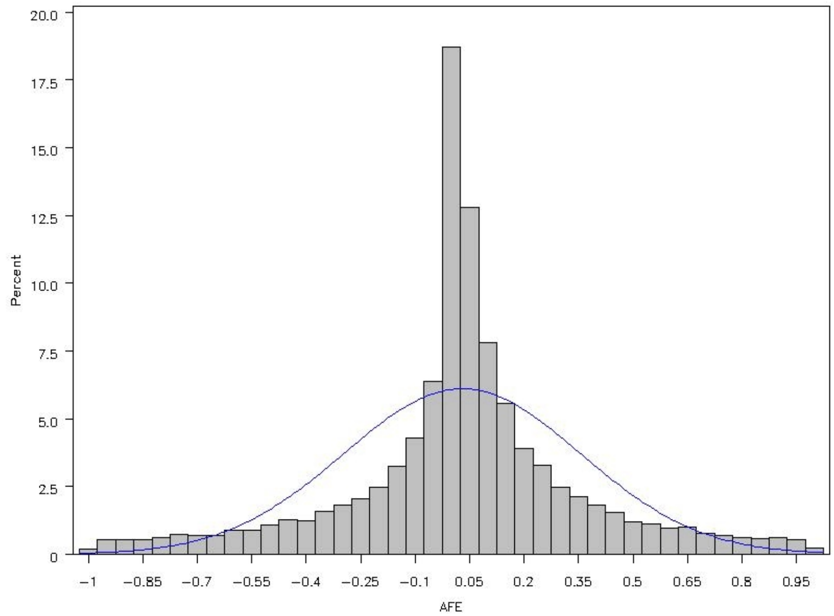
Range of Forecast errors	Ratio of positive to Negative Forecast Errors	% of total number of observations
	Reported	Reported
Overall	4.06	
Earnings per Share = 0		0%
[-0.05,0) & (0, 0.05]	5.80*	49%
[-0.1,-0.05) & (0.05, 0.1]	7.28*	32%
[-0.15,-0.1) & (0.1, 0.15]	2.79*	10%
[-0.2,-0.15) & (0.15, 0.2]	1.07*	3%
[-0.25,-0.2) & (0.2, 0.25]	0.56*	2%
[-0.3,-0.25) & (0.25,0.3]	0.31*	1%
[Min,-0.3) & (0.3, Max]	0.21*	4%

Panel B: The Distribution of Analysts' Forecasts of Earnings per Share

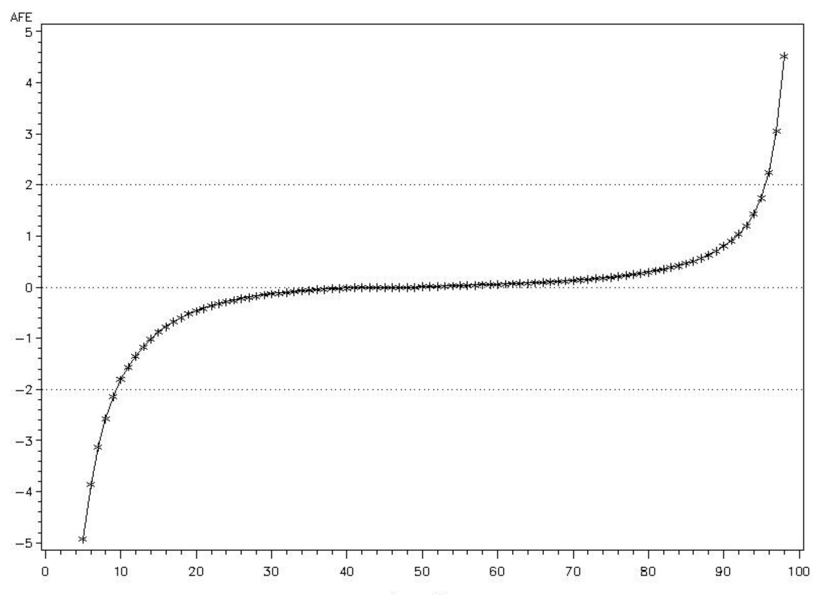
Range of Forecast errors	Ratio of positive to Negative Forecast Errors	% of total number of observations
	Reported	Reported
Overall	4.62	
Forecast = 0		0%
[-0.05,0) & (0, 0.05]	6.18*	49%
[-0.1,-0.05) & (0.05, 0.1]	8.51*	33%
[-0.15,-0.1) & (0.1, 0.15]	3.08*	10%
[-0.2,-0.15) & (0.15, 0.2]	1.12*	3%
[-0.25,-0.2) & (0.2, 0.25]	0.61*	1%
[-0.3,-0.25) & (0.25,0.3]	0.42*	1%
[Min,-0.3) & (0.3, Max]	0.26*	3%

Figure 4.2
Distribution of Analyst Forecast Errors

Panel A: Analyst Forecast Error Distribution



Panel B: Percentiles of the Analyst Forecast Error Distribution



In figure 4.2, panel A presents the analyst forecast error distribution over the range of [-1, 1]. Forecast error is defined as the difference between actual earnings from IBES less the mean consensus IBES forecasts. The difference is deflated by beginning of the period stock price and multiplied by 100 (following Abarbanell and Lehavy 2003). Panel B presents the percentile distribution of the analyst forecast errors. The sample consists of the 34,994 earnings forecast errors meeting the requirements presented in table 3.1.

Table 4.2

Comparison of the Summary Statistics of the Analyst Forecast Error Distribution

Table 4.2 presents summary statistics of the analyst forecast error distribution. Column one presents the results from the full sample, and column two presents the results from Abarbanell and Lehavy (2003). Analyst forecast error is defined as actual earnings per share, reported by IBES, less the consensus analyst forecast, deflated by beginning of the period stock price and multiplied by 100.

	Full Sample	Abarbanell and Lehavy (2003)
Number of Observations	34,990	33,548
Mean	-0.657	-0.126
Median	0.009	0.000
% Positive	51%	48%
% Negative	41%	40%
% Zero	8%	12%

Table 4.3
Results of Chi-Square and Mann-Whitney Tests of the Middle and Tail Asymmetries of the Analyst Forecast Error Distribution

Table 4.3 presents tests of the middle and tail asymmetries of the analyst forecast error distribution. Analyst forecast error is defined as actual earnings per share, reported by IBES, less the consensus analyst forecast, deflated by beginning of the period stock price and multiplied by 100.

*Column one presents the results from the full sample, and column two presents the results from Abarbanell and Lehavy (2003). Panel A presents the percentiles examined by Abarbanell and Lehavy (2003) to test for the tail asymmetry and a Mann-Whitney test comparing the absolute size of the percentiles in the tails of the distribution. Panel B presents chi-squared tests of concentric bins around zero and a breakdown of the percentage of observations in each set of bins. * indicates significance at the 5% level.*

Panel A: Statistics on the 'tail asymmetry'

Percentile	Full Sample	Abarbanell and Lehavy (2003)
P5	-4.931	-1.333
P10	-1.810	-0.653
P25	-0.253	-0.149
P75	0.198	0.137
P90	0.800	0.393
P95	1.744	0.684
Difference in Absolute Value of Percentiles		
|P5| - |P95|	3.187	0.649
|P10| - |P90|	1.010	0.260
|P25| - |P75|	0.055	0.012
Mann-Whitney Test of the Tails		
Z-Statistic	2.489*	

Panel B: Statistics on the 'middle asymmetry'

Range of Forecast errors	Ratio of positive to Negative Forecast Errors		% of total number of observations	
	Full Sample	Abarbanell and Lehavy (2003)	Full Sample	Abarbanell and Lehavy (2003)
Overall	1.25	1.19		
Forecast errors = 0			8%	12%
[-0.1,0) & (0, 0.1]	1.91*	1.63*	27%	29%
[-0.2,-0.1) & (0.1, 0.2]	1.69*	1.54*	14%	18%
[-0.3,-0.2) & (0.2, 0.3]	1.58*	1.31*	8%	10%
[-0.4,-0.3) & (0.3, 0.4]	1.37*	1.22*	6%	7%
[-0.5,-0.4) & (0.4, 0.5]	1.27*	1.00	4%	5%
[-1,-0.5) & (0.5, 1]	1.12*	0.83*	11%	11%
[Min,-1) & (1, Max]	0.59*	0.40*	22%	9%

Table 4.4
Chi-Squared tests of the Earnings and Analyst Forecast Distributions using the Median and Last Available Forecast Samples

*Table 4.4 summarizes the results of chi-squared tests of the chink above zero for two alternative samples. Column one presents the results using a sample of median consensus forecasts, created by substituting the median analyst forecast for the mean in the full sample (n = 34,990). Column two presents the results for a sample of last available forecasts, obtained from the IBES detail file and subjected to the sample screens described in section 3.1 (n = 9.698). * indicates significance at the 5% level.*

Panel A: The Distribution of Earnings Per Share

Range of Forecast errors	Ratio of positive to Negative Forecast Errors	
	Median	Last
Overall	4.06	3.73
Earnings = 0		
[-0.05,0) & (0, 0.05]	5.80*	5.02*
[-0.1,-0.05) & (0.05, 0.1]	7.28*	6.78*
[-0.15,-0.1) & (0.1, 0.15]	2.79*	2.48*
[-0.2,-0.15) & (0.15, 0.2]	1.07*	1.28*
[-0.25,-0.2) & (0.2, 0.25]	0.56*	0.63*
[-0.3,-0.25) & (0.25,0.3]	0.31*	0.35*
[Min,-0.3) & (0.3, Max]	0.21*	0.28*

Panel B: The Distribution of Analysts' Forecasts of Earnings per Share

Range of Forecast errors	Ratio of positive to Negative Forecast Errors	
	Median	Last
Overall	4.62	4.22
[-0.05,0) & (0, 0.05]	6.21*	5.40*
[-0.1,-0.05) & (0.05, 0.1]	8.42*	7.49*
[-0.15,-0.1) & (0.1, 0.15]	3.13*	2.94*
[-0.2,-0.15) & (0.15, 0.2]	1.14*	1.35*
[-0.25,-0.2) & (0.2, 0.25]	0.59*	0.57*
[-0.3,-0.25) & (0.25,0.3]	0.41*	0.36*
[Min,-0.3) & (0.3, Max]	0.26*	0.34*

Table 4.5
Chi-Squared tests of the Earnings and Analyst Forecast Distributions using a Sample of Quarterly Forecasts

*Table 4.5 summarizes the results of chi-squared tests of the chink above zero for a sample of consensus quarterly consensus forecasts, created by implementing the sample screens discussed in section 3.1 on a set of quarterly consensus forecasts (n = 128,612). # indicates significance at the 10% level, and * indicates significance at the 5% level.*

Panel A: The Distribution of Earnings Per Share

Range of Forecast errors	Ratio of positive to Negative Forecast Errors
	Reported
Overall	4.11739
[-0.01,0) & (0, 0.01]	6.14960*
[-0.02,-0.01) & (0.01, 0.02]	8.52152*
[-0.03,-0.02) & (0.02, 0.03]	4.82803*
[-0.04,-0.03) & (0.03, 0.04]	2.02864*
[-0.05,-0.04) & (0.04, 0.05]	1.06555*
[-0.1,-0.05) & (0.05,0.1]	0.42890*
[Min,-0.1) & (0.1, Max]	0.10769*

Panel B: The Distribution of Analysts' Forecasts of Earnings per Share

Range of Forecast errors	Ratio of positive to Negative Forecast Errors
	Reported
Overall	4.7047
[-0.5,0) & (0, 0.5]	6.4084*
[-0.1,-0.5) & (0.5, 0.1]	9.7192*
[-0.15,-0.1) & (0.1, 0.15]	5.4391*
[-0.2,-0.15) & (0.15, 0.2]	2.2452*
[-0.25,-0.2) & (0.2, 0.25]	1.0513#
[-0.3,-0.25) & (0.25,0.3]	0.4244*
[Min,-0.3) & (0.3, Max]	0.1350*

Table 4.6

Results of Chi-Square and Mann-Whitney Tests for the Median Consensus Forecast, Last Available Forecast, and Quarterly Consensus Forecast Samples

*Table 4.6 presents tests of the middle and tail asymmetries of the analyst forecast error distribution for three alternative samples. Column one presents the results for a sample of median consensus forecasts, column two for a sample of the last available forecasts, and column three for a sample of quarterly consensus forecasts. Panel A presents the percentiles examined by Abarbanell and Lehavy (2003) to test for the tail asymmetry and a Mann-Whitney test comparing the absolute size of the percentiles in the tails of the distribution. Panel B presents chi-squared tests of concentric bins around zero and a breakdown of the percentage of observations in each set of bins. * indicates significance at the 5% level.*

Panel A: Statistics on the 'tail asymmetry'

Percentile	Median	Last Available	Quarterly
P5	-4.907	-5.213	-1.813
P10	-1.749	-2.000	-0.720
P25	-0.232	-0.336	-0.108
P75	0.192	0.257	0.135
P90	0.780	1.058	0.461
P95	1.723	2.435	0.923
Difference in Absolute Value of Percentiles			
|P5| - |P95|	3.184	2.778	0.889
|P10| - |P90|	0.969	0.942	0.259
|P25| - |P75|	0.040	0.079	-0.027
Mann-Whitney Test of the Tails			
Z-Statistic	2.240*	2.240*	0.581

Panel B: Statistics on the 'middle asymmetry'

Range of Forecast errors	Ratio of positive to Negative Forecast Errors		
	Median	Last Available	Quarterly
Overall	1.23	1.16	1.39
[-0.1,0) & (0, 0.1]	1.89*	1.61*	1.95*
[-0.2,-0.1) & (0.1, 0.2]	1.77*	1.57*	1.77*
[-0.3,-0.2) & (0.2, 0.3]	1.58*	1.42*	1.50*
[-0.4,-0.3) & (0.3, 0.4]	1.48*	1.42*	1.33*
[-0.5,-0.4) & (0.4, 0.5]	1.22*	1.07	1.20*
[-1,-0.5) & (0.5, 1]	1.13*	1.15*	1.01
[Min,-1) & (1, Max]	0.60*	0.68*	0.57*

Table 4.7
Chi-Squared tests of the Earnings and Analyst Forecast Distributions using a Sample of Individual Analyst Forecasts

*Table 4.7 summarizes the results of chi-squared tests of the chink above zero for a sample of 95,578 individual analyst forecasts from the IBES detail file. # indicates significance at the 10% level, and * indicates significance at the 5% level.*

Panel A: The Distribution of Earnings Per Share

Range of Forecast errors	Ratio of positive to Negative Forecast Errors: Reported	
Overall	5.65	
Earnings per Share = 0		
[-0.05,0) & (0, 0.05]	6.91	*
[-0.1,-0.05) & (0.05, 0.1]	9.29	*
[-0.15,-0.1) & (0.1, 0.15]	3.66	*
[-0.2,-0.15) & (0.15, 0.2]	1.85	*
[-0.25,-0.2) & (0.2, 0.25]	0.81	*
[-0.3,-0.25) & (0.25,0.3]	0.45	*
[Min,-0.3) & (0.3, Max]	0.26	*

Panel B: The Forecast Level Distribution

Range of Forecast errors	Ratio of positive to Negative Forecast Errors: Reported	
Overall	6.124	
Forecast = 0		
[-0.05,0) & (0, 0.05]	7.212	*
[-0.1,-0.05) & (0.05, 0.1]	10.318	*
[-0.15,-0.1) & (0.1, 0.15]	4.259	*
[-0.2,-0.15) & (0.15, 0.2]	1.761	*
[-0.25,-0.2) & (0.2, 0.25]	0.780	*
[-0.3,-0.25) & (0.25,0.3]	0.442	*
[Min,-0.3) & (0.3, Max]	0.286	*

Table 4.8
Results of Chi-Square and Mann-Whitney Tests for the Sample of Individual Analyst Forecasts

