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Voluntary Disclosures: Benefits and Costs Analysis

By

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Abstract

VOLUNTARY DISCLOSURES: BENEFITS AND COSTS ANALYSIS

by

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Some firms voluntarily release earnings forecasts prior to the related mandatory disclosures. Economic rationality dictates that managers would disclose those earnings forecasts if it is in their own best interests. While it is likely that conveying good news generates positive net value to managers, it is less obvious why providing "bad news" earnings forecasts leaves a manager better off. This dissertation identifies various firms' economic characteristics that would increase the net value of managers releasing "bad news" earnings forecasts. Each of these characteristics, if present, will have different implications on the firms' reported earnings, returns to shareholders and revisions of analysts' forecasts.

Using a matched pair design adapted from Kasznik and Lev (1995), a firm that provides "bad news" earnings forecast is matched with a firm that did not release any forecast when faced with (a similar) negative earnings surprise. The matching criteria are the percentage analysts' forecast error and firm size.

From a sample of 1096 firm-observations from 1992 to 1999, results indicate that managers are more likely to provide "bad news" earnings forecasts when faced with higher litigation costs, higher reputation costs and higher market alignment costs. In

addition to the firms' characteristics, this dissertation also finds that managers are more likely to release "bad news" earnings forecasts when faced with lower costs on their personal wealth. Finally, combining the firms' characteristics and the level of insider sales (prior to the release of the forecasts) in a unified logistic regression model, litigation costs and insider sales are found to be the key factors that cause managers to release "bad news" earnings forecasts.

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Chapter 1: Introduction

Managing market earnings expectations is an important investor-relations function in public firms. An increasingly popular method of managing earnings expectations is through public earnings forecasts.[1] In an earnings forecast, a manager voluntarily announces a tentative earnings amount shortly before the mandated earnings announcement. Empirical findings (Patell 1976; Penman 1980) demonstrate that public earnings forecasts released by managers convey value-relevant information to investors. Given that investors follow these earnings forecasts, an important research issue is to investigate why some firms report forecasts publicly while others do not.

The deliberate choice by manager to issue an earnings forecast suggests that the manager is better off, ex-ante, by making the forecast rather than by withholding it (even though earnings will be revealed later through mandatory disclosure). Early studies (Patell 1976; Penman 1980) show that managers are more likely to disclose earnings forecasts that convey good news relative to market expectations (hereinafter also referred to as "positive earnings forecasts"). They find that disclosure of positive earnings forecasts generally increases the value of the firm. Therefore, it is reasonable to conclude that managers disclose positive earnings forecasts because the net value of disclosure to managers is positive, i.e. the benefit of disclosing positive earnings forecasts is always greater than the cost.

[1] Sixty-nine percent of the respondents to a 1995 National Investor Relations Institute survey of disclosure practices said that they "always" or "usually" provide public earnings forecasts.

More recent studies (Ajinkya and Gift 1984; Skinner 1994; Skinner 1997) demonstrate that managers are more likely to disclose earnings forecasts that communicate bad news (hereinafter also referred to as "negative earnings forecasts").[2] The primary consequence to managers stemming from negative earnings forecasts relates to stock price declines. While it is likely that the net value of disclosure to managers is positive when communicating positive earnings forecasts, it is less obvious why providing negative earnings forecasts leave managers better off. The central focus of this dissertation is to examine the economic characteristics of firms that cause managers to disclose negative earnings forecasts.

1.1 Research question

The U.S. Securities and Exchange Commission (SEC) mandates that firms provide financial reports at regular intervals. However, some firms voluntarily release earnings forecasts (including negative ones) prior to the related mandatory disclosure. The research question addressed in this dissertation is: What are the economic characteristics of firms that cause managers to issue negative earnings forecasts?

Given that managers are rational in their disclosure decisions, the release of earnings forecasts that convey "bad news" is expected to make the managers better off relative to having the information revealed through related mandatory disclosure. If I compare across two firms that have equally "bad news" but where only one firm discloses, I should find that the economic characteristics of firm that disclosed are such

[2] In this dissertation, negative earnings forecast refers to the difference between the firm's reported earnings and the consensus of analysts' earnings forecasts. Implicitly, I assume that managers have foreknowledge of the reported earnings when deciding whether to release the negative earnings forecasts.

that it has: (i) greater benefits from disclosure; or (ii) lower costs of disclosure; or (iii) both greater benefits and lower costs. Summarized briefly, firms that provide negative earnings forecasts must differ economically from firms that withhold information, in a way that increases the net value of issuing negative earnings forecasts. This dissertation identifies a series of potential economic characteristics that increase the net value of the firms that issue negative earnings forecasts.

1.2 Research design

Using a matched pair design adapted from Kasznik and Lev (1995), I match firms that provide negative earnings forecast with firms that did not release any forecast when faced with negative earnings surprise. This provides an opportunity for comparing the economic characteristics of voluntary disclosers of negative earnings forecasts with those of non-disclosers. The matching criteria are the percentage analysts' forecast error[3] between the start of the measurement period and the subsequent earnings announcement, firm size and the firm's fiscal-quarter-end. *Within this framework*, the disclosing firm, had it remained silent, would have had the same informational characteristics as the non-disclosers, *ceteris paribus*. In other words, two firms with the same magnitude of analysts' forecast error are assumed to face identical potential costs and benefits of issuing earnings forecasts unless if they differ along an economic dimension that affects the costs or benefits of a voluntary disclosure.

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[3] Percentage analysts' forecast error is defined as the difference between the firm's reported earnings per share and the consensus of analysts' forecasts of earnings per share at the end of month *t*-2, scaled by the

Summing up, economic characteristics of two groups of firms are compared in this dissertation; one consists of firms that voluntarily disclose negative earnings forecasts (sample firms), while the other group consists of firms that do not provide any earnings forecasts when faced with negative earnings surprise (control firms).

In my first set of empirical tests, I identify potential firms' economic characteristics that may increase the net value of negative earnings forecasts. Each of these potential characteristics, if present in the disclosing firms, has different implications for: (i) the reported accounting performance, (ii) the returns to shareholders and (iii) the revision of analysts' forecasts. My first set of empirical tests are designed to identify these economic characteristics whose implications conform best with differences in the patterns of reported accounting performance, returns to shareholders and revision of analysts' forecasts observed across disclosing and non-disclosing firms.

The primary consequence to managers stemming from a negative earnings forecast relates to stock price declines. In particular, when a significant portion of managers' wealth is comprised of equity in their firm's stock, the effects of stock price declines will be considerable. Therefore, if managers have the capacity to increase the net value of a forecast through suitable trading strategies (so as to protect their personal wealth), they are more likely to go ahead with the forecast. This proposition is examined using data on insider trading surrounding negative earnings forecasts. Stated differently, my second set of empirical tests investigate whether firms that can better manage the

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absolute value of the consensus of analysts' forecasts of earnings per share at the end of month t-2. Month t is identified as the month when the negative earnings forecast is released.

negative stock price effects (consequence from the release of the negative earnings forecasts) through insider sales are more likely to offer the forecasts.

In the first and second set of empirical tests, the economic characteristics of firms and the levels of insider sales are used independently as predictors of firms' disclosure strategies. That is, given two firms with similar informational characteristics, the one with economic characteristics that yield higher payoffs to the managers (resulting from the release of the negative earnings forecast) is more likely to be an actual discloser. By the same token, a firm that is better able to manage wealth effects through *legal* insider sales is more likely to release a negative earnings forecast.

Lastly, I employ a third set of empirical tests which combine the prior two tests. Using a binomial logistic regression model, I examine whether the decision to provide negative earnings forecasts is a function of the economic characteristics of firms and/or the levels of insider sales.

1.3 Summary of tests and results

I examine 8,576 firm-observations from 1992 to 1999 and categorize 548 of them as disclosers of negative earnings forecasts. I then match with 548 non-disclosers (i.e. firms that do not release any forecasts when faced with a negative earnings surprise similar to one of the disclosers) and obtain a sample of 1096 firms. In the first set of empirical tests, I compare the economic characteristics of disclosers and non-disclosers of negative earnings forecasts. I find disclosers of negative earnings forecasts suffer greater

declines in seasonal quarterly earnings per share[4] (both past and future) relative to non-disclosers. Disclosers of negative earnings forecasts, on average, experienced a –26.2% (median –25.0%) change in past seasonal quarterly earnings per share while non-disclosers experienced a change of only –16.8% (median –14.6%). Similar findings are obtained when the future seasonal quarterly earnings per share of disclosers and non-disclosers are analyzed (i.e. –20.4% for disclosers and –9.8% for non-disclosers). These empirical results indicate that disclosers of negative earnings forecasts are, on average, faced with greater decline in their (past and future) time series of reported earnings.

When examining the returns to shareholders, I compute the market-adjusted stock returns surrounding the release of the negative earnings forecasts and the subsequent earnings announcements. I find that disclosers of negative earnings forecasts, on average, experience a more severe drop in their stock prices relative to non-disclosers. When the combined investor reaction to the negative earnings forecasts and the subsequent earnings announcement is compared with the corresponding reaction for the control group of non-disclosers, the combined reaction on firms that disclose negative earnings forecasts is negative and significant. Disclosers experience on average, a combined market-adjusted stock return of –13.3% (median –10.1%) while non-disclosers experience an average of only –0.3% (median –0.7%).

As for revisions of analysts' forecasts, I compare the percentage change in the consensus of analysts' forecasts of EPS in the month prior to the release of the negative

[4] Past seasonal quarterly earnings per share is computed as the percentage difference between current quarter EPS and the previous year same-quarter EPS, while future seasonal quarterly earnings per share

earnings forecasts. I find that disclosers, on average, experience a smaller percentage of downward revision (prior to the release of the negative earnings forecasts) relative to non-disclosers. The empirical results show that disclosers experience an average downward revision of –5.8% (median –3.0%) in the month leading up to the negative earnings forecasts. Within the same period, non-disclosers suffer larger downward revisions with an average of –11.9% (median –10.0%). These findings indicate the following:

1.) For the sample group of disclosers, financial analysts are not incorporating (on a timely basis) the impending "bad news" into their EPS forecasts, resulting in a relatively large gap between the market expectation of the firms' EPS and the realized EPS. Thus, managers have the incentives to release their own forecasts in order to align the market expectation;

2.) As for the control group of non-disclosers, the gap between the market expectation of the firms' EPS and the realized EPS is smaller due to the downward revisions of the analysts' forecasts. For this reason, managers have less of an incentive to want to release forecasts of their own.

In my second set of tests, I compute the level of insider sales prior to the release of the negative earnings forecasts. I find that managers are more likely to disclose

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measures the percentage difference between current quarter EPS and the year ahead same-quarter EPS.

negative earnings forecasts if they are able to sell their stock holdings before the release of the forecasts.[5] In the 30-day window prior to the release of the negative earnings forecasts, managers of 23% of sample firms are successful in selling their stock holdings while only 14% of the control firms are able to do so. In addition to having more sample firms (relative to control firms) initiating sales prior to the release of the forecasts, I also find that the level of insider sales for the sample firms is, on average 2.12 times (median 1.21 times) more than for the normal level of sales. This is slightly higher than the level of insider sales for the control firms of only 2.01 times (median 1.06) above the normal level of sales.

In sum, my second set of tests provides evidence that managers are more likely to disclose negative earnings forecasts if they are successful in selling their stock holdings prior to the release of the forecasts. Likewise, managers that are not able to sell their stock holdings are less likely to want to disclose the negative earnings forecasts. The support for these inferences comes both from the lower percentage of control firms with insider sales and the lower level of abnormal insider sales for the control firms.

The final set of tests combine the approaches applied in the preceding tests using a binomial logistic regression model. In examining the economic characteristics of firms and levels of insider sales as predictors of firms' disclosure strategies, I calculate the odds of firms providing negative earnings forecasts. The results from the binomial logistic regression suggest the following:

[5] Managers are able to sell their stock holdings because of the non-blackout periods that permit insiders to trade in the open market.

1.) Firms are more likely to provide negative earnings forecasts if the changes in seasonal quarterly earnings per share (both past and future) are negative, *ceteris paribus*. This finding is evident from the negative coefficients of the earnings changes variables;

2.) The decision to release negative earnings forecasts is also influenced by revision of analysts' forecasts. *Ceteris paribus*, I find that firms are more likely to voluntarily disclose the negative earnings forecasts if financial analysts are slow in incorporating the impending "bad news" into their earnings estimates;

3.) The level of insider sales 30-days prior to the release of negative earnings forecasts is statistically significant in predicting firms' disclosure strategies, *ceteris paribus*. To summarize, managers are more likely to release negative earnings forecasts when faced with adverse past and future earnings changes, smaller revisions in analysts' forecasts of EPS and the ability to insider sell prior to the release of the negative forecasts.

1.4 Contribution of this dissertation

This dissertation contributes to management earnings forecasts literature in the following ways. First, most empirical studies related to managers' incentives in providing

negative earnings forecasts focused solely on a single motivation. For example, Skinner (1997) relates the early disclosure of "bad news" to a reduction in litigation cost whereas Kasznik and Lev (1995) focused on the permanent or transitory nature of the "bad news" in explaining firms' disclosure policy. Prior research has not looked at how managers attempt to achieve these various incentives concurrently. By simultaneously analyzing these multiple motivations, I minimize a potential correlated omitted variables bias that can exist in studies that look only at single motivation. This dissertation employs the binomial logistic regression to identify the competing incentives that drive managers to release negative earnings forecasts.

Second, it provides new evidence on the level of insider sales prior to the release of the earnings forecasts. More specifically, it demonstrates that by timing the release of negative earnings forecasts after successfully selling their stock holdings, managers can reduce the effects of a decline in stock price on their equity-based compensation.

1.5 Organization of the dissertation

The next chapter reviews related prior research on voluntary disclosure and insider trading. Chapter 3 outlines the history of insider trading regulation. The self-monitoring of insider trading by firms is also described therein. In Chapter 4, I develop the hypotheses to be tested. Chapter 5 discusses the sample selection and distribution statistics. Chapter 6 presents the methodology used to test the hypotheses. The empirical results are discussed in Chapter 7. Finally, conclusions are presented in Chapter 8.