*Table 4.8 presents tests of the middle and tail asymmetries of the analyst forecast error distribution for the sample of individual analyst forecasts. Panel A presents the percentiles examined by Abarbanell and Lehavy (2003) to test for the tail asymmetry and a Mann-Whitney test comparing the absolute size of the percentiles in the tails of the distribution. Panel B presents chi-squared tests of concentric bins around zero and a breakdown of the percentage of observations in each set of bins. * indicates significance at the 5% level.*

Panel A: Statistics on the 'tail asymmetry'

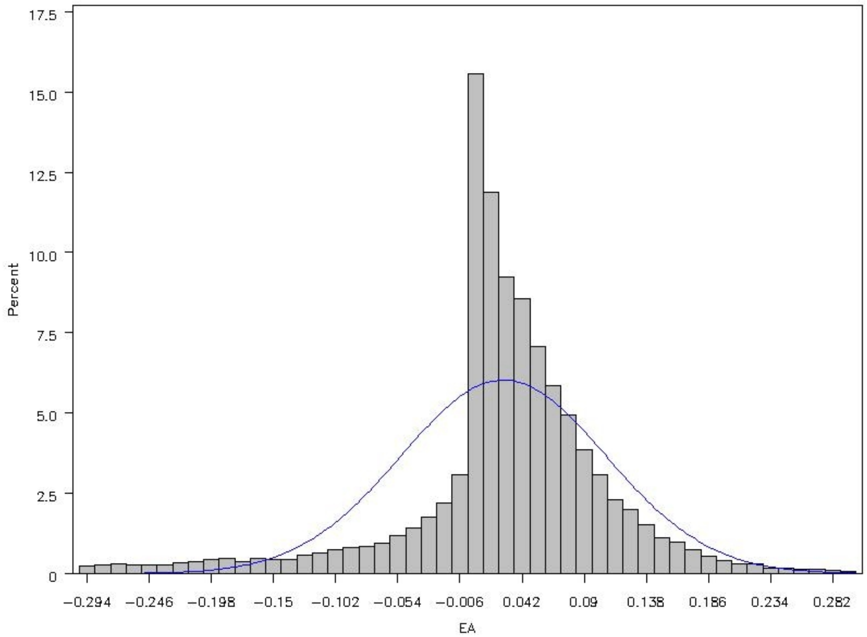
Percentile	Full Sample
P5	-2.345
P10	-0.923
P25	-0.136
P75	0.181
P90	0.652
P95	1.357
Difference in Absolute Value of Percentiles	
|P5| - |P95|	0.988
|P10| - |P90|	0.272
|P25| - |P75|	-0.044
Mann-Whitney Test of the Tails	
Z-Statistic	0.166

Panel B: Statistics on the 'middle asymmetry'

Range of Forecast errors	Ratio of positive to Negative Forecast Errors Full Sample	
Overall	1.340	
Forecast errors = 0		
[-0.1,0) & (0, 0.1]	1.666	*
[-0.2,-0.1) & (0.1, 0.2]	1.667	*
[-0.3,-0.2) & (0.2, 0.3]	1.618	*
[-0.4,-0.3) & (0.3, 0.4]	1.550	*
[-0.5,-0.4) & (0.4, 0.5]	1.296	*
[-1,-0.5) & (0.5, 1]	1.125	*
[Min,-1) & (1, Max]	0.717	*

Figure 4.3
Distributions of Total Earnings and Analysts' Forecasts of Total Earnings

Panel A: Earnings Distribution



Panel B: Analyst Forecast Distribution

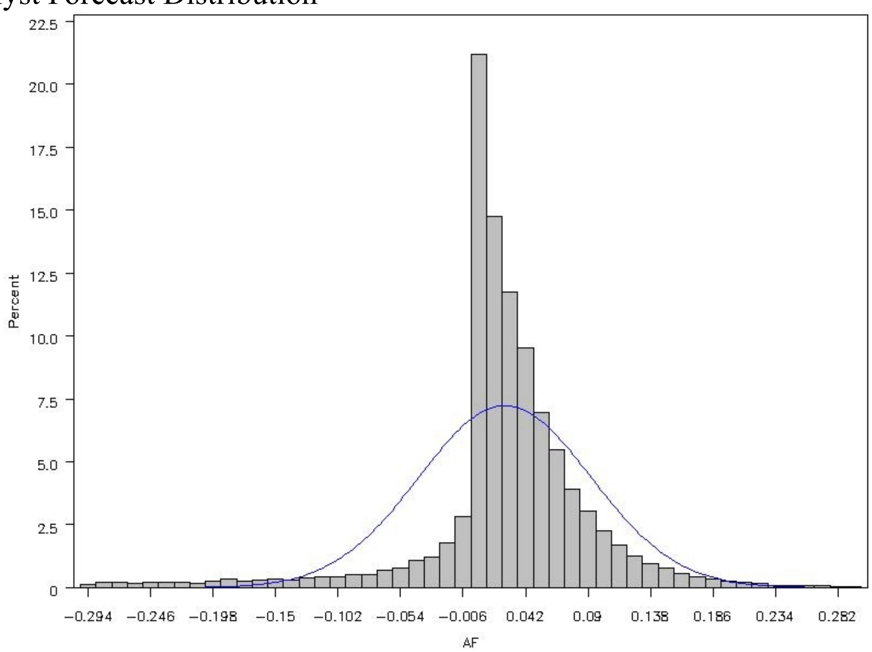
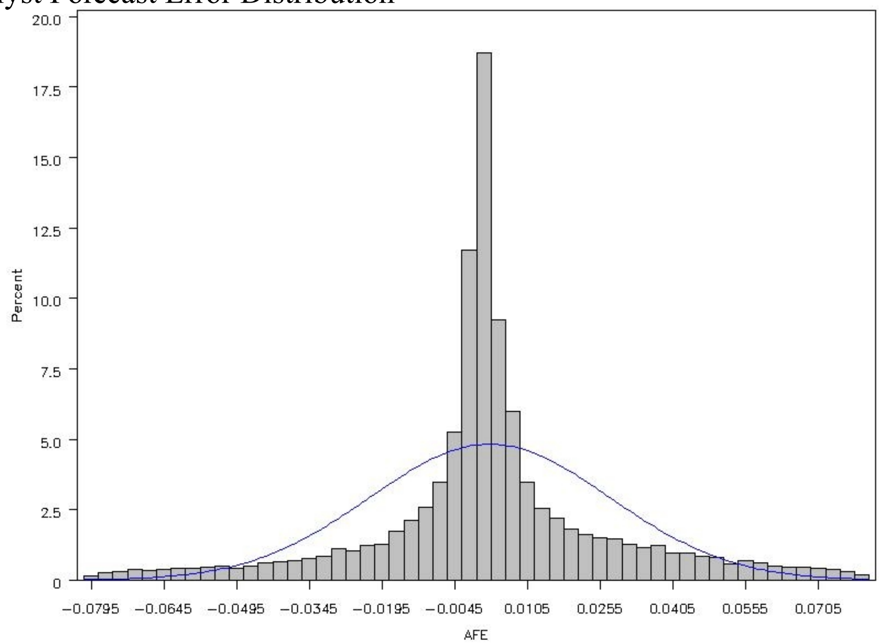


Figure 4.3, panel A presents the earnings distribution. Earnings are earnings before extra items (Compustat data item 123). Panel B presents the analyst forecast distribution. Analyst forecasts are the mean consensus forecast reported by IBES time the number of shares used to calculate EPS (Compustat data item 54). Both variables are deflated by total assets (Compustat data item 6). The sample consists of the 34,990 annual earnings forecasts from IBES meeting the requirements presented in table 3.1.

Figure 4.4
Distribution of Total Analyst Forecast Errors

Panel A: Analyst Forecast Error Distribution



Panel B: Percentiles of the Analyst Forecast Error Distribution

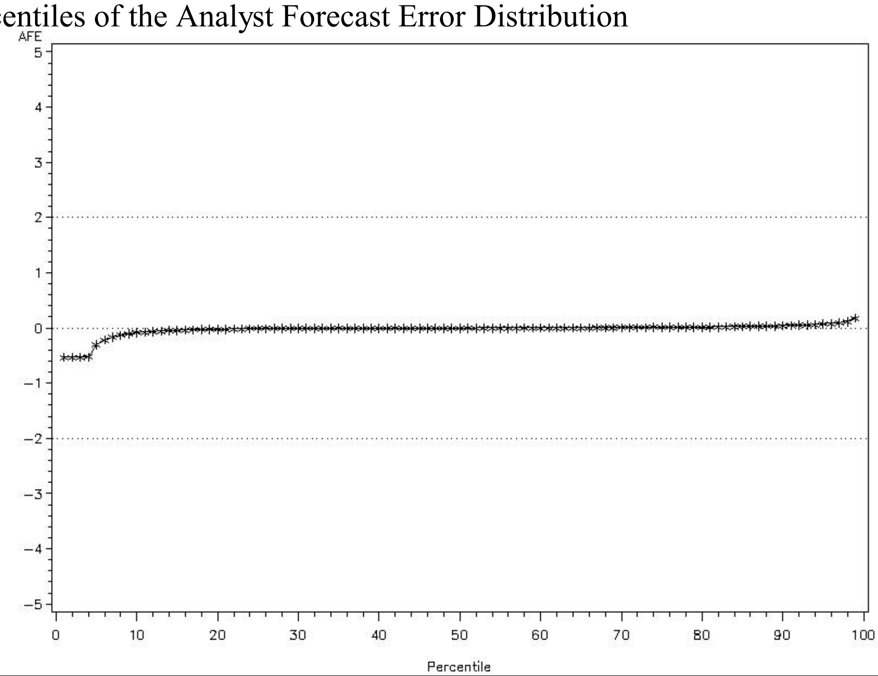
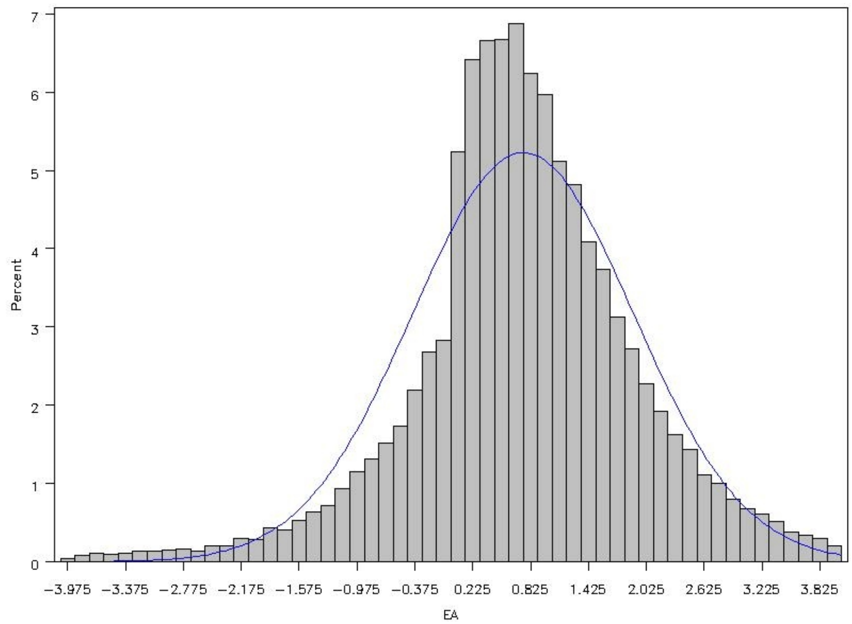


Figure 4.4, panel A presents the analyst forecast error distribution over the range of [-1, 1]. Forecast error is defined as the difference between income before extra items (Compustat data item 123) less the mean consensus IBES forecasts times by the number of shares used to calculate EPS (Compustat data item 54). The difference is deflated by total assets. Panel B presents the percentile distribution of the analyst forecast errors. The sample consists of the 34,990 earnings forecast errors meeting the requirements presented in table 3.1.

Figure 4.5
Distributions of Total Earnings and Analysts' Forecasts of Undeflated Earnings per Share

Panel A: Earnings Distribution



Panel B: Analyst Forecast Distribution

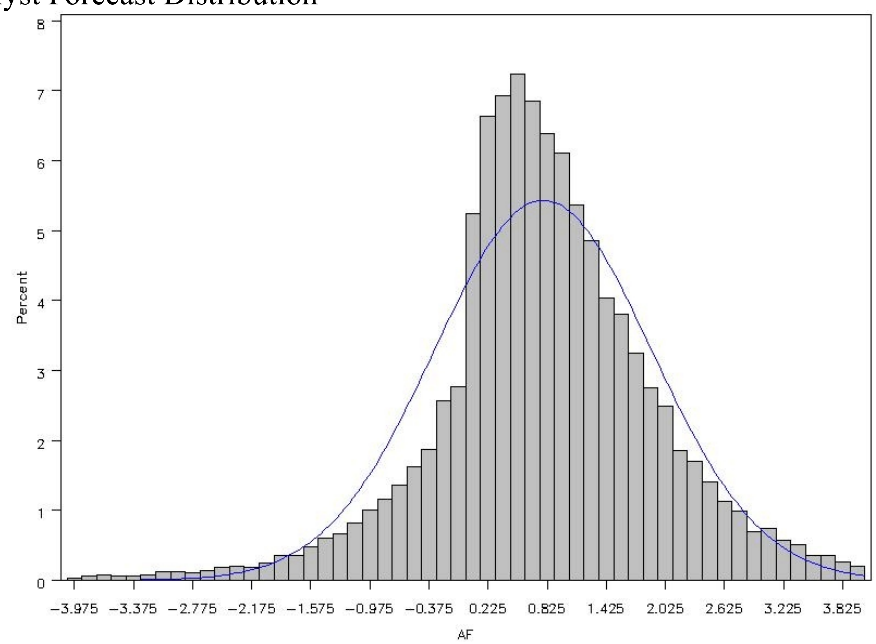
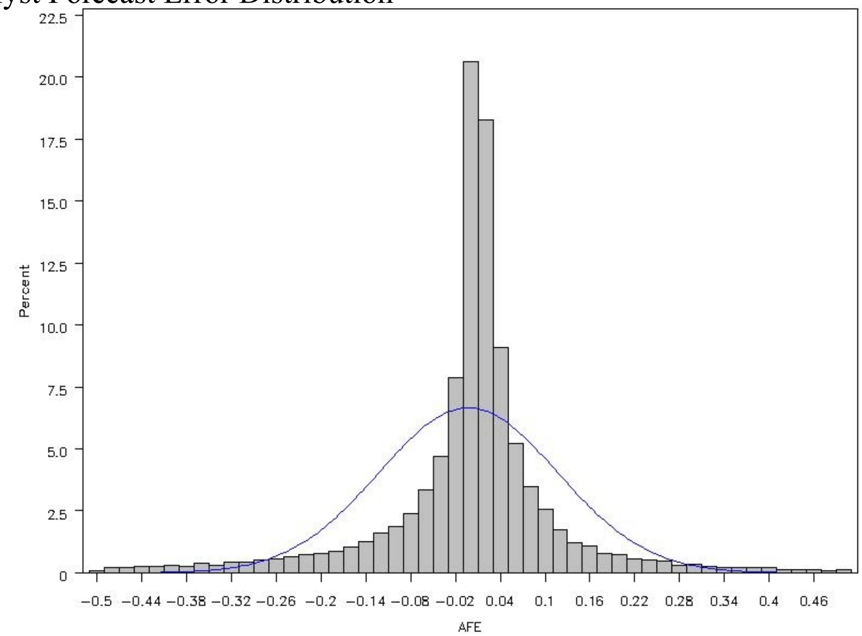


Figure 4.5, panel A presents the earnings distribution with no deflator. Earnings are earnings before extra items (Compustat data item 123). Panel B presents the analyst forecast distribution. Analyst forecasts are the mean consensus forecast reported by IBES time the number of to calculate EPS (Compustat data item 54). The sample consists of the 34,990 annual earnings forecasts from IBES meeting the requirements presented in table 3.1.