Chapter 2: Review of Prior Research

Prior research that is relevant to this dissertation includes studies on the value relevance of earnings forecasts released by managers, the incentives to provide good and bad news earnings forecasts, and studies that compare the characteristics of disclosers and non-disclosers of earnings forecasts. I also review research that investigates the association between voluntary disclosures and insider transactions (i.e., transactions by managers in their own firms' shares).

2.1 Voluntary disclosure

Early empirical accounting research on voluntary disclosures investigates the share price responses to management earnings forecasts. Patell (1976) tests for the information content of management earnings forecasts. He examines the common stock price reaction surrounding the voluntary disclosure of 336 management forecasts during the years 1963-67. Patell finds a statistically significant upward price change during the week of forecast disclosure beyond that explained by movement of the market as a whole. The inference drawn from his finding is that either the data presented in the management forecast, or the act of voluntary disclosure, or both, conveys (positive) information to investors.

Penman (1980) finds a similar result using management earnings forecasts from 1968-73. Using a larger sample of 1,188 forecasts, he finds statistically significant average daily excess returns surrounding the date of the forecast. The results from his excess returns tests indicate that information is conveyed to investors through the

forecasts. In sum, both Patell and Penman find that management earnings forecasts, on average, possess information relevant to the valuation of firms. Further, their results indicate that on average, firms communicate information that conveys good news.

Voluntary disclosure of good news generally increases the net value of firms. This is evident from Penman (1980). By partitioning his sample based on positive and negative forecast errors, he finds that good news forecasts have positive average excess returns surrounding the announcements while bad news forecasts have negative average excess returns. This implies that investors revise their expectations in an unbiased fashion, i.e. good news forecasts are associated with an upward price revision, while bad news forecasts are associated with a downward price revision. Therefore, it is reasonable to conclude that firms have more incentives to want to disclose good news because it generally increases the firms' stock values.

Several studies have documented the incentives to disclose good news. For example, Warner, Watts and Wruck (1988) suggest that managers voluntarily disclose good news to reduce the likelihood of under-valuation and to justify poor earnings performance. They investigate the relation between a firm's stock price performance and subsequent changes in its top management. Their empirical results indicate that poor stock price performance is associated with a higher probability of top management turnover. They conclude that managers opportunistically disclose good news to safeguard their job tenures.

Some recent analytical models examine managers' incentives to voluntarily disclose information that conveys bad news. Darrough and Stoughton (1990) analyze incentives for voluntary disclosure in the context of market competition. They show that, for example, managers may disclose bad news to discourage new entries into the product market at the expense of communicating the bad news to the financial market. Dontoh (1989) shows that managers of firms in oligopolistic markets will disclose both good and bad news given the trade-off between wanting to provide good news to shareholders and bad news to competitors. While the benefits of deterring-competitors yields interesting insights for the voluntary disclosure of bad news, there is an additional institutional reason for the observed preponderance of bad news voluntary disclosures.

One plausible reason for why firms voluntarily disclose bad news can be attributed to the existence of disclosures mandated by the 1933 Securities Act. If investors will surely become informed about the bad news (through the related mandated disclosures), managers could be better off voluntarily disclosing the bad news early. However, not all firms that are in possession of bad news will want to voluntarily disclose (before the mandatory date) because there are both costs and benefits associated with early disclosures of bad news. Rather, the implication is that the decision to disclose bad news depends on the reaction that will take place at the date when the information is bound to be revealed. Theoretically at least, a firm that voluntarily discloses bad news may suffer less of a consequence than a firm that is forced to reveal the bad news through the mandated disclosure. That is, there might be some indirect benefits to providing a bad news voluntary disclosure.

Among the benefits from early disclosures of bad news previously advanced in the literature are: 1.) It increases the credibility of the managers and the firms (Trueman 1986); 2.) It maintains good relations between the managers and financial analysts, by lending greater credibility to the analysts' forecasts and investment advice (Ajinkya and Gift 1984); and 3.) It reduces the potential cost of legal liability (Skinner 1994, 1997).

Ajinkya and Gift (1984) suggest the "market alignment" hypothesis, i.e. management forecasts are issued in an effort to move existing market expectations (about firms' future earnings) toward management beliefs. If management views the prevailing financial analyst forecasts as inaccurate, and expects dramatic swings in price later when actual results come out, it would be motivated to correct analysts' forecasts with direct forecasts of its own. They test their hypothesis using management forecasts of earnings from 1970-1977. Their empirical results indicate that investors view management earnings forecasts as corrective signals of market expectations. They conclude that managers align the prevailing market expectation in order to maintain a good relation with the financial analysts and investors.

Skinner (1994, 1997) investigates the relation between the timeliness of voluntary earnings disclosures and stockholder litigation. He argues that managers' disclosure

[6] A manager's incentives to voluntarily disclose comes from his desire to inform investors that he has observed changes in the firm's economic environment which have caused him to change his expectation of earnings. He is using the release of the forecast to provide a signal to investors of his ability to anticipate future changes. This motive is similar to that of the workers in Spence's (1973) labor market model whereby workers obtain education in order to provide a signal to employers of the worker's (unobserved) productivity.

choices affect both the likelihood and costs of stockholder litigation. For example, more timely disclosure of adverse earnings news reduces expected litigation costs. He claims that since the U.S. legal system induces an asymmetric loss function for firms and managers, it creates an incentive for managers to want to disclose adverse news early in order to reduce the costs of litigation.[7] However, his empirical results are inconsistent with the idea that early disclosure prevents stockholder litigation. On one hand, he finds more timely disclosure of adverse earnings news in quarters that result in litigation than in quarters that do not result in litigation. On the other hand, he finds some evidence that more timely disclosure is associated with lower settlement amounts.

There are also costs associated with early disclosures of bad news. Among them are: 1.) It risks investors' over-reactions to the voluntary disclosures of bad news (Kasznik and Lev 1995); 2.) It may trigger lawsuits as a result of a sudden sharp decline in the stock price (Francis, Philbrick and Schipper 1994); and 3.) There is a chance that shareholders could successfully sue the manager for releasing a misleading forecast.[8]

Kasznik and Lev (1995) investigate methods used by managers to alert investors of impending large earnings surprises and investors' reaction to such warnings. They analyze all managerial disclosures prior to the surprising earnings releases. Focusing only

[7] These litigation costs can be thought of as the product of the probability of being sued and the costs incurred if litigation occurs. For example, the earlier the disclosure that corrects the allegedly defective information in the market (and precipitates the litigation), the shorter the class period, holding other factors equal. A shorter class period reduces the size of the class, hence also the damages.

[8] Even if the manager disclosed a truthful forecast, shareholders might be able to successfully sue him if actual earnings deviated significantly from forecasted earnings, claiming that a misleading forecast was released. If the possibility of shareholders winning a large settlement in such a suit was relatively great, the manager might prefer not to disclose his forecast.

on negative earnings surprise, they find that firms that warn investors of bad news experience significantly more negative returns per unit of unexpected earnings than firms that do not warn. Their finding suggests that firms are penalized for disclosing bad news early in terms of stock price.