Figure 4.6
Distribution of Undeflated Analyst Forecast Errors

Panel A: Analyst Forecast Error Distribution



Panel B: Percentiles of the Analyst Forecast Error Distribution

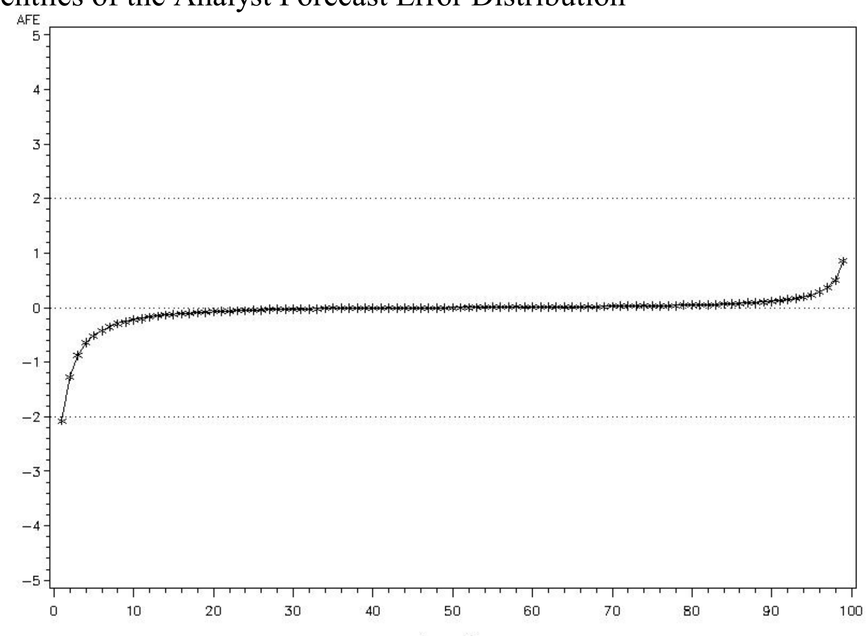


Figure 4.6, panel A, presents the analyst forecast error distribution over the range of [-1, 1]. For these figures, forecast error is defined as the difference between actual earnings from IBES less the mean consensus IBES forecasts. Panel B presents the percentile distribution of the analyst forecast errors. The sample consists of the 34,990 earnings forecast errors meeting the requirements presented in table 3.1.

CHAPTER 5

THE REGRESSION MODEL

5.1 Defining the Model

In order to examine how analysts treat earnings management when making their forecasts, I use a variation of the model used by Elgers, et al. (2003) to test working capital accruals. The current model consists of two equations. In the first equation, year ahead earnings are regressed on current cash flows, nondiscretionary accruals, and discretionary accruals. The estimated coefficient on each component of current earnings indicates its predictive ability for future earnings. In the second equation, analysts' forecasts of year ahead earnings are regressed on current period earnings components. In this equation, the coefficients on each earnings component indicate analysts' weighting of that component in their forecast. I assume that if analysts aim for forecast accuracy, they will weight the earnings components according to their predictive ability, and the coefficients for particular components will not differ across equations. In contrast, differences between coefficients indicate cases where analysts depart from accuracy as their forecasting goal. Thus, if analysts remove the effects of earnings management, they will discount discretionary accruals to provide information about current earnings management, even at the expense of some current information content contained in discretionary accruals.

Formally, the model is written:

$$EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1} \qquad (1)$$

$$AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1} \qquad (2)$$

where EA_{t+1} is earnings before extra items at time t+1 (Compustat data item 123),[7] AF_{t+1} is the mean consensus analyst forecast of reported earnings at time t+1 multiplied by the number of shares used to calculate EPS (IBES data item 'meanest' times Compustat data item 54), CFO_t is cash flows from operations as defined by Hribar and Collins (2002), $DACC_t$ is discretionary accruals from the modified-Jones model (discussed in section 5.4), and $NDACC_t$ is non-discretionary accruals, calculated as the difference between CFO_t and $DACC_t$. All variables are deflated by lagged total assets (Compustat data item 6).

This model is similar in form to the simultaneous equation models used by Sloan (1996) and Xie (2001). In their studies, Sloan and Xie use a system of equations approach to regress upcoming earnings and stock price on the current earnings components and test whether investors correctly weight the information content of current earnings. For their tests, the differences between the dependent variables, earnings and stock price, are sufficient to allow the models to meet the assumption of independence needed to run a system of simultaneous equations. The dependent variables in the current model, however, are earnings and analysts forecasts *of* earnings. This relationship between these two dependent variables leads to cross-sectional dependence in the error terms of equations one and two that violates the assumption of independence and results in biased estimates (Bernard 1987). To avoid this problem, equations one and two are not run as a system of simultaneous equations but are estimated independently for each sample year. The mean value for each of the coefficients is then calculated, and cross-equation differences in coefficients are evaluated using a standard t-test (Elgers et al. 2003).

[7] I winsorize EA_{t+1} at the 1st and 99th percentiles because the mean consensus analyst forecast is similarly winsorized (see section 3.1).

5.2 Assumptions

The testing strategy described in section 5.1 relies on several assumptions. First, consistent with prior research (such as Bartov, Gul and Tsui 2001, Gaver, Gaver and Austin 1995, Hribar and Collins 2002, Jones 1991, and Kothari, Leone and Wasley 2005), I assume that discretionary accruals capture the earnings management component of reported earnings. Second, I assume that analysts communicate their knowledge of earnings management in their forecast, rather than in other disclosures in the body of their report. This focus on forecasts rather than recommendations is consistent with Abarbanell and Bernard (2000), Barron, Kim, Lim and Stevens (1998), Bradshaw, Richardson and Sloan (2001), Crichfield, Dyckman and Lakonishok (1978), Elgers, Lo and Pfeiffer Jr. (2001), and Schipper (1991). In addition, I assume that analysts issue only one earnings forecast rather than separately forecasting reported and premanaged earnings, consistent with the assumptions of Abarbanell and Lehavy (2003), Burgstahler and Eames (2003), and Liu (2005). Finally, I assume that analysts can separate discretionary accruals into earnings management and legitimate changes in accruals (Abarbanell and Lehavy 2003 and Balsam, Bartov and Marquardt 2002).

5.3 Predictions

Based on the findings of Elgers, et al. (2003) and Xie (2001), I predict that the components of current earnings will be positively related to both upcoming earnings and analysts' forecasts of upcoming earnings. This leads to my first hypothesis:

H1: All of the coefficients from equations one and two will be positive.

I assume that analysts understand the implications of cash flows and nondiscretionary accruals for upcoming earnings. Thus, I predict that the difference between the coefficients from equations one and two on cash flows from operations and nondiscretionary accruals will be zero. This leads to the second hypothesis:

H2: There will be no difference between the coefficients on either cash flows from operations or nondiscretionary accruals in equations one and two.

If analysts include the effects of earnings management in their forecasts, as predicted by Burgstahler and Eames (2003), there will be no difference between the coefficients on discretionary accruals in equations one and two. This leads to hypothesis three:

H3: If analysts include the effects of earnings management in their forecasts, then there will be no difference between the coefficients on discretionary accruals in equations one and two.

Rejection of hypothesis three indicates that discretionary accruals are weighted differently by analysts than would be indicated by their predictive ability for future earnings. A finding that the coefficient on discretionary accruals in equation two is significantly lower than the weight in equation one is consistent with analysts' discounting earnings management when making their forecasts. Such a finding would support the view of Abarbanell and Lehavy (2003).

5.4 Calculating Discretionary Accruals

I calculate discretionary accruals using the cross-sectional version of the modified-Jones model. I estimate the model cross-sectionally for each year, rather than by individual firm over time, for two reasons. First, Bartov, et al. (2001) show that the cross-section version is more accurate than the time-series model. Second, the cross-sectional model provides a larger sample size relative to the time-series models. I estimate the model for each two-digit Standard Industrial Code (SIC) and year combination with at least five observations, consistent with Xie (2001). In addition, I include return on assets to control for legitimate changes in accruals due to performance (Kothari et al. 2005). The model is:

$$TA_t = b_1(1/A_{t-1}) + b_2\Delta REV_t + b_3PPE_t + b_4ROA_t + e_t \qquad (3)$$

where, TA_t is total accruals for year t calculated as the difference between earnings before extra items (Compustat annual data item 123) and cash flows from operations (Compustat annual data item 308 less Compustat annual data item 124), A_{t-1} is lagged total assets (Compustat annual data item 6), ΔREV_t is the change in sales less the change in accounts receivable (Compustat annual data items 12 and 2, respectively), PPE_t is gross property plant and equipment (Compustat annual data item 8), and ROA_t is return on assets (Compustat annual data item 172 divided by lagged total assets). TA_t, ΔREV_t, and PPE_t are deflated by lagged total assets. Discretionary accruals ($DACC_t$) are the residuals from equation three.

5.5 Summary Statistics

Table 5.1 presents the summary statistics for the variables used in equations one and two. Consistent with Burgstahler and Eames (2003), I find that the mean year-ahead analyst forecast (0.016) and actual year-ahead earnings (0.017) are similar (p-value = 0.9831). However, the year-ahead forecast (AF_{t+1}) is much more variable than year-ahead earnings, as shown by both the larger standard deviation and the more extreme minimum and maximum values. This is because AF_{t+1} is formed by multiplying the mean consensus forecast by the number of shares used to calculate EPS. This exposes AF_{t+1} to the variation of both variables. The alternative winsorizing method presented in section 5.7.3 attempts to address this issue.

Cash flows from operations are significantly positive, while the mean values for both nondiscretionary and discretionary accruals are significantly negative. Discretionary accruals are significantly smaller in magnitude ($p < 0.001$) and appear less variable than nondiscretionary accruals. Also, the high positive values for both the 75th percentile and the maximum suggest that discretionary accruals are used, at least in some cases, to increase total earnings, suggesting that they are used to manage earnings. These results are consistent with those of prior research (see, for example, Elgers et al. 2003, Sloan 1996, and Xie 2001).

5.6 Results

Table 5.2, panel A, presents the results of estimating equation one, in which upcoming earnings are regressed on current earnings components. Consistent with hypothesis one, the coefficients are positive on all three variables. I test for significance using both a traditional t-test as well as a binomial test ($p = 0.5$) of the number of positive coefficients among the 16 sample years. Both tests indicate that each component of current earnings is significantly positively associated with upcoming earnings. Panel B presents the results for equation two, in which analysts' forecasts of upcoming earnings are regressed on current earnings components. Although the binomial test suggests that each variable is significantly positive, the t-tests indicate that none of the coefficients on the current earning components are significantly different from zero. This last result is contrary to hypothesis one.

Panel C reports the differences in the average coefficient values reported in panels A and B. The coefficients on discretionary accruals (β_3 and α_3) do not differ significantly between equations, consistent with hypothesis three. Likewise, the cross-equation differences between the coefficients on cash flows from operations and nondiscretionary accruals are insignificant, consistent with hypothesis two. It cannot be concluded, however that analysts correctly weight the information from all three earnings components when forecasting upcoming earnings, because the insignificant coefficients in panel B suggest that they do not use the earnings information in forming their forecasts.

In order to probe the somewhat surprising results in panel B of table 5.2, table 5.3 presents the results from the individual year regressions. Panel A presents the results for equation one and panel B presents the results for equation two. In general, the coefficients in panel A are significantly positive over the 16 years. The only exception is the negative coefficient on nondiscretionary accruals in 2002. The adjusted R^2 values for equation one are also stable over the entire sample period. The same is true each year in equation two, with two notable exceptions, 2001 and 2002. In 2001, the coefficients on cash flows, nondiscretionary accruals and discretionary accruals are all significantly negative. In contrast, the coefficients on cash flows, nondiscretionary accruals, and discretionary accruals are all more positive in 2002 than any other year in the sample.

I replicated the analysis in table 5.2 after excluding the 2001 and 2002 data. The results are presented in table 5.4. I find that the coefficients on all variables in equations one and two are significantly positive, consistent with hypothesis one. Further, there is no difference in the weight analysts place on discretionary accruals compared the their predictive ability for future earnings. This supports hypothesis three. Based on these results, I exclude 2001 and 2002 from the sample for each of the sensitivity analyses discussed in section 5.7.

5.7 Sensitivity Tests

5.7.1 Alternative samples

As discussed in section 4.3.1, the current sample differs from those used by Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003). In order to ensure that the results presented in the table 5.4 are not due to sampling choice, I repeat the analysis using several alternative samples. First, table 5.5 presents the results of estimating equations one and two using a sample of median consensus forecasts (n = 13,719) rather than mean consensus forecasts. The results are qualitatively similar to those presented in table 5.4.

Table 5.6 presents the results for a sample of quarterly, rather than annual, forecasts (n = 56,704). The results of estimating equation one are reported in panel A and are qualitatively similar to those presented in table 5.4. Panel B reports insignificant coefficients for all three of the current earnings components for equation two, consistent with those presented in panel B of table 5.2 and contrary to the results on table 5.4. Panel C shows an insignificant difference between α_3 and β_3, however the insignificant coefficients in panel B suggest that this result is due to noise rather than analysts including the effects of earnings management.

Table 5.7 presents the results using the last available forecast (n = 7,780). The results of equations one and two, presented in panels A and B of table 5.7, are qualitatively similar to the results presented in table 5.4. Further, the results in panel C, table 5.7, show no difference in the coefficients on discretionary accruals between the two equations for the last available forecast sample, consistent with hypothesis three.

Table 5.8 presents results for the detail sample (n = 13,502). These results provide the first evidence I have found that supports Abarbanell and Lehavy's (2003) view that analysts remove the effects of earnings management when issuing their forecasts. Panels A and B of table 5.8 show that the coefficients of equations one and two are significantly positive, consistent with hypothesis one. However, the differences between the coefficients of all three coefficients from the two equations are statistically significant, contrary to hypotheses two and three. The significant difference between the coefficients in cash flow from operations and nondiscretionary accruals components suggests that the results are due to analyst forecast error rather than to analysts intentionally removing earnings management (see, for example, Bradshaw, et al. 2001 and Elgers, et al. 2003).

5.7.2 Firms likely to manage earnings.

The current sample makes no attempt to distinguish among firms according to their likelihood of managing earnings. For firms that do not manage earnings, β_3 will equal α_3 because there is no earnings management to be removed. These firms cannot be used to decide whether analysts include or remove earnings management from their forecasts. To address this issue, I estimate equations one and two using a sub-sample of firms that I consider to be likely to engage in earnings management. The sample consists of those firms with deflated earnings per share in the range [-0.01, 0.01]. This restriction is based on evidence (see, for example, Ayers, Jiang and Yeung 2006, Burgstahler and Dichev 1997, DeFond and Park 1997, and Matsumoto 2002) that firms immediately around the zero benchmark have incentives to manage earnings, with those firms managing to meet-or-beat the benchmark being successful in their efforts.

The results are shown in tables 5.9. Consistent with hypothesis one, the coefficients from both equations are significantly positive. However, the differences between the coefficients of all three coefficients from the two equations are significant, contrary to hypotheses two and three. While the significant difference on the discretionary accruals variable suggests that analysts remove the effects of earnings management for firms likely to manage earnings, the significant difference on the other earnings components suggests that the difference is due to analyst forecast error rather than to analysts intentionally removing earnings management from their forecasts.

5.7.3 *Winsorizing*

Abarbanell and Lehavy (2003) control for outliers by winsorizing earnings per share and analyst forecasts at the 1st and 99th percentiles. Similarly, Elgers et al. (2003) truncate their measure of earnings and analyst forecasts at the 1st and 99th percentiles. Burgstahler and Eames (2003), on the other hand, do not winsorize or truncate their sample. For the principal tests, I winsorized analysts forecasts (IBES data item 'meanest') and year-ahead earnings (Compustat data item 123) at the 1st and 99th percentiles. I replicated my tests without winsorizing for consistency with Burgstahler and Eames (2003). The results, presented in table 5.10, show no evidence of a difference in the coefficients on discretionary accruals from the two regressions. However, since the coefficients on cash flow from operations and discretionary accruals reported on panel B are insignificant, this result is likely due to the increase in variance caused by the lack of winsorizing.