A second study that investigates the link between the presence of adverse information and the risk of litigation is Francis, Philbrick and Schipper (1994). In their sample, they do not find a simple causal relation between the presence of adverse earnings reports and the incidence of shareholder litigation, as reported by Skinner (1994). But they find the pattern of positive returns (prior to the release of the adverse earnings forecasts) followed by an extreme negative price reaction to the adverse earnings disclosure triggers legal actions against the firms.

From the literature review presented above, it is clear that voluntary disclosures of bad news involve complex costs and benefits to both firms and managements. This dissertation narrows down the potential costs and benefits in order to focus the empirical analysis.

One of the immediate consequences from the release of a negative earnings forecast relates to stock price declines (Kasznik and Lev 1995). In particular, when a significant portion of managers' wealth is comprised of equity in their firm's stock, the effects of stock price declines will be considerable. Therefore, it should be the case that prior to the release of the negative earnings forecasts, managers have the incentives to

want to sell their equity holdings. In *section 2.2*, I review prior research that links trading by insiders surrounding corporate announcements.

2.2 Insider trading

Insider trading based on private information is illegal and punishable under the 1933 Securities Act. However, despite this provision, many studies have documented stock trading by executives surrounding corporate announcements, such as earning forecasts (Penman 1982, 1985), dividend announcements (John and Lang, 1991), securities issues (Karpoff, 1991), and earnings announcements (Udpa, 1996). These studies discover that stock trading by executives is correlated with the information embedded in subsequent public announcements. By measuring the profitability of such insider "trading" activities on the basis of these corporate announcements, these studies show that corporate insiders opportunistically trade at favorable prices.

More recent studies on the subject of opportunistic trading by insiders include Yermack (1997) and Aboody and Lev (2000). Yermack (1997) analyzes the timing of CEO stock option awards as a method of investigating corporate managers' influence over the terms of their own compensation. In a sample of 620 stock option awards to CEOs of Fortune 500 companies between 1992 and 1994, Yermack found that the timing of stock option awards coincides with favorable movements in the firms' stock prices. This is consistent with the notion that CEOs receive stock option awards shortly before favorable corporate news.[9]

[9] Yermack (1997) examined stock option awards prior to mandatory quarterly earnings announcements.

Instead of focusing on the link between the timing of stock option awards and mandatory disclosures, Aboody and Lev (2000) investigate whether CEOs manage the timing of their voluntary disclosures around stock option awards. Their conjecture is that CEOs manage investors' expectations around stock option award dates by delaying good news and rushing forward bad news.[10] They conclude that CEOs make opportunistic voluntary disclosure decisions that maximize their stock option compensation. Overall, the findings from Yermack (1997) and Aboody and Lev (2000) indicate that corporate insiders can either manage the timing of their trades or the timing of the disclosures to maximize their compensation.

Bushman and Indjejikian (1997) present a model that analyzes the voluntary disclosures incentives of corporate insiders who trade in their own stock. Their results highlight the fact that incentives for voluntary disclosures are influenced by the nature of the market for the firm's shares. Public disclosure changes the trading behavior of all traders in a way that allows a strategic insider to increase his profits at the expense of other informed or uninformed traders. Using this as cover, firms may be able to initiate trades and then time the disclosure to take place at a strategic point in time relative to the trade (as suggested for options in Aboody and Lev (2000)).

The research on insider trading that is most related to this dissertation is Noe's (1999) investigation on insider trading around disclosures. He argues that managers take

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[10] Delaying good news will suppress the stock price at its current level so that the stock option can be exercised at a relatively lower price. Similarly, rushing forward bad news will result in a decline in the stock price and again, works in the favor of the CEOs.

advantage of voluntary disclosures to initiate insider transactions when information asymmetry with outside investors is likely to be relatively low. He finds a concentration of insider trading around voluntary disclosures and a difference in insider trading patterns across good and bad news disclosures in the post-announcement period.

However, Noe (1999) does not document the significant differences in insider trading behaviors in the pre-announcement period. His hypothesis is that managers make voluntary disclosures so that they may trade after the disclosure. In contrast, I argue that managers are more likely to make "bad news" voluntary disclosures if they are successful in selling their stock holdings prior to the release of the voluntary disclosures. To the extent that managers have already sold shares prior to the release of the "bad news" disclosure, they are unlikely to sell further after the disclosure. At least in this limited sense, the empirical results of this dissertation are very different from the findings documented by Noe.

Chapter 3: Historical Background on Insider Trading

Insider trading is regulated under the 1934 Securities Act. The Act prohibits corporate insiders[11] from trading on material, non-public information. While most insider trading laws impose costs, such as fines and jail time, primarily on the individuals doing the insider trading, there is also provision in the law to penalize the firms.[12] For this reason, firms have incentives to supplement the legal rules by formulating internal restrictions regarding on when managers will be allowed to trade. This section reviews briefly, the insider trading laws and the (voluntary) self-imposed regulation on insider trading by firms.

3.1 History of insider trading regulation

Before 1934, there were no restrictions on insider trading. During this time, many people believed that investing in the equity market was too risky for ordinary people without privileged access to price-sensitive information. Corporate insiders could trade actively with material, non-public information, leaving individual investors at large in an information inferior environment. The Securities Act of 1934[13] was motivated partly by a desire to curb insider-trading activities that were believed to have caused the 1929 market crash.

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[11] Under Section 16(b) of the Securities Exchange Act of 1934, corporate insiders usually include directors, officers, beneficial owners (owners of 10 percent or more of the outstanding voting stock), trustees, and affiliated persons.

[12] Even when the firms are not accused of wrongdoing, the cost to them can be substantial. There are legal and administrative costs, and the reputation effect of being publicly associated with the accused. In any case, the firm can expect to be penalized publicly for failing to supervise its employees.

[13] Various components of the Securities and Exchange Act of 1934 and the Williams Act Amendments of 1968 are directed specifically towards regulation of insider trading.

This important task of curbing insider-trading activities was assigned to the SEC (Securities Exchange Commission). The SEC formulated Rule 10(b)5, which prohibits corporate insiders from trading on the basis of material, non-public information. Under Rule 10(b)5, insider trading and tipping are prohibited at all times.[14]

However, the effectiveness of Rule 10(b)5 to curb opportunistic insider trading is doubtful[15]. This is due, in part to the difficulty of proving that insider trading, has, in fact, taken place.[16] Based on the perception that regulations in place were insufficient to deter insider trading, Congress introduced more severe legal sanctions for trading on inside information in 1984 (the Insider Trading Sanctions Act of 1984), 1988 (the Insider Trading and Securities Fraud Enforcement Act (ITSFEA) of 1988) and 1990 (Securities Enforcement and Penny Stock Reform Act (SEPSRA) of 1990).

SEC officials have reaffirmed their belief that insider trading, if left unchecked, will undermine the integrity of the US capital market. They have also asserted that self-regulation of insider trading by the firms themselves plays an important role in assuring "level playing fields" for all investors. The Insider Trading and Securities Fraud Enforcement Act (ITSFEA) of 1988 called specifically for such self-regulation. Among

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[14] Tipping is the act of disclosing material, non-public information to selected people.