I also estimated equations one and two using a different winsorizing strategy compared to my original analysis in order to control for the high variability in AF_{t+1} relative to year-ahead earnings documented in table 5.1. Specifically, I created the AF_{t+1} variable by multiplying the mean consensus forecast, already winsorized, by the number of shares used to calculate EPS (Compustat data item 54) and then winsorized at the 1st and 99th percentiles. The results are presented in table 5.11. Panels A and B show that the coefficients on the three current earnings components are positively statistically significant for both equations, consistent with hypothesis one and the results in table 5.4. The t-tests presented in panel C indicate that both cash flows from operations and discretionary accruals are discounted by analysts. The significant difference on discretionary accruals is consistent with Abarbanell and Lehavy's (2003) prediction that analysts remove the effects of earnings management. The significant difference between the coefficients on cash flows from operations suggests the influence of analyst forecast error rather than intentional attempts to remove earnings management.

5.7.4 Pooled Regression

As an alternative to running each equation independently for each sample year, I also performed a pooled regression using all of the observations. The results from this test are presented in table 5.12. The coefficients from both equations are significantly positive, consistent with hypothesis one. To test whether analysts discount these components relative to their predictive weights, panel C presents the results of a t-test calculated as the difference between the coefficient from equation two less the coefficient from equation one, divided by the standard error of the coefficient from equation two. While the differences in the coefficients of cash flow from operations and nondiscretionary accruals components from the two equations are statistically significant, the difference in the coefficients on discretionary accruals are not different between equations, consistent with hypothesis three.

5.7.5 Implications

Overall, the sensitivity analysis suggests that the current model is unable to differentiate between analysts removing the effects of earnings management and analyst forecast error. The results for median, quarterly, last available forecast and unwinsorized samples, as well as the pooled regression analysis, support the results presented in table 5.4. However, the replications using the detail, likely to manage earnings, and the double winsorized samples provide evidence of a significant difference between the coefficients on discretionary accruals from equations one and two. This evidence contradicts the evidence in table 5.4 and suggests that analysts remove the effects of earnings management from their forecasts. However, these tests also reject hypothesis two that the coefficients on cash flows from operations and nondiscretionary accruals will not differ significantly between equations. This suggests that analysts are not intentionally removing the effects of earnings management but are misweighting the information in earnings.

Because the current model cannot differentiate between analysts intentionally removing earnings management and analyst error, as well as the sensitivity of the results to the sample used, additional evidence is needed to address the issue of whether analysts include or remove earnings management from their forecasts.

5.8 Conclusions

The main results in this chapter support Burgstahler and Eames' (2003) view that analysts include the effects of earnings management in their forecasts. The method is patterned after a similar strategy for testing how market participants weight the information in earnings (see, for example, Elgers, et al. 2003, Sloan 1996, and Xie 2001). However, the model has several weaknesses. First, several of the sensitivity analyses find contradicting results. Second, the model is unable to differentiate between analysts intentionally removing the effects of earnings management and analyst forecast error. Third, the model assumes that analysts have perfect foresight. Finally, the null prediction of hypothesis three and the small sample size of the t-tests (only 14 annual observations) suggest that the model is not sufficiently powerful. In order to address these issues, chapter six presents an alternative method for testing how analysts use their earnings management information.

Table 5.1

Summary Statistics for the Variables Used in Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components

Table 5.1 presents summary statistics for the variables in equations one and two. EA_{t+1} *is earnings before extra items at time t+1,* AF_{t+1} *is the mean consensus analyst forecast of reported earnings at time t+1 multiplied by the number of shares used to calculate EPS,* CFO_t *is cash flows from operations at time t,* $DACC_t$ *is discretionary accruals from the modified-Jones model at time t, and* $NDACC_t$ *is non-discretionary accruals at time t, calculated as the difference between* CFO_t *and* $DACC_t$*. All variables are deflated by lagged total assets (Compustat data item 6).*

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
EA_{t+1}	0.016	0.155	-0.761	0.003	0.040	0.085	0.302
AF_{t+1}	0.017	3.414	-324.832	0.010	0.034	0.069	295.142
CFO_t	0.076	0.179	-3.942	0.037	0.091	0.149	3.400
$NDACC_t$	-0.052	0.146	-9.064	-0.081	-0.042	-0.010	1.700
$DACC_t$	-0.009	0.096	-1.401	-0.044	-0.008	0.027	2.472

Table 5.2

Summary Results from Regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components

Table 5.2 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 16,593 observations of the restricted sample (see section 3.1). # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.013	0.689	0.443	0.410
t-statistic	-3.16**	26.63**	7.06**	9.04**
# Positive	3/16*	16/16**	15/16**	16/16**
n=16,593				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.275	-0.167	3.571	0.109
t-statistic	1.24	-0.20	1.15	0.11
# Positive	10/16	15/16**	15/16**	15/16**
n=16,593				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.288	0.856	-3.128	0.301
t-statistic	-1.29	1.04	-1.01	0.31

Table 5.3

Regression Results from the Annual Regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components

Table 5.3 presents the coefficients, their t-statistics, and adjusted R^2 values of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components for each of the years from 1988-2003. Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings.

The variables are defined as in table 5.1. The sample consists of the 16,593 observations. To remain in the sample, the observations must be the last available mean consensus forecast of annual earnings forecasts for all December year-end, U.S. firms in the IBES summary database during the period 1988-2004. In addition, they must be made more than 30 days prior to year end, must have the necessary information for calculating discretionary accruals (see section 5.4), and must have the needed year-ahead information (see the discussion of the restricted sample in section 3.1 for more detail).

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$ (1)

Year	N	α_0	t-stat	α_1	t-stat	α_2	t-stat	α_3	t-stat	adj. R^2
1988	86	-0.02	-2.29	0.89	13.28	0.79	9.52	0.84	4.84	0.676
1989	621	-0.01	-1.25	0.76	19.77	0.64	12.21	0.49	8.14	0.402
1990	653	0.00	-0.77	0.69	21.56	0.63	16.17	0.47	9.60	0.504
1991	684	0.00	-0.68	0.64	22.81	0.28	9.50	0.31	6.85	0.499
1992	751	-0.01	-1.77	0.81	28.29	0.66	14.54	0.60	12.14	0.533
1993	820	0.00	1.29	0.84	35.77	0.67	19.25	0.59	13.64	0.652
1994	929	0.00	-0.63	0.77	34.64	0.67	15.77	0.54	12.52	0.601
1995	1,101	0.00	0.51	0.65	32.52	0.54	19.38	0.56	17.41	0.514
1996	1,167	0.00	0.44	0.60	28.86	0.48	11.08	0.33	7.49	0.464
1997	1,272	-0.01	-2.83	0.62	26.82	0.55	15.19	0.35	8.16	0.479
1998	1,398	-0.01	-3.53	0.68	34.49	0.29	10.56	0.30	8.04	0.540
1999	1,374	-0.01	-1.32	0.54	32.34	0.41	9.84	0.29	9.65	0.502
2000	1,334	-0.05	-11.84	0.51	24.23	0.06	5.83	0.13	4.03	0.420
2001	1,383	-0.03	-7.83	0.68	32.92	0.62	11.85	0.29	8.14	0.572
2002	1,491	-0.05	-10.50	0.67	31.73	-0.09	-2.66	0.21	5.35	0.501
2003	1,529	-0.02	-4.80	0.68	46.05	0.18	5.58	0.26	8.19	0.596

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$ (2)

Year	N	β_0	t-stat	β_1	t-stat	β_2	t-stat	β_3	t-stat	adj. R^2
1988	86	0.01	2.06	0.31	5.11	0.40	5.33	0.18	1.16	0.273
1989	621	0.00	-0.54	0.51	14.79	0.43	9.21	0.33	6.07	0.272
1990	653	0.00	1.05	0.42	14.74	0.33	9.57	0.32	7.35	0.298
1991	684	0.00	1.17	0.43	15.16	0.23	7.58	0.18	3.93	0.324
1992	751	0.00	-0.56	0.63	25.58	0.53	13.47	0.43	11.25	0.484
1993	820	0.00	-0.52	0.69	27.87	0.55	14.72	0.42	10.33	0.531
1994	929	0.00	0.67	0.66	36.19	0.61	17.46	0.56	15.86	0.623
1995	1,101	0.00	0.91	0.62	26.41	0.51	15.33	0.56	14.87	0.407
1996	1,167	0.01	1.29	0.59	25.89	0.44	9.24	0.44	8.85	0.399
1997	1,272	-0.02	-3.61	0.76	28.69	0.51	12.41	0.43	8.80	0.482
1998	1,398	-0.03	-5.42	0.91	32.40	0.35	8.86	0.53	9.95	0.493
1999	1,374	0.00	0.09	0.62	24.12	0.53	8.08	0.20	4.19	0.369
2000	1,334	-0.03	-3.87	0.55	14.49	0.01	0.58	0.04	0.74	0.201
2001	1,383	0.80	2.71	-12.42	-8.22	-0.94	-0.48	-12.26	-4.71	0.052
2002	1,491	0.35	13.31	1.38	1.10	50.16	24.17	8.81	3.86	0.370
2003	1,529	0.12	12.97	0.67	15.72	2.50	26.72	0.49	5.24	0.379

Table 5.4

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components After Removing 2001 and 2002 from the Sample Period

Table 5.4 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components after the observations from 2001 and 2002 have been removed from the sample period. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 13,719 observations of the restricted sample that do not fall in 2001 and 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.009	0.691	0.490	0.433
t-statistic	-2.60**	23.29**	8.48**	8.91**
# Positive	3/14*	14/14**	14/14**	14/14**
n=13,719				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.006	0.598	0.566	0.371
t-statistic	0.59	14.79**	3.66**	8.43**
# Positive	8/14	14/14**	14/14**	14/14**
n=13,719				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.014	0.093	-0.076	0.062
t-statistic	-1.42	1.86#	-0.46	0.94

Table 5.5
Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using a Sample of Median Analyst Forecasts

Table 5.5 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a sample of median analyst forecasts is used. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1, except that AF_{t+1} is defined as the median consensus analyst forecast multiplied by the number of shares used to calculate EPS. The sample consists of the 13,719 observations of the restricted sample that do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.009	0.691	0.490	0.433
t-statistic	-2.60*	23.29**	8.48**	8.91**
# Positive	3/14*	14/14**	14/14**	14/14**
n=13,719				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.006	0.599	0.579	0.372
t-statistic	0.60	14.89**	3.47**	8.44**
# Positive	8/14	14/14**	14/14**	14/14**
n=13,719				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.015	0.092	-0.089	0.061
t-statistic	-1.38	1.84#	-0.50	0.93

Table 5.6

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using a Sample of Quarterly Analyst Forecasts

Table 5.6 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a sample of quarterly analyst forecasts is used. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 56,704 quarterly observations meeting the data requirements for the restricted sample discussed in section 3.1 and do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.002	0.557	0.446	0.461
t-statistic	-3.07**	21.52**	13.36**	14.93**
# Positive	20/59*	59/59**	57/59**	59/59**
n=56,704				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.000	0.200	-0.141	0.086
t-statistic	-0.04	0.98	-0.29	0.41
# Positive	32/59	53/59**	51/59**	52/59**
n=56,704				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.002	0.357	0.587	0.375
t-statistic	-0.93	1.74#	1.18	1.78#

Table 5.7

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using a Sample of Last Available Forecasts

Table 5.7 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a sample of last available forecasts is used. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 7,780 individual analyst forecasts made after all other forecasts in a given year and meeting the data requirements of the restricted sample discussed in section 3.1 and do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.003	0.657	0.515	0.397
t-statistic	-1.10	19.90**	7.55**	6.78**
# Positive	3/14*	14/14 **	14/14 **	14/14 **
n=7,780				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	-0.002	0.543	0.349	0.307
t-statistic	-0.56	16.23**	8.11**	9.91**
# Positive	5/14	14/14 **	13/14 **	14/14 **
n=7,780				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.001	0.114	0.166	0.090
t-statistic	0.28	2.42*	2.06#	1.35

Table 5.8

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using a Sample of Individual Analyst Forecasts from the IBES Detail File

Table 5.8 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a sample of individual analyst forecasts from the IBES detail sample is used. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 13,502 individual analyst forecasts meeting the data requirements for the restricted sample discussed in section 3.1 and do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.001	0.649	0.582	0.415
t-statistic	-0.31	14.71**	7.06**	6.59**
# Positive	7/14	14/14**	14/14**	14/14**
n=13,509				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.000	0.501	0.353	0.256
t-statistic	0.07	15.09**	8.53**	6.46**
# Positive	7/14	14/14**	14/14**	14/14**
n=13,509				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.001	0.148	0.229	0.159
t-statistic	-0.27	2.67*	2.48*	2.14*

Table 5.9

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using a Sample of Firms Likely to Manage Earnings

Table 5.9 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a sample of firms likely to manage earnings is used. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 1,268 observations from the restricted sample discussed in section 3.1 that do not fall in 2001 or 2002 and with deflated earnings per share in the range [-0.01, 0.01]. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.006	0.704	0.519	0.563
t-statistic	-0.89	10.06**	5.41**	6.20**
# Positive	6/14	14/14**	14/14**	13/14**
n=1,286				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.002	0.226	0.090	0.163
t-statistic	0.32	5.42**	2.02#	3.01**
# Positive	9/14	14/14**	10/14	12/14**
n=1,286				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.008	0.478	0.429	0.400
t-statistic	-0.89	5.87**	4.06**	3.78**

Table 5.10

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Without Winsorizing

Table 5.10 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when none of the variables are winsorized. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1, except that AF_{t+1} and EA_{t+1} are not winsorized. The sample consists of the 13,719 observations of the restricted sample that do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.014	0.763	0.541	0.491
t-statistic	-3.18**	30.82**	8.80**	10.72**
# Positive	1/14**	14/14**	14/14**	14/14**
n=13,719				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	-0.157	2.276	1.457	2.273
t-statistic	-1.22	1.92#	2.89*	1.64
# Positive	8/14	14/14**	14/14**	13/14**
n=13,719				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	0.143	-1.513	-0.916	-1.782
t-statistic	1.11	-1.27	-1.80#	-1.29

Table 5.11

Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components With Double Winsorizing of the AF_{t+1} Variable

Table 5.11 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when analysts forecasts are winsorized twice. A t-test is used to determine the significance of the average coefficient value and a binomial test (p = 0.5) is used to test the sign of the coefficients over the sample years. The number reported is the number of positive coefficients.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1, except that AF_{t+1} was winsorized once when the full sample was created and again after the product of the mean consensus forecast and the number of shares used to calculate EPS was calculated. The sample consists of the 13,719 observations of the restricted sample that do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.009	0.691	0.490	0.433
t-statistic	-2.60*	23.29**	8.48**	8.91**
# Positive	3/14*	14/14**	14/14**	14/14**
n=13,719				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	0.001	0.523	0.361	0.307
t-statistic	0.20	19.23**	9.78**	9.57**
# Positive	8/14	14/14**	14/14**	14/14**
n=13,719				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.009	0.168	0.130	0.126
t-statistic	-2.20*	4.16**	1.89#	2.16**

Table 5.12
Summary Results from Regressing Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components Using Pooled Regression Analysis

Table 5.12 presents the summary results of the regressions of Year-Ahead Earnings and Analysts Forecasts on Current Earnings Components when a pooled regression is used rather than the independent yearly estimates.

Panel A presents the results from equation one, which tests the predictive value of current cash flows from operations, non-discretionary accruals, and discretionary accruals. Panel B presents the results from equation two, which tests how analysts weight the current earnings components when forecasting upcoming earnings. Panel C presents the difference between the mean coefficients in panels A and B and the results from a t-test of these differences.