[15] Studies have demonstrated that corporate insiders traded profitably on inside information. These include Jaffe (1974), Finnerty (1976) and Elliot, Morse and Richardson (1984).

[16] In order to convict someone of wrongdoing (insider trading or tipping), first there had to be a relationship that afforded access to material, non-public information relating to an important corporate development. Second, an insider could not fairly (and legally) trade on that information without having first disclosed it to the investing community at large.

the efforts undertaken by firms to comply with the SEC are: the allocation of resources to compliance and detection systems, and the encouragement of whistle blowing by employees. Perhaps the single most prominent measure used by companies to help regulate insider-trading activities by their employees is the introduction of blackout periods. The following section explains the role of blackout period and its effectiveness in curbing insider trading.

3.2 The blackout period

By 1997, 80 percent of firms had explicit blackout periods during which the firm prohibited trading by its insiders.[17] The most common blackout choice observed today is to disallow trading by insiders at all times except for the 3 through 12 trading days after the earnings announcement. However, in some firms, corporate insiders can trade during blackout periods if permission is obtained from the firms' legal counsel. Permission is usually granted for liquidity or diversification purposes. Another exception arises from trading plans reported to the SEC that pre-specify trading dates several years in advance. At least some popular sources (for example, The Wall Street Journal) suggest that these pre-specified plans might override blackout considerations.

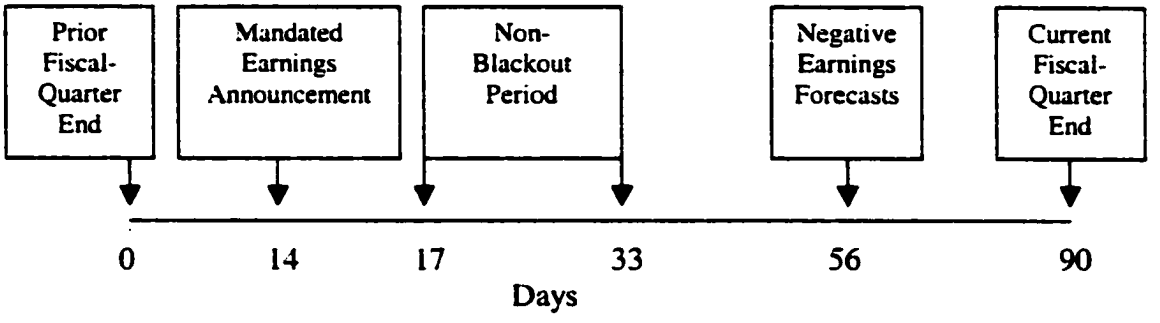
Bettis, Coles and Lemmon (2000) find that insider trading indeed is concentrated in windows during which trading is permitted. Nevertheless, some insider trading does occur during blackout periods, so even self-regulation at the firm level is not perfectly effective. Their finding demonstrates that while insider trading is more frequent within

[17] Survey conducted by Bettis, Coles and Lemmon (Journal of Financial Economics 2000).

the periods after earnings announcements, insider trading in the periods preceding earnings announcements is not an unusual occurrence.

Timeline A illustrates the link (on average) between the non-blackout period, the release of negative earnings forecast and the mandated earnings announcements.

Timeline A



Firms release negative earnings forecasts on average 56 calendar days into the fiscal quarter (Noe 1999). Given that the non-blackout period usually falls, on average, between 17 to 33 calendar days into the fiscal quarter (or the equivalent of 3 through 12 trading days after the earnings announcements), firms typically provide negative earnings forecasts after the non-blackout period. Therefore, insiders would normally have the opportunity to sell shares prior to the release of the negative earnings forecasts provided they acquired the negative information early in the quarter. By delaying the release of the negative earnings forecasts (to an average of 56 calendar days) managers can sell their stocks *legally* and at a favorable price (prior to the release of the negative earnings forecasts). In contrast, managers who discover adverse information subsequent to the non-blackout period face difficulties in executing open market trades (that will now be forced to fall inside the blackout period). Therefore, they face potentially greater wealth

consequences and are less likely to make disclosures. To sum up, the existence of blackout periods acts to set up an association between the capacity to trade and the willingness to make disclosures. Without blackout periods, I would expect all firms with similar economic characteristics to both trade and disclose. Consequently, there would be a lower association between insider trading and disclosure policy after controlling for other economic characteristics (such as size or the level of the bad news).

Chapter 4: Hypothesis Development

The central premise of this dissertation is that managers should be better off, ex-ante, by releasing negative earnings forecasts rather than allowing the negative earnings surprise to be revealed later through related mandated announcements. In this section, I develop hypotheses related to the firms' economic characteristics that might either increase the values of a negative earnings surprise disclosure, or, alternatively, reduce the costs associated with such a disclosure. *Exhibit A* describes the potential benefits and costs stemming from the release of the negative earnings forecasts and the withholding of earnings forecasts when faced with negative earnings surprises.

Earlier literature examines each of these benefits and costs individually across different sample firms. For example, Skinner (1994) investigates the reduction in litigation costs through voluntary disclosures of "bad news", using firms that faced lawsuits from 1988 through 1994 as his sample firms. On the other hand, Kasznik and Lev (1995) collect their sample firms from 1988 to 1990, demonstrating that the total price response to earnings disclosures is more negative for firms that issue pre-emptive "bad news" disclosures than for firms with "bad news" that do not issue such disclosures.

In this dissertation, the benefits and costs are examined within a single dataset. I focus on *Cell I* (i.e. the benefits of disclosing negative earnings forecasts) and *Cell IV* (i.e. the reduction in costs stemming from the release of negative earnings forecasts) to motivate and develop my hypotheses.

Exhibit A Potential benefits and costs stemming from the release (and withholding) of negative earnings forecasts

	Disclose *Negative Earnings Forecasts*	*Withhold* *Negative Earnings Surprise*
Benefits	***Cell I*** Avoidance of litigation (H1) Managerial reputation (H2, H3) Relationship with financial analysts Relationship with investors (Reduces cost of capital) Talent signaling	***Cell II*** Postpone the decline in stock price until the mandated announcement date During the interim, some good news might occur
Costs	***Cell IV*** Decline in stock price (H4) Reduce the current wealth of managers	***Cell III*** Increase the risk of litigation Sever the relationship with financial analysts

Ajinkya and Gift (1984) show that managers bear costs if they fail to disclose "bad news" in a timely manner. Securities market professionals (for example, money managers and financial analysts) dislike negative earnings surprises, and can impose costs on managers who are not forthcoming about impending earnings problems. Therefore, two firms with identical economic characteristics and the same level of negative earnings surprise would either both disclose or not disclose. By matching two firms that have similar negative earnings surprise but only one firm decides to disclose, it should be the case that the economic characteristics of firm that disclosed are such that it has: (i) greater benefits from disclosure; or (ii) lower costs of disclosure; or (iii) both greater benefits and lower costs.

Firms experience both benefits and costs when releasing negative earnings forecasts. As summarized in *Cell I*, release of negative earnings forecasts reduce the risk of litigation (Skinner 1994, 1997) and enhance the reputation of managers (Ajinkya and Gift 1984). However, firms that release negative earnings forecasts suffer more negative total stock returns relative to having the negative earnings surprises revealed via mandated disclosures (*Cell IV*). Therefore, in deciding whether to disclose the negative earnings forecasts, managers will have to take into consideration the potential benefits and costs. The remainder of this section explains the development of the hypotheses based on the benefits and cost as summarized in *Exhibit A*.