*The variables are defined as in table 5.1. The sample consists of the 13,719 observations of the restricted sample that do not fall in 2001 or 2002. # indicates significance at the 10% level, * at the 5% level, and ** at 1% or better.*

Panel A: $EA_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 NDACC_t + \alpha_3 DACC_t + \varepsilon_{t+1}$

	α_0	α_1	α_2	α_3
Coefficient	-0.017	0.615	0.159	0.322
t-statistic	-15.18**	101.18**	25.19**	28.94**
n=13,719				

Panel B: $AF_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 NDACC_t + \beta_3 DACC_t + \nu_{t+1}$

	β_0	β_1	β_2	β_3
Coefficient	-0.015	0.634	0.201	0.308
t-statistic	-8.19**	63.30**	19.36**	16.80**
n=13,719				

Panel C: Difference in weighting

	$\alpha_0 - \beta_0$	$\alpha_1 - \beta_1$	$\alpha_2 - \beta_2$	$\alpha_3 - \beta_3$
Difference	-0.002	-0.019	-0.042	0.014
t-statistic	-1.04	-1.86#	-4.06**	0.78

CHAPTER 6

THE ASSOCIATIONS BETWEEN ANALYST FORECASTS AND REPORTED AND RESTATED EARNINGS

6.1 The Model

The analysis in chapter five suggests that analysts do not remove the effects of earnings management from their forecasts. However, an alternative explanation for these results is analysts' inability to appropriately weight *components* of earnings. Prior evidence (Abarbanell 1991, Bradshaw, Richardson and Sloan 2001, Plumlee 2003, Ramnath 2002, Shane and Brous 2001, and Weber 2005) suggests that analysts can have difficulty interpreting individual pieces of information. On the other hand, analysts' overall forecasts tend be relatively accurate and improve over the course of the year (Barron, Byard and Kim 2002, Brown 1997, Brown and Han 1992, Crichfield, Dyckman and Lakonishok 1978, and Hope 2003). This implies that the association between analysts' forecasts and total earnings (rather than components of earnings) should be considered. Ideally, the associations between the forecast and earnings with and without earnings management would be computed and then compared. This chapter proposes and tests the following model for this purpose:

$$\text{Analyst Forcasts}_t = \lambda_0 + \lambda_1 \text{Managed Earnings}_t + \delta_t \qquad (4)$$

$$\text{Analyst Forcasts}_t = \phi_0 + \phi_1 \text{Unmanaged Earnings}_t + \tau_t \qquad (5)$$

where Analyst Forcasts_t is the mean consensus analyst forecast of earnings per share at time t times the number of shares used to calculate EPS (Compustat data item 54), Managed Earnings_t is reported earnings before extra items at time t (Compustat data item123), and Unmanaged

$Earnings_t$ is restated earnings before extra items (Compustat data item 118). All three variables are deflated by lagged assets. In order to determine whether managed or unmanaged earnings is more highly associated with analysts forecasts I use a Vuong test, which is described by Dechow (1994). The Vuong (1989) test uses a z-statistic to assess which equation (four or five) has the lower sum of squared residuals. The earnings definition in the equation with the lower sum of squared errors is more highly associated with analyst forecasts.

The analysis is based on three assumptions. First, I assume that analysts convey their understanding of earnings management in their analyst forecast, rather than in other disclosures. This assumption is consistent with Schipper (1991). Second, I assume that analysts do not issue separate forecasts of pre-managed earnings. This is consistent with Abarbanell and Lehavy (2003), Burgstahler and Eames (2003), and Liu (2005). Third, and most importantly, I assume that restated earnings has been purged of earnings management. This is consistent with Erickson, Hanlon and Maydew (2004), Jones, Krishnan and Melendez (2006), and Palmrose, Richardson and Scholz (2004).

6.2 Predictions

I assume that reported earnings include earnings management and restated earnings do not. This implies that if analysts include earnings management in their forecasts, then analysts' forecasts will be more highly associated with reported earnings than they are with restated earnings. This is hypothesis four:

H4: If analysts include the effects of earnings management in their forecast, then the association between analyst forecasts and reported earnings will exceed the association between analyst forecasts and restated earnings.

The converse will also be true. If analysts exclude earnings management from their forecasts, then analysts' forecasts will be more highly associated with restated earnings than they are with reported earnings. This is hypothesis five:

H5: If analysts remove the effects of earnings management from their forecast, then the association between analyst forecasts and restated earnings will exceed the association between analyst forecasts and reported earnings.

6.3 Sample Selection and Summary Statistics

To test hypotheses four and five, I start with the full sample described in chapter three and detailed in table 3.1. I retain only the observations with data available from Compustat on restated earnings and lagged assets. After truncating the sample at the 1st and 99th percentile of reported earnings, restated earnings, and mean consensus analyst forecasts, 15,158 observations remain. I refer to this set of observations as the 'restatement sample.'

Compustat gives four reasons for restated earnings: discontinued operations, mergers and acquisitions, earnings management, and errors in managers' original estimates. Since I use income before extra items, restatements due to discontinued operations will not enter my sample. However, the sample could include restatements due to mergers and acquisitions or legitimate errors in estimates. I partially address this issue by removing firms that report merger or acquisition activity for the year. This leaves restatements due to errors in estimates in the sample. Unfortunately, Compustat does not differentiate between errors in estimates and earnings management. This restriction reduces the sample to 8,139 firm-years. I refer to this set of observations as the 'restricted restatement sample.' Table 6.1 contains a summary of the sample selection procedure.

Table 6.2 presents summary statistics for the restatement and restricted restatement samples. The variables are defined as follows: total assets is Compustat data item 6; the number of analysts is the number that participated in creating each consensus forecast, as reported by IBES; analyst forecast is the mean consensus forecast reported by IBES multiplied by the number of shares used to calculate EPS (Compustat data item 54); reported earnings is income before extra items (Compustat data item 123); and restated earnings is income before extra items (restated) (Compustat data item 118). Analyst forecast, reported earnings, and restated earnings are deflated by lagged total assets.

The firms in the restricted restatement sample are smaller than those in the restatement sample (\$4,001.7 million versus \$6,608.7 million, $p < 0.001$). This is not surprising, because smaller firms are more likely to have financial difficulties leading them to manage earnings while larger firms are more likely to be involved in mergers and acquisitions. Also consistent with their smaller size, the firms in the restricted restatement sample are followed by fewer analysts on average (6.4) than firms in the restatement sample (7.5) ($p < 0.001$).

6.4 Results

Before proceeding to the estimation of equations four and five, I compute simple correlations between the analyst forecasts and reported and restated earnings. The correlations are presented in table 6.3. Panel A reports results for the restatement sample. The correlation between reported earnings and analysts' forecasts is 0.837, and the correlation between restated earnings and analysts' forecasts is 0.832. Panel B presents similar results for the restricted restatement sample (0.873 and 0.867 for reported and restated earnings, respectively). The correlation between analyst forecasts and reported earnings is higher than the correlation between analyst forecasts and restated earnings for both samples ($p = 0.0755$ for the restatement sample and $p = 0.016$ for the restricted restatement sample, one-tailed test). This is consistent with the prediction of hypothesis four that analysts include earnings management in their forecasts.

Table 6.4 presents the results of estimating equations four and five. Panels A and B report coefficients, adjusted R^2 values, and observations for equations four and five, respectively. In both the restatement sample (column one) and the restricted restatement sample (column two), the adjusted R^2 values are higher for reported earnings than restated earnings. In addition, the coefficient on reported earnings (panel A) is closer to one than the coefficient on restated earnings (panel B) for both samples.

Panel C reports the results of the Vuong test, which is used to assess the statistical significance of the differences in both adjusted R^2 and coefficient values. If analysts include earnings management in their forecasts, then their forecasts should be more highly associated with reported than restated earnings (consistent with hypothesis four) and the z-statistic from the Vuong test will be negative. If, on the other hand, analysts remove earnings management from their forecasts, their forecasts should be more highly associated with restated than reported earnings and the z-statistic from the Vuong test will be positive. This would support hypothesis five. Consistent with hypothesis four, the z-statistic is -2.48 for the restatement sample and -2.51 for the restricted restatement sample. These significantly negative results suggest that analysts forecasts are more highly associated with reported earnings than they are with restated earnings, indicating that analysts include the effects of earnings management in their forecasts. Thus, hypothesis five is rejected in favor of hypothesis four.

6.5 Sensitivity Tests

6.5.1 Alternative samples

In order to ensure that these results are not dependent on the sample of mean consensus forecasts, I repeat the Vuong test using three of the alternative samples discussed in section 5.7. First, I use a sample of median consensus forecasts; second, a sample of last available forecasts; and third, a sample of individual forecasts from the IBES detail sample. I do not use a sample of quarterly observations because Compustat does not provide quarterly restatement data. For each sample, I begin with a set of annual earnings forecasts for all December year-end, U.S. firms during the period 1988-2004. I then remove those observations made more than 30 days prior to the fiscal year end and those without the needed restatement and lagged asset data. Finally, I truncate the analyst forecasts and reported and restated earnings distributions at the 1st and 99th percentiles. The results are presented in table 6.5 for the median sample, table 6.6 for the last available forecast sample, and table 6.7 for the detail file sample. Except for the insignificant z-statistic for the restatement sample using the last available forecast (table 6.6, column one), the results are consistent with those presented in table 6.4.

6.5.2 Removing observations from 2001 and 2002

Although the restatement and restricted restatement samples used in this chapter are different from the restricted sample used in chapter five, I replicate the analysis after removing the observations from 2002 and 2003 to ensure that the anomalies found in tables 5.2 and 5.3 do not affect the results of the current tests. This restriction reduces the restatement and restricted restatement samples to 10,260 and 5,605 observations, respectively. The results, presented in table 6.8, are consistent with those presented in table 6.4. Since the anomalies in the 2001 and

2002 data involve year-ahead earnings as well as the current earnings components, I also replicated the tests after removing the observations from 2002 and 2003. The results (untabulated) are also consistent with those in table 6.4.

6.6 Conclusions

This chapter examines the association between analyst forecasts and reported and restated earnings. The evidence suggests that analyst forecasts are more highly associated with reported earnings than they are with restated earnings. I interpret this as meaning that analysts include, rather than remove, the effects of earnings management in their forecasts. This is consistent with the results presented in chapter five and the findings of Burgstahler and Eames (2003).

Table 6.1
Sample Selection Criteria for Testing the Associations between Analyst Forecasts and Reported and Restated Earnings

Table 6.1 summarizes the sample selection procedure used to create the samples used to test the associations between analyst forecasts and reported and restated earnings. The initial sample is the full sample identified in table 3.1 and consists of all non-stale annual earnings forecasts for U.S. firms with a December year end from 1988-2004. Any observations missing reported earnings, restated earnings, or lagged assets are then removed as are the 1st and 99th percentiles of the reported and restated earnings and analyst forecast distributions. The final sample screen removes observations that report a merger or acquisition during the sample year. This screen increases the likelihood that the restatements are due to earnings management rather than legitimate business practices.

Full sample from table 3.1	34,990
Less:	
Observations missing reported earnings, restatement, or lagged asset data	(18,870)
Observations in the 1st and 99th percentiles of the analyst forecast, reported earnings or restated earnings distributions	(962)
Restatement Sample	15,158
Observations reporting mergers and acquisitions	(7,019)
Restricted Restatement Sample	8,139

Table 6.2
Summary Statistics for the Restatement and Restricted Restatement Samples

Table 6.2 presents summary statistics for the restatement and restricted restatement samples used to test the associations between analyst forecasts and reported and restated earnings. The variables are defined as follows: total assets is Compustat data item 6; the number of analysts is the number that participated in creating each consensus forecast, as reported by IBES; analyst forecast is the mean consensus forecast reported by IBES multiplied by the number of shares used to calculate EPS (Compustat data item 54); reported earnings is income before extra items (Compustat data item 123); and restated earnings is income before extra items (restated) (Compustat data item 118). Analyst forecast, reported earnings, and restated earnings are deflated by lag total assets.

Panel A presents summary statistics for the restatement sample and Panel B for the restricted restatement sample. Assets are reported in millions.

Panel A: Restatement Sample

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
Total Assets	6,608.7	40,948.8	3.6	156.3	570.5	2,423.8	1,484,101.0
Number of Analysts	7.5	6.8	1.0	2.0	5.0	11.0	44.0
Analyst Forecast	0.019	0.10	-0.55	-0.01	0.03	0.01	0.23
Reported Earnings	0.006	0.13	-0.70	-0.01	0.03	0.07	0.26
Restated Earnings	0.007	0.13	-0.74	-0.01	0.03	0.07	0.33
n=15,158							

Panel B: Restricted Restatement Sample

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
Total Assets	4,001.7	30,058.4	3.6	99.2	337.0	1,400.0	1,009,569.0
Number of Analysts	6.4	6.3	1.0	2.0	4.0	9.0	41.0
Analyst forecast	0.00	0.12	-0.55	-0.01	0.03	0.06	0.23
Reported Earnings	-0.01	0.15	-0.70	-0.04	0.03	0.07	0.26
Restated Earnings	-0.01	0.15	-0.74	-0.04	0.03	0.07	0.33
n=8,139							

Table 6.3

Correlations between Analyst Forecasts and Reported and Restated Earnings

Table 6.3 presents the correlations between analyst forecasts and reported and restated earnings for the restatement and restricted restatement samples used to test the associations between analyst forecasts and reported and restated earnings. The variables are defined as follows: analyst forecast is the mean consensus forecast reported by IBES multiplied by the number of shares used to calculate EPS (Compustat data item 54); reported earnings is income before extra items (Compustat data item 123); and restated earnings is income before extra items (restated) (Compustat data item 118). All three variables are deflated by lagged total assets.

Panel A presents correlations for the restatement sample and Panel B for the restricted restatement sample.

Panel A: Restatement Sample

	Analyst Forecasts
Reported EA	0.837
(Probability)	(<0.0001)
Restated EA	0.832
(Probability)	(<0.0001)

n=15,158

Panel B: Restricted Restatement Sample

	Analyst Forecasts
Reported EA	0.873
(Probability)	(<0.0001)
Restated EA	0.867
(Probability)	(<0.0001)

n=8,139

Table 6.4

Results for Regressions of Analyst Forecasts on Reported and Restated Earnings and the Vuong Test of Association

Table 6.4 presents the results for regressions of analyst forecasts on reported earnings (panel A) and on restated earnings (panel B). Panel C presents the results of the Vuong test. The Vuong test compares the size of the error terms from the two regressions. A negative z-statistic suggests that the first regression (i.e. reported earnings) is more closely related to analyst forecasts and vice versa. The variables are defined as in table 6.2.

*Column one presents the results for the restatement sample (n = 15,158) and column two for the restricted restatement sample (n = 8,139). * indicates significance at the 5% level and ** at 1% or better.*

Panel A: $AF_t = \lambda_0 + \lambda_1 EA_{Reported,\,t} + \delta_t$

	Restatement Sample	Restricted Restatement Sample
λ_0	0.015**	0.009 **
λ_1	0.651**	0.719 **
adjusted R^2	0.7006	0.7612
Number of observations	15,158	8,139

Panel B: $AF_t = \phi_0 + \phi_1 EA_{Restated,t} + \tau_t$

	Restatement Sample	Restricted Restatement Sample
ϕ_0	0.014**	0.008 **
ϕ_1	0.649**	0.714 **
adjusted R^2	0.6920	0.7508
Number of observations	15,158	8,139

Panel C: Vuong Test of Association (reported vs. restated)

	Restatement Sample	Restricted Restatement Sample
Z-statistic	-2.48**	-2.51**

Table 6.5

Results for Regressions of Analyst Forecasts on Reported and Restated Earnings and the Vuong Test of Association Using a Sample of Median Consensus Forecasts

Table 6.5 presents the results of regressing analyst forecasts on reported earnings (panel A) and reported earnings (panel B) and of the Vuong test (panel C) for a sample of median consensus forecasts. Panels A and B present the results from regressing analyst forecasts on reported earnings and on restated earnings, respectively. Panel C presents the results of the Vuong test. The variables are defined as in table 6.2.

*Column one presents the results for the restatement sample (n = 15,158) and column two for the restricted restatement sample (n = 8,141). * indicates significance at the 5% level and ** at 1% or better.*

Panel A: $AF_t = \lambda_0 + \lambda_1 EA_{Reported,\,t} + \delta_t$

	Restatement Sample	Restricted Restatement Sample
λ_0	0.015**	0.009 **
λ_1	0.651**	0.719 **
adjusted R^2	0.7006	0.7612
Number of observations	15,158	8,141

Panel B: $AF_t = \phi_0 + \phi_1 EA_{Restated,t} + \tau_t$

	Restatement Sample	Restricted Restatement Sample
ϕ_0	0.014**	0.008 **
ϕ_1	0.649 **	0.714 **
adjusted R^2	0.6914	0.7501
Number of observations	15,158	8,141

Panel C: Vuong Test of Association (reported vs. restated)

	Restatement Sample	Restricted Restatement Sample
Z-statistic	-2.49**	-2.50**

Table 6.6

Results for Regressions of Analyst Forecasts on Reported and Restated Earnings and the Vuong Test of Association Using a Sample of Last Available Analyst Forecasts

Table 6.6 presents the results of regressing analyst forecasts on reported earnings (panel A) and reported earnings (panel B) and of the Vuong test (panel C) for a sample of last available analyst forecasts. Panels A and B present the results from regressing analyst forecasts on reported earnings and on restated earnings, respectively. Panel C presents the results of the Vuong test. The variables are defined as in table 6.2.

*Column one presents the results for the restatement sample (n = 8,909) and column two for the restricted restatement sample (n = 4,497). * indicates significance at the 5% level and ** at 1% or better.*

Panel A: $AF_t = \lambda_0 + \lambda_1 EA_{Reported,\,t} + \delta_t$

	Restatement Sample	Restricted Restatement Sample
λ_0	0.016**	0.009 **
λ_1	0.621**	0.703 **
adjusted R^2	0.6834	0.7664
Number of observations	8,909	4,497

Panel B: $AF_t = \phi_0 + \phi_1 EA_{Restated,t} + \tau_t$

	Restatement Sample	Restricted Restatement Sample
ϕ_0	0.016**	0.009 **
ϕ_1	0.616**	0.691 **
adjusted R^2	0.6709	0.746
Number of observations	8,909	4,497

Panel C: Vuong Test of Association (reported vs. restated)

	Restatement Sample	Restricted Restatement Sample
Z-statistic	-1.80**	-2.08**

Table 6.7
Results for Regression Analyst Forecasts on Reported and Restated Earnings and the Vuong Test of Association Using a Sample of Individual Analyst Forecasts

Table 6.7 presents the results of regressing analyst forecasts on reported earnings (panel A) and reported earnings (panel B) and of the Vuong test (panel C) for a sample of individual analyst forecasts from the IBES detail file. Panels A and B present the results from regressing analyst forecasts on reported earnings and on restated earnings, respectively. Panel C presents the results of the Vuong test. The variables are defined as in table 6.2.

*Column one presents the results for the restatement sample (n = 38,912) and column two for the restricted restatement sample (n = 18,685). * indicates significance at the 5% level and ** at 1% or better.*

Panel A: $AF_t = \lambda_0 + \lambda_1 EA_{Reported,\,t} + \delta_t$

	Restatement Sample	Restricted Restatement Sample
λ_0	0.019**	0.014 **
λ_1	0.568**	0.620 **
adjusted R^2	0.6282	0.6937
Number of observations	38,912	18,685

Panel B: $AF_t = \phi_0 + \phi_1 EA_{Restated,t} + \tau_t$

	Restatement Sample	Restricted Restatement Sample
ϕ_0	0.019**	0.014 **
ϕ_1	0.566**	0.616 **
adjusted R^2	0.6231	0.6874
Number of observations	38,912	18,685

Panel C: Vuong Test of Association (reported vs. restated)

	Restatement Sample	Restricted Restatement Sample
Z-statistic	-3.35**	-3.07**

Table 6.8

Results for Regression Analyst Forecasts on Reported and Restated Earnings and the Vuong Test of Association After Removing 2001 and 2002

Table 6.8 presents the results of regressing analyst forecasts on reported earnings (panel A) and reported earnings (panel B) and of the Vuong test (panel C) after removing 2001 and 2002 from the sample period. Panels A and B present the results from regressing analyst forecasts on reported earnings and on restated earnings, respectively. Panel C presents the results of the Vuong test. The variables are defined as in table 6.2.

*Column one presents the results for the restatement sample (n = 10,260) and column two for the restricted restatement sample (n = 5,605). * indicates significance at the 5% level and ** at 1% or better.*

Panel A: $AF_t = \lambda_0 + \lambda_1 EA_{Reported,\,t} + \delta_t$

	Restatement Sample	Restricted Restatement Sample
λ_0	0.015**	0.009 **
λ_1	0.664**	0.728 **
adjusted R^2	0.7030	0.7648
Number of observations	10,260	5,605

Panel B: $AF_t = \phi_0 + \phi_1 EA_{Restated,t} + \tau_t$

	Restatement Sample	Restricted Restatement Sample
ϕ_0	0.015 **	0.009 **
ϕ_1	0.655 **	0.716 **
adjusted R^2	0.6911	0.7504
Number of observations	10,260	5,605

Panel C: Vuong Test of Association (reported vs. restated)

	Restatement Sample	Restricted Restatement Sample
Z-statistic	-2.98**	-2.84**

CHAPTER 7

TESTS OF THE LAST MINUTE EARNINGS MANAGEMENT HYPOTHESIS

7.1 Last Minute Manipulations

The results in chapters five and six suggest that analysts include earnings management in their forecasts. However, they do not explain why Abarbanell and Lehavy (2003) find asymmetries in the forecast error distribution consistent with analysts removing the effects of earnings management. One explanation for Abarbanell and Lehavy's results is that analysts are consistently mistaken in anticipating earnings management for a significant number of firms. This explanation is not compelling for two reasons. First, although anticipating earnings management is undoubtedly difficult (Fischer and Verrecchia 2000), there is evidence that analysts are capable of doing so (Burgstahler and Eames 2003, Liu 2005). Second, an explanation based on analyst error is inconsistent with the pattern of the asymmetries. If analysts make mistakes in predicting earnings management, then their mistakes should be random. In terms of the forecast error distribution, this means a roughly equal number of observations both above and below zero, and roughly symmetric tails. However, this is not the pattern observed in figure 3.2.

Brown (1998) provides an alternative explanation for the existence of the asymmetries documented by Abarbanell and Lehavy (2003). He observes that managers provide information throughout the fiscal period that analysts use to make and revise their earnings forecasts. At the end of the period, however, the situation is reversed. Analysts make their final forecasts of earnings *before* managers issue their final earnings announcement. In the period between the final analyst forecasts and the earnings announcement, managers can make 'last minute' manipulations so that reported earnings meet-or-beat market expectations. The sequence of events is presented in figure 7.1. Even if analysts try to include earnings management in their forecasts, last minute manipulations could lead to asymmetries such as those described by Abarbanell and Lehavy (2003). Last minute manipulation to meet expectations has been documented in a tax setting by Dhaliwal, Gleason and Mills (2003).

7.2 Proxy for Earnings Prior to Last Minute Manipulations

To test the last minute manipulation explanation, I examine whether the level of earnings management increases when analysts raise investor expectations. I use a sample of management forecasts of earnings to proxy for the level of earnings prior to last minute manipulations. I assume that management forecasts of earnings include both pre-managed earnings and the earnings manipulations managers plan to make before the release of the analyst forecast. This assumption is consistent with prior research. For example, Kasznik (1999) finds that firms include earnings management to reach their management forecast. Ke, Huddart and Petroni (2003) show that managers know what their important accounting disclosures, such as earnings announcements, will be in advance of the actual disclosure.

7.3 Sample Selection and Summary Statistics

I construct a sample of point and range management forecasts of annual earnings from First Call from 1985 to 2004. If the forecast is a range, I record the upper bound of the range in order to increase the probability that the management forecast contains both pre-managed earnings and planned earnings management. I restrict the sample to management forecasts made within 20 days of the end of the period to increase the probability that the forecast contains pre-managed earnings and planned earnings management, but not last minute manipulations. Finally, I require each observation to have an analyst forecast issued after the management forecast, a reported earnings number available from the IBES consensus database, and a beginning of the period stock price available from CRSP. I winsorize the management and analyst forecasts at the 1st and 99th percentiles to control for outliers. These sample screens result in 312 management forecasts. The sample selection procedure is summarized in table 7.1.

Table 7.2, panel A, presents summary statistics for the management forecast sample. Overall, the sample consists of relatively large firms (mean total assets of $13,654 million) that are followed, on average, by five analysts. On average, analyst forecasts are significantly higher than management forecasts ($p < 0.001$). This suggests that analysts are more likely to remove transitory bad news from their earnings forecasts (Barth et al. 2001) than managers (Pownall and Waymire 1989, Skinner 1994).

7.4 Developing the Model

To test for the existence of last minute manipulations, I first split the sample according to whether or not analysts raise market expectations. I assume that analysts raise expectations when the analyst forecast is higher than the management forecast. Conversely, when the analyst forecast is lower than the management forecast, I assume analysts have lowered expectations. When analysts raise market expectations, managers have incentives to use last minute manipulations to increase reported earnings beyond the initially planned level indicated by the management forecast. This leads to hypothesis six.

H6: When the analyst forecast exceeds the management forecast, reported earnings will also exceed the management forecast.

On the other hand, if analysts lower market expectations, then managers will not have incentives to raise reported earnings. Instead, they will either 'take a bath' to improve their ability to manage earnings in the future (Barton and Simko 2002, DeFond and Park 1997) or will exactly meet their management forecast to improve their credibility (Skinner 1994, Tucker 2004). This leads to hypothesis seven.

H7: When the analyst forecast falls below the management forecast, reported earnings will not exceed the management forecast.

7.5 Results

Table 7.3 presents the results of a two by two chi-squared test of hypotheses six and seven. The rows partition the sample according to managers' incentives to engage in last minute earnings management. The first row contains observations where there is no incentive to increase earnings, because the analyst forecast does not exceed the management forecast. For these observations, managers are predicted to either meet their management forecast or 'take a bath.' The second row contains observations where there is an incentive to increase earnings, because the analyst forecast is above the management forecast. For these observations, managers are predicted to report earnings that are higher than the management forecast. The columns partition the sample according to the effect of the last minute manipulations. The first column contains observations where earnings equal or fall below their management forecast. The second column contains observations where earnings exceed the management forecast. Hypothesis six predicts that when the analyst forecast exceeds the management forecast, managers will perform last minute manipulations to increase reported earnings above the planned earnings level prior to last minute manipulations. As a result, reported earnings will exceed the management forecast. Hypothesis seven predicts that when the management forecast exceeds the analyst forecast, managers will either perform no last minute earnings management or will use last minute manipulations to lower reported earnings below the initially planned level. In this case, reported earnings will equal or miss the management forecast.

For a sample of 312, the expected number of observations in each cell is 78. As predicted by hypothesis six, almost half of the observations (147) increased their reported earnings after receiving an analyst forecast that exceeded their management forecast. In addition, a higher than expected number of firms (93) missed or met their management forecast when the analyst forecast was below the management forecast, consistent with hypothesis seven. The chi-squared statistic of 97.83 is significant at the 0.0001 level.

One impediment to this analysis is the possibility that managers issue their forecasts below their expectations in order to beat them (Gigler and Hemmer 2001 and Matsumoto 2002). In this case, management forecasts understate managers' expected earnings prior to last minute manipulations. While the use of the upper bound of the range forecast should provide some control for this possibility, I also replicate my tests after increasing each management forecast by \$0.01. The use of \$0.01 is based on the finding of Kasznik (1999) that firms that beat their management forecast do so by an average of \$0.01. The results, presented in Panel B of table 7.3, are virtually identical to those in Panel A. I also performed the analysis after adding \$0.02 and \$0.05 to the management forecast. The results (untabulated) are also quite similar to those presented in table 7.3.

7.6 Sensitivity Analysis

7.6.1 Alternative Sample

Soffer, Thiagarajan and Walther (2000) and Tan, Libby and Hunton (2002) argue that if managers use their forecasts to manage expectations, they are most likely to do so with forecasts issued immediately prior to the fiscal year end. This is a concern because my sample consists of management forecasts made in the last 20 days of the fiscal period. To address this issue, I construct an alternative sample of management forecasts issued *after* the end of the fiscal period. I assume that these forecasts are pre-announcements of earnings rather than attempts to manipulate expectations, since prior research finds that forecasts issued after the close of the fiscal period consist of primarily good news (Baginski, Hassell and Waymire 1994), while expectations management normally consists of reporting bad news (Soffer, et al. 2000). The resulting sample consists of 597 pre-announcements.

The results presented in panel A of table 7.4, based on reported pre-announcements, are qualitatively identical to those in panel A of table 7.3, and support both hypothesis six and hypothesis seven. However, panel B of table 7.4 shows that the results for the pre-announcement sample are sensitive to increasing the management forecast by $0.01. After this adjustment, hypothesis seven is still supported, but hypothesis six is not. The implication is that last minute manipulations that increase earnings are less common following management forecasts that occur after the close of the fiscal year. This might be due to increased auditor scrutiny of earnings manipulations when earnings have been pre-announced.

7.6.2 *The management forecast value of range forecasts*

One possible explanation for the high number of observations that missed or met their management forecast when the analyst forecast was below the management forecast is the use of the upper bound of range forecasts as the management forecast value. While the use of the upper bound increases the likelihood that the management forecast contains both pre-managed earnings and planned earnings management, it could distort incentives to engage in last minute manipulations, since market expectations prior to the analyst forecast are likely to lie within the range of the management forecast rather than at the upper bound. For example, for a firm that issues a range forecast of $1.50 to $2.00, an analyst forecast of $1.95 will raise market expectations if the market is focused on the midpoint ($1.75) or the lower bound ($1.50) instead of the upper bound ($2.00). However, the current classification method would place the observations in the low earnings management incentives category. This misclassification could bias the results in favor of hypothesis seven. In order to control for this possibility, I replicate my tests after removing the range forecasts from the sample. I also replicate the tests leaving the range forecasts in the sample, but using, alternatively, the lower bound and the midpoint as the point estimate for analysis.

Table 7.5 presents the results of the chi-squared tests after removing the range forecasts. The resulting sample consists of 86 point forecasts. The expected number of observations in each cell is 21.5. Panel A of table 7.5 reports that more than half of the observations (44) increase their reported earnings after receiving an analyst forecast that exceeds their management forecast, consistent with hypothesis six. In addition, a higher than expected number of observations (26) met or missed their management forecast when the analyst forecast did not exceed their management forecast, consistent with hypothesis seven. The results after adding \$0.01 to the management forecast, shown in panel B, are qualitatively similar.

Tables 7.6 and 7.7 present the results after defining the management forecast value of the range forecasts as the lower bound and the midpoint of the range, respectively. The expected number of observations in each cell is 78. Overall, the results are consistent with those in table 7.3. The only exception is that panel A of tables 7.6 shows no evidence that a higher than expected number of firms missed or met their forecasts when the analyst forecast was below the management forecast, contrary to hypothesis seven.

7.6.3 Removing observations from 2001 and 2002

Although the management forecast sample used in the current analysis is different from the analyst forecast sample used in chapter five, I replicate the chi-squared tests after removing the observations from 2001 and 2002 to ensure that the anomalies documented in tables 5.2 and 5.3 do not affect the results of the current tests. The results for the reduced sample of 247 management forecasts, presented in table 7.8, are consistent with those presented in table 7.3. Since the anomalies in the 2001 and 2002 data involve year-ahead earnings as well as the current earnings components, I also replicated the tests after removing the observations from 2002 and 2003. The results (untabulated) are also consistent with those in table 7.3.