4.1 The litigation cost

Skinner (1994, 1997) finds that managers have an incentive to disclose "bad news" early to preempt any negative earnings surprise and reduce the expected costs of stockholder litigation (*Cell I*). Therefore, *ceteris paribus*, one would expect disclosers of negative earnings forecasts to face with higher potential litigation costs relative to non-disclosers. The first hypothesis, stated in the alternate form, is as follows:

Hypothesis 1: Firms that face higher litigation costs are more likely to release negative earnings forecasts.

The cost of stockholder litigation often relates to past seasonal change in quarterly earnings per share (EPS), i.e. firms are more likely to be sued if their current earnings are low relative to previous year same-quarter earnings (Francis, Philbrick and Schipper 1994). For this reason, in order to test if firms disclose negative earnings forecasts to

reduce the litigation cost, I compute the past seasonal change in quarterly earnings per share (EPS) for both the disclosers and non-disclosers. After controlling for all other factors, the first hypothesis predicts that firms with more negative past seasonal change in quarterly earnings per share (EPS) are more likely to release negative earnings forecasts.

4.2 The reputation cost

The findings of Kasznik and Lev (1995) indicate that firms disclosing negative earnings forecasts encounter more serious, ongoing earnings difficulties than firms that do not issue forecasts when faced with negative earnings surprises. They argue that under a permanent impairment of earnings, managers have greater (relative) benefits by correcting market expectations than they have under a temporary impairment of earnings. If this is the case, then firms are more likely to disclose negative earnings forecasts when facing permanent declines in their future stream of earnings. These firms should experience higher reputation costs if they do not pre-empt the "bad news" early (*Cell I*). Therefore, c*eteris paribus*, one would expect disclosers of negative earnings forecasts to face with higher potential reputation costs relative to non-disclosers. The second hypothesis, stated in the alternate form, is as follows:

Hypothesis 2: Firms that face higher reputation costs are more likely to release negative earnings forecasts.

One way to measure the permanence of the negative earnings surprise is by examining the seasonal earnings changes of future quarters. The seasonal earnings changes of future quarters are measured as the percentage difference between the current quarter earnings per share and the year-ahead same quarter earnings per share.

Therefore, in order to test if firms disclose negative earnings forecasts to reduce the reputation cost, I compute the future seasonal change in quarterly earnings per share (EPS) for both the disclosers and non-disclosers. After controlling for all other factors, the second hypothesis predicts that firms with negative future seasonal change in quarterly earnings per share (EPS) are more likely to release negative earnings forecasts.

4.3 The market alignment cost

Managers provide earnings forecasts to align the existing market expectations toward management beliefs (Ajinkya and Gift 1984). They do so to minimize the potential cost of allowing unrealistic forecasts by financial analysts to prevail in the marketplace. If managers look upon analysts' forecasts as inaccurate, and expects dramatic swings in price later when actual results are revealed, they would be motivated to correct the analysts' forecasts with direct forecasts of their own (*Cell I*).

Therefore, firms providing negative earnings forecasts are expected to face a wider gap in earnings expectation relative to firms that do not disclose any earnings forecasts. A wider gap in the earnings expectation faced by managers would impose higher potential market alignment costs on them. *Ceteris paribus*, one would expect disclosers of negative earnings forecasts to face with higher potential market alignment costs relative to non-disclosers. This generates my third hypothesis, stated in alternate form:

Hypothesis 3: Firms that face higher market alignment costs are more likely to release negative earnings forecasts.

To test if firms disclose negative earnings forecasts to reduce the market alignment costs, I compute the revision of earnings per share forecast by financial analysts for both the disclosers and non-disclosers. After controlling for all other factors, firms with smaller revision of earnings per share forecast by financial analysts are more likely to release negative earnings forecasts.

4.4 The wealth effect

Kasznik and Lev (1995) find that firms disclosing negative earnings forecasts (i.e. sample firms) suffer greater price declines relative to firms that withhold the adverse information (i.e. control firms). In their sample, firms disclosing negative earnings forecasts experience average market adjusted return of –6.2% (in the 5 trading days surrounding the release of the forecasts).[18] Therefore, one of the immediate consequences of issuing negative earnings forecasts relates to stock price decline. Given that a significant portion of management's wealth is equity in their firm's stock, the effects of stock price declines will be considerable (*Cell IV*).

Insider sales allow managers to offset the losses due to the release of negative earnings forecasts. Therefore, managers who are permitted to execute open market sales before the release of the negative earnings forecasts have lower costs associated with the release of the forecasts. In other words, managers are more likely to provide negative earnings forecasts if they are able to sell their stock holdings prior to the release of the forecasts, *ceteris paribus*. This leads to the final hypothesis, stated in the alternate form:

Hypothesis 4: Managers that face lower wealth effect are more likely to release negative earnings forecasts.

To test if managers that face lower wealth effect are more likely to disclose negative earnings forecasts, I compute the abnormal insider sales prior to the release of the negative earnings forecasts, for both the disclosers and non-disclosers. After controlling for all other factors, managers that are successful in selling their stock holdings prior to the release of the negative earnings forecasts are more likely to go ahead with the release of the forecasts.

To summarize, the hypotheses discussed above predict that managers are more likely to disclose negative earnings forecasts when they face:

1.) Higher potential litigation cost (*Cell I*) which relates to adverse past seasonal changes in quarterly earnings per share.

2.) Higher potential reputation cost (*Cell I*) which is associated with the permanent impairment of earnings.

3.) Higher market alignment cost that is caused by slower revisions of earnings per share forecasts by analysts;

4.) Smaller losses on the managers' wealth, in the case when the managers are successful in selling their stock holdings prior to the release of the negative earnings forecasts.

[18] The average market adjusted return for the control firms is only –2.0%. The difference in the averages between the sample and control firms is statistically significant (p-value of 0.01).

Chapter 5: Sample Selection

In order for a firm to be in this sample, it must have released management earnings forecasts that convey "bad" news. Once the firms that released earnings forecasts that convey "bad" news were identified, I require that they have security price data from the Center for Research on Security Prices database (CRSP), consensus earnings estimates and reported earnings from I/B/E/S (Institutional Brokers Estimate System) database, and information on the firms' insider trading from First Call Corporation insider transaction database.

5.1 Data

Management earnings forecasts are provided by I/B/E/S (Institutional Brokers Estimate System). I/B/E/S collects and filters through all earnings forecasts provided by firms' management via popular newswires and press. Among the newswires and press covered are *The Wall Street Journal Index*, *Bloomberg* and *Dow Jones News Retrieval Service*. In this dissertation, I focus only on management earnings forecasts collected by I/B/E/S from 1992 through 1999.

I/B/E/S excludes from this database any management earnings forecasts that were released on the same day as the firms' mandated earnings announcements. This ensures that the database is not contaminated with management forecasts that would result in

simultaneous market reaction surrounding the announcement dates, i.e. market reactions to the management forecasts and the mandated earnings announcements.[19]

Because this dissertation focuses solely on negative earnings forecasts provided by firms' management, I include only management earnings forecasts that preempt "bad news", i.e. the firm is not able to meet the current consensus of analysts' earnings estimates. These negative earnings forecasts can either be quantitative or qualitative.[20] The nature of the forecasts (quantitative or qualitative) is not important in this dissertation because the management forecasts are not used directly when computing the analysts' forecast error.

First Call Corporation provides the insider transaction data. First Call insider transaction data includes all reported insider transactions of 'key' employees of the firms. Among the 'key' employees included are chairman of the board, presidents, vice-presidents, directors, divisional officers and officers.

Given that the sample consists of firms that release management earnings forecasts from 1992 through 1999, I require these firms to be covered by First Call insider transaction data from 1990 to 1999. The data requirement for the insider transaction goes back additional 2 years (i.e. the starting year for the insider transaction

[19] Since this dissertation focuses solely on the market reaction surrounding the management forecasts, the exclusion of management forecasts that were released on the same day as the actual earnings announcements reduces any bias when measuring the market reaction surrounding the announcement dates.

[20] In a quantitative forecast, management provides point or range earnings estimates. These are the most specific releases concerning the forthcoming earnings announcement. In a qualitative forecast, management only indicates that the current expected earnings are too high.

data requirement is 1990 instead of 1992). This is the case because the insider transaction data in 1990 and 1991 are needed to form the expected insider trading for firms that release negative earnings forecasts.

The First Call insider transaction data identifies the name of the insider, the company name, the date of the transaction[21], the type of the transaction (open market purchases or sales), and the price of the securities in the transaction. It also classifies the insiders as direct or indirectly linked to the firms. Insiders having direct ownership interests in the firm are supposedly better informed about the current and future operations of the firms. Therefore, I include in this dissertation only insider transactions by parties directly related to the operations of the firms. Transactions by indirect parties such as trustees and beneficial owners are excluded.

Consensus of analysts' earnings estimates and the firms' reported earnings are obtained from I/B/E/S (Institutional Brokers Estimate System) Summary History database. The I/B/E/S Summary History consists of chronological snapshots of consensus level data taken on a monthly basis. I use the consensus of analysts' earnings estimates as proxies for the market's expectation of firms' earnings per share. The consensus of analysts' earnings estimates provided by I/B/E/S comprises of either the mean or median of the earnings per share before extraordinary items. Finally, the security price data is obtained from CRSP (Center for Research on Security Prices).

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[21] The date of the transaction is the actual date the insider trade occurs (not the date the insider trade is filed with the SEC nor the date it becomes public information).

5.2 Sample selection

The I/B/E/S management earnings forecasts database consists of 8,576 forecasts provided by firms' management from 1992 through 1999. Of these 8,576 management forecasts, 2,796 of them are related to forecasts that convey "bad" news, i.e. the firm is not able to meet the current consensus of analysts' earnings forecasts. Thus, my initial sample of negative earnings forecasts has 2,796 firm-observations.

Firm-observations that are not covered by COMPUSTAT, CRSP, I/B/E/S Analysts' Estimates and First Call Corporation insider transaction databases were eliminated. This reduces my initial sample to 1,789 firm-observations.

Further, I restrict negative earnings forecasts only to those pertaining to current quarter earnings. Negative earnings forecasts that are related to annual earnings or future quarters were excluded from the sample of 1,789 firm-observations. This further reduces to a sample of 1,007 firm-observations. Lastly, 459 firm-observations are removed because I am not able to find the matched pair of non-disclosers for these firm-observations (based on the matching criteria discussed in *Chapter 6*). *Exhibit B* summarizes the sample selection procedures.

Exhibit B Data requirements and sample size:

Total number of negative earnings forecasts from Jan 1992 – Dec 1999	2,796
1.) Eliminate firm-observations that do not have EPS data (Item 9) in the COMPUSTAT Industrial Quarterly database	126
	2,670
2.) Eliminate firm-observations that do not have security price data from CRSP	235
	2,435
3.) Eliminate firm-observations that do not have consensus analysts' estimates from the I/B/E/S Summary History database	143
	2292
4.) Eliminate firm-observations that do not have insider trading data from the First Call Corporation insider transaction database	503
	1,789
5.) Eliminate firm-observations that are not related to current quarter earnings	782
	1,007
6.) Eliminate firm-observations that are not matched with control firms of non-disclosers (see Chapter 6 on the discussion of creating the control group)	459
Total sample	**548**

5.3 Summary statistics

In this section, I compare the characteristics of the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers). *Panel A* of *Table 1* shows the distribution of the sample and control firm-observations by their sector memberships. Kasznik and Lev (1995) argue that sector and regulatory status affect firms' disclosure policies. For instance, firms in the technology sector are more likely to voluntarily

disclose information because they are exposed to a larger-than-average risk of shareholder lawsuits[22]. Conversely, regulated firms (e.g., firms in the public utilities sector) provide to regulators, and thereby indirectly to the general public, a considerable amount of operating information. Such information is often more detailed and timely than quarterly financial reports. It can, therefore, be expected that regulated firms encounter less information asymmetry with investors than other firms, and will therefore engage in a lower level of discretionary disclosure.

The distribution of firm-observations in each sector is comparatively similar across the sample and control groups (*Panel A* of *Table 1*). From a total of 548 firm-observations in the sample group, the most represented sector is technology with 164 negative earnings forecasts (or 29.9% of the total firm-observations). This is followed by the consumer services and capital goods sectors, with 101 (18.4%) and 63 (11.5%) negative earnings forecasts respectively. In the control group, the three most represented sectors are similar to those in the sample group, i.e. technology, consumer services and capital goods. The control group comprises of 135 firm-observations (24.6%) from the technology sector, 90 (16.4%) from the consumer services sector and 77 (14.1%) from the capital goods sector.

The proximity in the distribution of firm-observations in each sector for both the sample and control groups limits the influence of the firms' sector memberships in their

[22] Among the reasons for the prevalence of shareholder lawsuits against technology firms is their relatively high risk, resulting in large price fluctuations and potential losses to investors. The aggressive accounting techniques used by technology firms may also contribute to litigation exposure. Given this exposure,

disclosure policies. In other words, I control for any potential sector effect when analyzing the economic characteristics of the sample and control firms.

Panel B of *Table 1* provides descriptive statistics on firm-specific characteristics for the sample and control firms. It shows the mean, median, minimum and maximum values of the percentage analysts' forecast errors, market value, beta and number of analysts following a particular firm.

The mean percentage analysts' forecast error for the sample firms is –52.7% (median –42.3%). The smallest and largest percentage analysts' forecast errors are –0.5% and –200.0%, respectively. Since one of the matching criteria in selecting control firms is the percentage analysts' forecast error (see *Chapter 6* for more details), the distribution of the percentage analysts' forecast error for the control group is closely identical to that of the sample group. The mean percentage analysts' forecast error for the control firms is –53.4% (median –43.2%). The difference in the mean percentage analysts' forecast error between the sample and control groups is statistically not significant from zero (*t-statistics 0.29*).