7.6.4 Regression analysis

In addition to the chi-squared tests, I also use a simple regression model to test for last minute manipulations. The dependent variable is the difference between reported earnings and management forecasts, and is intended to capture last minute manipulations. This is regressed on an indicator variable to capture whether managers have incentives to perform last minute manipulations. This occurs when analyst forecasts are greater than management forecasts. Formally stated, the model is:

$$MFE_t = \gamma_0 + \gamma_1 BeatMF_t + \eta_t \qquad (6)$$

where MFE_t is the difference between reported earnings and the management forecast, deflated by the beginning of the period stock price, and $BeatMF_t$ is an indicator variable that takes on the value of one when the analyst forecast is higher than the management forecast. I predict that when analysts raise market expectations by issuing a forecast above the management forecast, managers will perform last minute earnings manipulations to ensure that they meet-or-beat analysts' forecasts, or that $\gamma_1 > 0$.

Table 7.9, panel A, reports the results of estimating equation six. As expected, the coefficient on $BeatMF_t$ is significantly positive, consistent with managers engaging in additional manipulations to meet-or-beat analyst forecasts. As with the chi-squared tests, I also performed the analysis after adding $0.01 to the management forecast. This addresses concerns that the management forecast does not include all of the planned earnings management. The results are reported in panel B of table 7.9 and are qualitatively similar to those in panel A.

I also estimated equation six using a continuous independent variable to capture managerial incentives to perform last minute manipulations. I define this variable, $DiffAF_t$, as the difference between the analyst forecast and the management forecast, deflated by beginning of the period stock price. The results, presented in table 7.10, are qualitatively similar to those in table 7.9.

7.7 Conclusions

The evidence in this chapter suggests that asymmetries in the analyst forecast error distribution are caused by managers' last minute earnings manipulations. This reconciles the asymmetries identified by Abarbanell and Lehavy (2003) with my findings that analysts include earnings management in their forecast. Assuming that last minute manipulations follow the same pattern as other earnings manipulations, the evidence also suggests that the difference between management forecasts and earnings announcements might be a useful proxy for earnings management.

Figure 7.1
Model of the Earnings Announcement Timeline

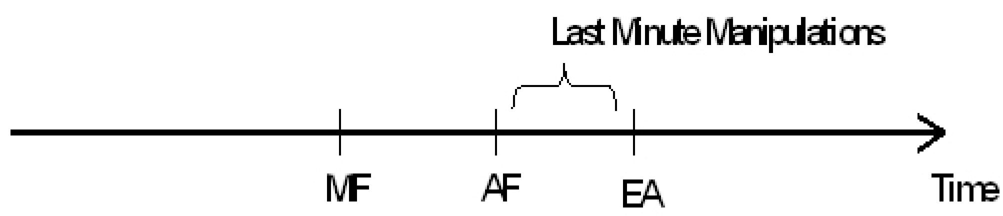


Figure 7.1 represents the sequential order of managers' and analysts' actions at the end of the fiscal period. MF (management's earnings forecast) proxies for the earnings number management plans to release prior to analysts' forecast. Before the actual earnings announcement (EA), however, analysts issue an earnings forecast for the company (AF). Managers compare the new analyst forecast to their planned earning number and, if necessary, engage in 'last minute' earnings manipulations to raise their final earnings number.

Table 7.1
Sample Selection Criteria for the Sample of Management Forecasts

Table 7.1 summarizes the sample selection procedure used to create a sample of management forecasts used to for last minute manipulations. The initial sample consists of all annual point and range management forecasts from 1985-2004. Observations made outside of the 20 day window prior to the end of the fiscal period or missing the necessary analyst forecast or beginning of the period stock price data are then removed.

Initial sample of annual, earnings per share, point and range forecasts from 1985-2004	23,927
Less:	
Observations not made within the 20 days prior to the period end	(23,406)
Observations missing analyst or beginning of the period price information	(209)
Management forecast sample	312

Table 7.2
Summary Statistics for the Management Forecast Sample

Table 7.2 presents summary statistics for the management forecast sample used to test the existence of last minute earnings management. The variables presented in panel A are defined as follows: total assets is Compustat data item 6; the number of analysts is the number that participated in creating each consensus forecast, as reported by IBES; analyst forecast is the mean consensus forecast reported by IBES; and management forecast is the point or upper bound of the range forecast reported by ValueLine. Assets are reported in millions and analyst forecasts and management forecasts are dollars per share. Although 312 observations meet the conditions described in table 7.1, only 311 observations are used to calculate the summary statistics for total assets. Total asset data is not necessary for the tests, so I did not remove the firm that did not report that information.

	Mean	Standard Deviation	Min	25th Percentile	Median	75th Percentile	Max
Total Assets	13,654.4	69,994.2	25.4	336.1	1,211.0	5,253.0	750,330.0
Number of Analysts	5.3	6.2	1.0	1.0	3.0	7.0	42.0
Management Forecast	1.6	1.2	-1.0	0.7	1.5	2.2	5.3
Analyst Forecast	5.2	9.4	0.0	0.9	1.8	5.3	78.4
n=312							

Table 7.3

Results of a Chi-Squared Test of Last Minute Manipulations by Managers

Table 7.3 presents the results of a chi-squared test of the effect of increases in market expectations on managers' last minute earnings manipulations. The management forecast sample is partitioned according to whether or not the analyst forecast was larger than the management forecast and again by whether the earnings announcement was larger than the management forecast. Cell 1 (upper left) contains those observations with the analyst forecast below the management forecast that missed or met the management forecast; cell 2 (lower left) contains those observations with the analyst forecast above the management forecast that missed or met the management forecast; cell 3 (upper right) contains those observations with the analyst forecast below the management forecast that beat the management forecast; and cell 4 (lower right) contains those observations with the analyst forecast above the management forecast that beat the management forecast.

Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control for pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	93	13	106
AF greater than MF	59	147	206
Total	152	160	312
Chi-square value	97.83		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations
using inflated management forecasts (MF + $0.01)

Expectation	Reported Earnings: Missed or Met MF	Beat MF	Total
AF less than MF	94	12	106
AF greater than MF	65	141	206
Total	159	153	312
Chi-square value	91.39		
(Probability)	(<0.0001)		

Table 7.4
Results of a Chi-Squared Test of Last Minute Manipulations by Managers Using a Sample of Pre-Announcements

Table 7.4 replicates the chi-squared test presented in table 7.3 using a sample of 597 earnings pre-announcement rather than management forecasts. Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control for pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	188	50	238
AF greater than MF	157	202	359
Total	345	252	597
Chi-square value	72.94		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations using inflated management forecasts (MF + $0.01)

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	209	35	244
AF greater than MF	173	180	353
Total	382	215	597
Chi-square value	84.09		
(Probability)	(<0.0001)		

Table 7.5
Results of a Chi-Squared Test of Last Minute Manipulations by Managers Using a Sample of Point Forecasts

Table 7.5 replicates the chi-squared test presented in table 7.3 using a sample of 86 point forecasts. Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	26	4	30
AF greater than MF	12	44	56
Total	38	48	86
Chi-square value	86.00		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations using inflated management forecasts (MF + $0.01)

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	32	1	33
AF greater than MF	19	34	53
Total	51	35	53
Chi-square value	31.48		
(Probability)	(<0.0001)		

Table 7.6
Results of a Chi-Squared Test of Last Minute Manipulations by Managers Using the Lower Bound of the Range Forecasts

Table 7.6 replicates the chi-squared test presented in table 7.3 using a sample of 389 management forecasts. In this table, I define the management forecast value from the range forecasts as the lower bound, rather than the upper bound as in table 7.3. Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	78	20	98
AF greater than MF	41	250	291
Total	119	270	389
Chi-square value	148.14		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations using inflated management forecasts (MF + $0.01)

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	82	14	99
AF greater than MF	46	244	290
Total	128	261	389
Chi-square value	149.91		
(Probability)	(<0.0001)		

Table 7.7
Results of a Chi-Squared Test of Last Minute Manipulations by Managers Using the Midpoint of the Range Forecasts

Table 7.7 replicates the chi-squared test presented in table 7.3 using a sample of 389 management forecasts. In this table, I define the management forecast value from the range forecasts as the midpoint of the upper and lower bounds, rather than the upper bound as in table 7.3. Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control for pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	83	20	103
AF greater than MF	48	238	286
Total	131	258	389
Chi-square value	138.00		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations using inflated management forecasts (MF + $0.01)

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	89	17	106
AF greater than MF	58	225	283
Total	147	242	389
Chi-square value	132.13		
(Probability)	(<0.0001)		

Table 7.8

Results of a Chi-Squared Test of Last Minute Manipulations by Managers After Removing 2001 and 2002

Table 7.8 replicates the chi-squared test presented in table 7.3 after removing the observations from 2001 and 2002. The resulting sample consists of 247 management forecasts. Panel A presents the chi-square test using management forecasts as reported. Panel B presents the results after adding $0.01 to each management forecast to control for pre-managed earnings or planned earnings management not included in the management forecast.

Panel A: Chi-squared test of last minute manipulations using reported management forecasts

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	63	10	73
AF greater than MF	46	128	174
Total	109	138	247
Chi-square value	74.75		
(Probability)	(<0.0001)		

Panel B: Chi-squared test of last minute manipulations using inflated management forecasts (MF + $0.01)

	Reported Earnings		
Expectation	Missed or Met MF	Beat MF	Total
AF less than MF	64	9	73
AF greater than MF	51	123	174
Total	115	132	247
Chi-square value	70.39		
(Probability)	(<0.0001)		

Table 7.9

Regression Analysis of Last Minute Manipulations

Table 7.9 presents the results of regressing last minute earnings manipulations on managers' incentives to engage in last minute manipulations. MFE_t is defined as reported earnings from IBES less the management forecast, deflated by beginning of the period stock price, and proxies for last minute manipulations. $BeatAF_t$ is a indicator variable that takes on a value of one when the analyst forecast is great than the management forecast and proxies for managers' incentives to engage in last minute manipulations.

Panel A presents the results using the actual management forecast, and Panel B presents the results after adding $0.01 to the management forecast before calculated MFE_t. This change controls for the possibility that managers issue forecasts that they are planning to beat.

$$MFE_t = \gamma_0 + \gamma_1 BeatMF_t + \eta_t$$

Panel A: Regression results using reported management forecasts

	Coefficient	Standard Error	t-statistic
γ_0	-0.029	0.0862	-0.33
γ_1	0.335	0.1061	3.15**
adjusted R^2	0.028		
n=312			

Panel B: Regression results using inflated management forecasts (MF + $0.01)

	Coefficient	Standard Error	t-statistic
γ_0	-0.032	0.0862	-0.37
γ_1	0.335	0.1060	3.16**
adjusted R^2	0.028		
n=312			

Table 7.10

Regression Analysis of Last Minute Manipulations Using a Continues Variable for Changes in Analyst Expectations

Table 7.10 presents the results of regressing last minute earnings manipulations on managers' incentives to engage in last minute manipulations. MFE_t is defined as reported earnings from IBES less the management forecast, deflated by beginning of the period stock price, and proxies for last minute manipulations. $DiffAF_t$ is the difference between the final analyst forecast and the management forecast, deflated by beginning of the period stock price, and proxies for managers' incentives to engage in last minute manipulations.

Panel A presents the results using the actual management forecast, and panel B presents the results after adding \$0.01 to the management forecast before calculated MFE_t. This change controls for the possibility that managers issue forecasts that they are planning to beat.

$$MFE_t = \gamma_0 + \gamma_1 DiffMF_t + \eta_t$$

Panel A: Regression results using reported management forecasts

	Coefficient	Standard Error	t-statistic
γ_0	0.085	0.0298	2.84**
γ_1	0.363	0.0145	24.93**
adjusted R^2	0.6662		
n=312			

Panel B: Regression results using inflated management forecasts (MF + \$0.01)

	Coefficient	Standard Error	t-statistic
γ_0	0.084	0.0298	2.82**
γ_1	0.362	0.0145	24.93**
adjusted R^2	0.6661		
n=312			

CHAPTER 8

CONCLUSION

8.1 Summary

Recent studies by Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003) produce conflicting implications regarding how analysts incorporate earnings management into their forecasts. Burgstahler and Eames (2003) suggest that analysts include the effects of earnings management in order to more accurately forecast reported earnings, while Abarbanell and Lehavy (2003) argue that analysts remove the effects of earnings management in order to forecast pre-managed earnings. The purpose of this dissertation has been to determine which of these findings is supported by the data.

Using a model similar to that used by Elgers et al. (2003), I tested the predictive value of current discretionary accruals on upcoming earnings and the weight analysts place on discretionary accruals when forecasting upcoming earnings. The evidence suggests that analysts include the information in discretionary accruals (a proxy for earnings management) when forecasting upcoming earnings. In addition, I examined the association between analyst forecasts and reported and restated earnings. Using a Vuong test, I found evidence that analyst forecasts are more highly associated with reported than with restated earnings. This is also consistent with analysts including the effects of earnings management in their forecasts.

Although these tests support the findings of Burgstahler and Eames (2003), they do not explain the asymmetries in the analyst forecast error distribution documented by Abarbanell and Lehavy (2003). Brown (1998) suggests that these asymmetries are caused by last minute manipulations by managers, rather than by analysts intentionally removing the effects of earnings managements. My results support this view. This reconciles the results of Abarbanell and Lehavy (2003) and Burgstahler and Eames (2003).

8.2 Implications for Future Research

If analysts include the effects of earnings management in their forecasts, and investors accept their forecast as an accurate prediction of a company's performance, then earnings management becomes a self-fulfilling prophecy as managers scramble to make the forecast. Additional research is needed to determine how investors price the earnings manipulations included in analysts' forecasts and to what extent their pricing is rational. Additional research could also address whether the evidence of analyst bias observed in prior studies (Kadous et al. 2004) is due to the use of reported earnings, instead of earnings before last minute manipulations, as the benchmark for analyst performance. Finally, to the extent that the difference between management forecasts and earnings announcement is an accurate proxy for last minute earnings manipulations, it could be useful to researchers studying earnings management.

8.3 Limitations

My results are subject to four major caveats. First, the tests are based on several assumptions that may not be completely descriptive. Of particular concern is the assumption that analysts provide all of their information to investors through their earnings forecast. While this assumption is consistent with the prior literature, it is possible that analysts convey their information regarding earnings management in the body of their report, in their stock recommendation, in another forecast, or in some other manner. If so, then analysts have little, if any, incentive to remove earnings management from their earnings forecast.

The second caveat concerns variable measurement. Earnings management, pre-managed earnings, and the level of earnings prior to last minute manipulations are all unobservable. Thus, any proxy variable is subject to considerable noise. It is possible that the results are due to this noise rather than to the hypothesized relationships. Similarly, the results of the Vuong test are limited by the possibility that the earnings restatements are due to reasons other than earnings management.

A third concern is the generalizability of the results. In particular, the management forecast sample used to test the last minute manipulations explanation for the asymmetries in the analyst forecast error distribution may not be representative of the broader population of firms. Sample screens reduced the usable observations for this analysis from 23,927 to only 312. Although the voluntary disclosure literature has traditionally used smaller samples, it is possible that the results presented in chapter 7 will not hold for a wider selection of firms.

A final caveat is that the tests are exclusively based on archival data taken from the IBES, FirstCall, Compustat, and CRSP databases. Although this data provides an overall picture of analysts and their forecasts, information obtained from actual analysts in a survey or experimental setting might be useful for addressing the research hypotheses from another perspective. I leave such a test to future research.

REFERENCES

Abarbanell, J. and V. Bernard. "Is the U.S. Stock Market Myopic?" *Journal of Accounting Research* (2000): 221-242.

Abarbanell, J. and R. Lehavy. "Biased forecasts or biased earnings? The role of reported earnings in explaining apparent bias and over/underreaction in analysts' earnings forecasts." *Journal of Accounting and Economics* (2003): 105-146.

Abarbanell, J. S. "Do analysts' earnings forecasts incorporate information in prior stock price changes?" *Journal of Accounting & Economics* (1991): 147-165.

Abdel-Khalik, A. R. and J. Espejo. "Expectations Data and the Predictive Value of Interim Reporting." *Journal of Accounting Research* (1978): 1-13.

Arya, A.; J. C. Glover and S. Sunder. "Are Unmanaged Earnings Always Better for Shareholders?" *Accounting Horizons* (2003): 111-116.

Ayers, B. C.; J. X. Jiang and P. E. Yeung. "Discretionary Accruals and Earnings Management: An Analysis of Pseudo Earnings Targets." *Accounting Review* (2006): 617-652.

Baginski, S.; J. Hassell and G. Waymire. "Some Evidence on the News Content of Preliminary Earnings Estimates." *Accounting Review* (1994): 265-271.

Balsam, S.; E. Bartov and C. Marquardt. "Accruals Management, Investor Sophistication, and Equity Valuation: Evidence from 10Q Filings." *Journal of Accounting Research* (2002): 987-1012.

Bamber, L. S. and Y. S. Cheon. "Discretionary management earnings forecast disclosures: Antecedents and outcomes associated with Forecast Venue and Forecast Specificity Choices." *Journal of Accounting Research* (1998): 167-190.

Barron, O. E.; D. Byard; C. Kile and E. J. Riedl. "High-Technology Intangibles and Analysts' Forecasts." *Journal of Accounting Research* (2002): 289-312.

Barron, O. E.; D. Byard and O. Kim. "Changes in Analysts' Information around Earnings Announcements." *Accounting Review* (2002): 821-846.

Barron, O. E.; O. Kim; S. C. Lim and D. E. Stevens. "Using analysts' forecasts to measure properties of analysts' information environment." *Accounting Review* (1998): 421-433.

Barth, M. E.; R. Kasznik and M. F. McNichols. "Analyst Coverage and Intangible Assets." *Journal of Accounting Research* (2001): 1-34.

Barton, J. and P. J. Simko. "The Balance Sheet as an Earnings Management Constraint." *Accounting Review* (2002): 1-27.

Bartov, E.; D. Givoly and C. Hayn. "The rewards to meeting or beating earnings expectations." *Journal of Accounting and Economics* (2002): 173-204.

Bartov, E.; F. A. Gul and J. S. L. Tsui. "Discretionary-accruals models and audit qualifications." *Journal of Accounting and Economics* (2001): 421-452.

Beneish, M. D. and M. E. Vargus. "Insider Trading, Earnings Quality, and Accrual Mispricing." *Accounting Review* (2002): 755-791.

Bernard, V. L. "Cross-Sectional Dependence and Problems in Inference in Market-Based Accounting Research." *Journal of Accounting Research* (1987): 1-48.

Bradshaw, M. T. "How Do Analysts Use Their Earnings Forecasts in Generating Stock Recommendations?" (December, 2004). Available at SSRN: http://ssrn.com/abstract=256438.

Bradshaw, M. T. and L. D. Brown. "Do Sell-Side Analysts Exhibit Differential Target Price Forecasting Ability?" (April 15, 2006). Available at SSRN: http://ssrn.com/abstract=698581.

Bradshaw, M. T.; S. A. Richardson and R. G. Sloan. "Do Analysts and Auditors Use Information in Accruals?" *Journal of Accounting Research* (2001): 45-74.

Bradshaw, M. T. and R. G. Sloan. "GAAP versus The Street: An Empirical Assessment of Two Alternative Definitions of Earnings." *Journal of Accounting Research* (2002): 41-66.

Brown, L. D. "Analyst Forecasting Errors: Additional Evidence." *Financial Analysts Journal* (1997): 81-88.

Brown, L. D. "Earnings forecasting research: its implications for capital markets research." *International Journal of Forecasting* (1993): 295-320.

Brown, L. D. "Managerial Behavior and the Bias in Analysts' Earnings Forecasts." (July 2, 1998). Available at SSRN: http://ssrn.com/abstract=113508.

Brown, L. D. and M. L. Caylor. "A Temporal Analysis of Quarterly Earnings Thresholds: Propensities and Valuation Consequences." *Accounting Review* (2005): 423-440.

Brown, L. D. and J. C. Y. Han. "The impact of annual earnings announcements on convergence of beliefs." *Accounting Review* (1992): 862-875.

Brown, L. D. and M. S. Rozeff. "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings." *Journal of Finance* (1978): 1-16.

Burgstahler, D. and I. Dichev. "Earnings management to avoid earnings decreases and losses." *Journal of Accounting and Economics* (1997): 99-126.

Burgstahler, D. C. and M. J. Eames. "Earnings Management to Avoid Losses and Earnings Decreases: Are Analysts Fooled?" *Contemporary Accounting Research* (2003): 253-294.

Chandar, N. and R. Bricker. "Incentives, Discretion, and Asset Valuation in Closed End Mutual Funds." *Journal of Accounting Research* (2002): 1037-1070.

Clement, M. "Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter?" *Journal of Accounting and Economics* (1999): 285-303.

Crichfield, T.; T. Dyckman and J. Lakonishok. "An Evaluation of Security Analysts' Forecasts." *Accounting Review* (1978): 651-668.

Das, S.; C. B. Levine and K. Sivaramakrishnan. "Earnings predictability and bias in analysts' earnings forecasts." *Accounting Review* (1998): 277-294.

Dechow, P. M. "Accounting earnings and cash flows as measures of firm performance : The role of accounting accruals." *Journal of Accounting and Economics* (1994): 3-42.

DeFond, M. L. and C. W. Park. "Smoothing income in anticipation of future earnings." *Journal of Accounting and Economics* (1997): 115-139.

Degeorge, F.; J. Patel and R. Zeckhauser. "Earnings Management to Exceed Thresholds." *Journal of Business* (1999): 1-33.

Dhaliwal, D.; C. A. Gleason and L. F. Mills. "Last Chance Earnings Management: Using the Tax Expense to Achieve Earnings Targets." (June, 2003). Available at SSRN: http://ssrn.com/abstract=314563.

Dichev, I. D. and D. J. Skinner. "Large Sample Evidence on the Debt Covenant Hypothesis." *Journal of Accounting Research* (2002): 1091-1123.

Durtschi, C. and P. Easton. "Earnings Management? The Shapes of the Frequency Distributions of Earnings Metrics Are Not Evidence Ipso Facto." *Journal of Accounting Research* (2005): 557-592.

Elgers, P. T.; M. H. Lo and J. Pfeiffer, Ray J. "Analysts' vs. investors' weightings of accruals in forecasting annual earnings." *Journal of Accounting and Public Policy* (2003): 255-280.

Elgers, P. T.; M. H. Lo and R. J. Pfeiffer Jr. "Delayed Security Price Adjustments to Financial Analysts' Forecasts of Annual Earnings." *Accounting Review* (2001): 613-632.

Enis, C. R. and B. Ke. "The Impact of the 1986 Tax Reform Act on Income Shifting from Corporate to Shareholder Tax Bases: Evidence from the Motor Carrier Industry." *Journal of Accounting Research* (2003): 65-88.

Erickson, M.; M. Hanlon and E. L. Maydew. "How Much Will Firms Pay for Earnings That Do Not Exist? Evidence of Taxes Paid on Allegedly Fraudulent Earnings." *Accounting Review* (2004): 387-408.

Fischer, P. E. and R. E. Verrecchia. "Reporting Bias." *Accounting Review* (2000): 229-245.

Frankel, R. and C. M. C. Lee. "Accounting valuation, market expectation, and cross-sectional stock returns." *Journal of Accounting and Economics* (1998): 283-319.

Gaver, J. J.; K. M. Gaver and J. R. Austin. "Additional evidence on bonus plans and income management." *Journal of Accounting and Economics* (1995): 3-28.

Gaver, J. J. and J. S. Paterson. "Do insurers manipulate loss reserves to mask solvency problems?" *Journal of Accounting and Economics* (2004): 393-416.

Gigler, F. B. and T. Hemmer. "Conservatism, Optimal Disclosure Policy, and the Timeliness of Financial Reports." *Accounting Review* (2001): 471-493.

Gintschel, A. and S. Markov. "The effectiveness of Regulation FD." *Journal of Accounting and Economics* (2004): 293-314.

Guidry, F.; A. J. Leone and S. Rock. "Earnings-based bonus plans and earnings management by business-unit managers." *Journal of Accounting and Economics* (1999): 113-142.

Healy, P. M. "The effect of bonus schemes on accounting decisions." *Journal of Accounting and Economics* (1985): 85-107.

Herrmann, D.; T. Inoue and W. B. Thomas. "The Sale of Assets to Manage Earnings in Japan." *Journal of Accounting Research* (2003): 89-108.

Hope, O.-K. "Disclosure Practices, Enforcement of Accounting Standards, and Analysts' Forecast Accuracy: An International Study." *Journal of Accounting Research* (2003): 235-272.

Hribar, P. and D. W. Collins. "Errors in Estimating Accruals: Implications for Empirical Research." *Journal of Accounting Research* (2002): 105-134.

Huang, A. H.; R. H. Willis and A. Y. Zhang. "Bold Security Analysts' Earnings Forecasts and Managers' Information Flow." (January, 2005). Available at SSRN: http://ssrn.com/abstract=587951.

Irvine, P. "Do analysts generate trade for their firms? Evidence from the Toronto stock exchange." *Journal of Accounting and Economics* (2000): 209-226.

Irvine, P. J. "Analysts' Forecasts and Brokerage-Firm Trading." *Accounting Review* (2004): 125-149.

Jacob, J.; T. Z. Lys and M. A. Neale. "Expertise in forecasting performance of security analysts." *Journal of Accounting & Economics* (1999): 51-82.

Jones, J. J. "Earnings Management During Import Relief Investigations." *Journal of Accounting Research* (1991): 193-228.

Jones, K.; G. V. Krishnan and K. Melendez. "Do Models of Discretionary Accruals Detect Actual Cases of Fraudulent and Restated Earnings? An Empirical Evaluation." (April 6, 2006). Available at SSRN: http://ssrn.com/abstract=895541.

Kadous, K.; S. D. Kirsche and L. M. Sedor. "Using Counter-explanation to Limit Unintentional Optimism in Analysts' Forecasts." (October, 2004). Available at SSRN: http://ssrn.com/abstract=623042.

Kasznik, R. "On the association between voluntary disclosure and earnings management." (1999///Spring, 1999). Available at SSRN: http://search.epnet.com/login.aspx?direct=true&db=buh&an=2205751.

Ke, B.; S. Huddart and K. Petroni. "What insiders know about future earnings and how they use it: Evidence from insider trades." *Journal of Accounting and Economics* (2003): 315-346.

Kim, K. and D. A. Schroeder. "Analysts' use of managerial bonus incentives in forecasting earnings." *Journal of Accounting and Economics* (1990): 4-23.

Kim, O.; S. C. Lim and K. W. Shaw. "The Inefficiency of the Mean Analyst Forecast as a Summary Forecast of Earnings." *Journal of Accounting Research* (2001): 329-335.

Kim, O. and R. E. Verrecchia. "Market liquidity and volume around earnings announcements." *Journal of Accounting and Economics* (1994): 41-67.

Kothari, S. P. "Capital markets research in accounting." *Journal of Accounting and Economics* (2001): 105-231.

Kothari, S. P.; A. J. Leone and C. E. Wasley. "Performance matched discretionary accrual measures." *Journal of Accounting and Economics* (2005): 163-197.

Lang, M. H.; K. V. Lins and D. P. Miller. "Concentrated Control, Analyst Following, and Valuation: Do Analysts Matter Most When Investors Are Protected Least?" *Journal of Accounting Research* (2004): 589-623.

Leone, A. J. and J. S. Wu. "What Does it Take to Become a Superstar? Evidence from Institutional Investor Rankings of Financial Analysts." (May, 2002). Available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=313594.

Liu, X. "Analysts' Response to Earnings Management." (March 1, 2005). Available at SSRN: http://ssrn.com/abstract=622404.

Matsumoto, D. A. "Management's Incentives to Avoid Negative Earnings Surprises." *Accounting Review* (2002): 483-514.

McVay, S. E.; V. Nagar and W. V. Tang. "Trading Incentives to Meet Earnings Thresholds." (April, 2006). Available at SSRN: http://ssrn.com/abstract=555202.

Mikhail, M. B.; B. R. Walther and R. H. Willis. "Does Forecast Accuracy Matter to Security Analysts?" *Accounting Review* (1999): 185-200.

Mikhail, M. B.; B. R. Walther and R. H. Willis. "The effect of experience on security analyst underreaction." *Journal of Accounting & Economics* (2003): 101-116.

Mikhail, M. B.; B. R. Walther and R. H. Willis. "Security Analyst Experience and Post-Earnings-Announcement Drift." *Journal of Accounting, Auditing & Finance* (2003): 529-555.

Morse, D. and J. Stephan. "Earnings announcements and the convergence (or divergence) of beliefs." *Accounting Review* (1991): 376-388.

Palmrose, Z.-V.; V. J. Richardson and S. Scholz. "Determinants of market reactions to restatement announcements." *Journal of Accounting and Economics* (2004): 59-89.

Payne, J. L. and W. B. Thomas. "The Implications of Using Stock-Split Adjusted I/B/E/S Data in Empirical Research." *Accounting Review* (2003): 1049-1067.

Pinello, A. S. "How Do Individual Investors Use Analyst Forecasts? The Implications for Investor Reaction to Forecast Revisions and Earnings Surprises." (November 15, 2005). Available at SSRN: http://ssrn.com/abstract=817006.

Plumlee, M. A. "The Effect of Information Complexity on Analysts' Use of That Information." *Accounting Review* (2003): 275-296.

Pownall, G. and G. Waymire. "Voluntary Disclosure Choice and Earnings Information Transfer." *Journal of Accounting Research* (1989): 85-105.

Ramnath, S. "Investor and Analyst Reactions to Earnings Announcements of Related Firms: An Empirical Analysis." *Journal of Accounting Research* (2002): 1351-1376.

Schipper, K. "Analysts' forecasts." *Accounting Horizons* (1991): 105-121.

Schipper, K. "Commentary on Earnings Management." *Accounting Horizons* (1989): 91-102.

Shane, P. and P. Brous. "Investor and (Value Line) Analyst Underreaction to Information about Future Earnings: The Corrective Role of Non-Earnings-Surprise Information." *Journal of Accounting Research* (2001): 387-404.

Skinner, D. J. "Why firms voluntarily disclose bad news." *Journal of Accounting Research* (1994): 38-60.

Sloan, R. G. "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows About Future Earnings?" *Accounting Review* (1996): 289-315.

Soffer, L. C.; S. R. Thiagarajan and B. R. Walther. "Earnings Preannouncement Strategies." *Review of Accounting Studies* (2000): 5-26.

Stickel, S. E. "Reputation and Performance Among Security Analysts." *Journal of Finance* (1992): 1811-1836.

Subramanyam, K. R. "The pricing of discretionary accruals." *Journal of Accounting and Economics* (1996): 249-281.

Tan, H.-T.; R. Libby and J. E. Hunton. "Analysts Reactions to Earnings Preannouncement Strategies." *Journal of Accounting Research* (2002): 223-246.

Tucker. "Does Disclosure Reputation Explain Earnings Warnings?" (August, 2004). Available at SSRN: http://ssrn.com/abstract=586211.

Vuong, Q. H. "Likelihood Ratio Tests for Model Selection and Non-Nested Hypotheses." *Econometrica* (1989): 307-333.

Waymire, G. "Additional Evidence on the Information Content of Management Earnings Forecasts." *Journal of Accounting Research* (1984): 703-718.

Weber, D. P. "Book - Tax Differences, Analysts' Forecast Errors, and Stock Returns." *Working Paper* (2005).

Xie, H. "The Mispricing of Abnormal Accruals." *Accounting Review* (2001): 357-373.