Lang and Lundholm (1993) find that firm size is associated with the frequency of corporate voluntary disclosure. They claim that larger firms are more exposed to shareholder litigation (having "deeper pockets") than smaller ones, and hence may voluntarily disclose more to deter litigation. From the *Panel B* of *Table 1*, the mean

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technology firms may be motivated to disclose more than firms in other sectors in order to fend off investors' suspicion and litigation.

(median) market value for sample firms is $5,123 millions ($578 millions) while for control firms of non-disclosers $4,149 millions ($394 millions). The maximum market value for the sample firms is $191,377 millions while for control firms it is $162,365 millions. The descriptive statistics presented indicate that sample firms are, on average larger than the control firms. This is consistent with the findings of prior discretionary disclosure literature that larger firms are more likely to voluntarily disclose more information to the capital market. However, the difference in the mean market values between the sample and control firms is statistically not significant from zero (*t-statistics 1.03*).

Another factor that may influence the disclosure policy of firms is firm risk, as measured by the firm's beta value (Kasznik and Lev 1995). Firms with higher beta are expected to voluntary disclose more frequently. This is evidence in my sample and control groups. The mean (median) beta is 0.91 (0.86) for the sample firms while for the control firms the mean (median) is 0.84 (0.79). The difference in the mean betas between the sample and control firms is statistically significant from zero (*t-statistics 2.83*).

Lastly, financial analysts are known to vigorously demand information from managers. It can, therefore, be expected that the larger the number of analysts following the firm, the larger the amount of discretionary information disclosed by it. The mean (median) number of analysts following sample firms is 5.95 (5.0) while for control firms the mean (median) is 4.76 (3.0). The difference in the mean number of analysts following

between the sample and control firms is statistically significant from zero (*t-statistics 4.35*).

Panel C of *Table 1* shows the summary statistics on the differences in the firm-specific characteristics between the sample firms and the control firms. The differences in the firm-specific characteristics are computed as the characteristics of the sample firms minus the characteristics of the control firms. The mean (median) difference in the analyst' forecast error is 0.7% (0.2%) with the maximum and minimum difference of 5.0 and –5.0%. This is the case because in constructing the control firms, one of the criteria is to find a control firm that has almost identical percentage analysts' forecast error as the sample firm (see *Chapter 6*). The mean (median) differences in the market value, beta and the number of analysts between the sample and control firms are $1,071 millions ($79 millions), 0.11 (0.08) and 1(1) respectively.

Panel A of *Table 2* shows the distributions of the negative earnings forecasts by the fiscal-quarters. There is some evidence of quarter clustering in the sample group of 548 firm-observations. More negative earnings forecasts occur in the third and fourth fiscal quarters, while relatively fewer occur in the first and second quarters. 58% of the negative earnings forecasts are released in the third and fourth quarters, with the remaining 22% of the negative earnings forecasts released in the first two fiscal quarters. This is consistent with the study conducted by McNichols (1989) that indicates a proportionately large number of discretionary disclosures are released in the fourth quarter.

Panel B of *Table 2* provides the distribution of negative earnings forecasts across years. Most of the forecasts (89.6%) are clustered in the last 3 years of the sample period, i.e. from 1997 to 1999.

Panel C of *Table 2* shows the number of negative earnings forecasts per firm. 80.1% of the firm-observations in my sample consist of firms who release negative earnings forecasts for the first time (as evidenced by the inclusion in the I/B/E/S database from 1992-1999). Given that a high percentage of firms are first time disclosers, it eliminates the bias attributed to repeated disclosers. 14.9% of the sample firms release two negative earnings forecasts during the 8-year period from 1992-1999. This is followed by 3.7% of sample firms releasing three negative earnings forecasts, 1.3% releasing four negative earnings forecasts and only one firm with five negative earnings forecasts.

Chapter 6: Methodology

6.1 The litigation cost

My first hypothesis relates to the reduction of litigation costs, i.e. managers have the incentives to disclose "bad" news early to pre-empt any negative earnings surprises in order to reduce the expected costs of shareholder litigation. It predicts that disclosers of negative earnings forecasts should faced with higher potential litigation cost relative to non-disclosers (i.e. firms that chose not to disclose any earnings forecasts when faced with negative earnings surprises). Before I can conduct the test of comparing the litigation costs between the disclosers and non-disclosers, I need to form a control group of non-disclosers.

The methodology adopted in this dissertation (to form the control group) extends and refines the matched pair design used in Kasznik and Lev (1995). First, the set of firms that released negative earnings forecasts (sample firms) are identified. For each sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

The procedures in selecting the control firms are as follows: 1.) From the COMPUSTAT Industrial Quarterly database, I group every firm by their fiscal-quarter-ends; 2.) I eliminate all the sample firms from the COMPUSTAT Industrial Quarterly database. In other words, the sample firms can never be chosen as control firms, in all of

the fiscal-quarter-ends; 3.) Finally, within each fiscal-quarter-end, I match the sample firm with a control firm that had (almost) the same analysts' forecast error and firm size.

Before describing the precise nature of the matching process, I first explain the measure used for computing analysts' forecast error (hereinafter referred to as AFE). AFE is calculated as:

$$AFE = \frac{EPS - Consensus}{|Consensus|}$$

EPS = *Reported EPS from I/B/E/S*

Consensus = *Average analysts' earnings per share forecast at the beginning of the month prior to the release of the negative earnings forecast*

The reported EPS is the earnings per share issued on earnings announcement (as reported by I/B/E/S. The consensus estimate of EPS (Consensus) is the average analysts' earnings per share forecast at the beginning of the month prior to the release of the negative earnings forecast. In other words, if t denotes the month when the negative earnings forecast was released, the consensus estimate of EPS at the beginning of month t-1 (or the end of month t-2) is used.

The logic behind this choice of date for the consensus estimate of EPS (Consensus) as well as the use of the realized earnings forecast error in the specification of AFE might be illustrated through the following situation. Suppose that early in the

quarter, all managers have a perfect knowledge of their end-of-quarter earnings. In this case, the manager's determination of the AFE corresponds with my definition. More generally, under an assumption that firms have an unbiased estimate of their end-of-quarter earnings, the AFE as defined in this dissertation provides an unbiased estimate of the manager's perceptions as to the "error" in the consensus estimates of EPS.

Thus, under my methodology, the manager of each disclosing firm has, on average, the same estimate of the error in the consensus estimate of EPS as the manager of the matched non-disclosing firm. The fact that one firm chooses to disclose while the other firm chooses to withhold the forecast suggests that the firms should differ in some way that makes the correction of the market expectation more valuable or less costly for the discloser.

For a firm to be a control candidate, its reported earnings, security price data, at least one analyst earnings per share forecast and insider trading information must have been available from the COMPUSTAT Industrial Quarterly, CRSP, I/B/E/S Analysts Estimates and First Call Corporation insider transaction databases, respectively. As stated earlier, I require that a control firm should not have provided any negative earnings forecasts at any time during all of the fiscal-quarter-ends, as evidenced by its exclusion from the I/B/E/S management earnings forecasts database. The exclusion of the sample firms from the control group ensured that the firms' disclosure policies would not be a factor that forces managers to release negative earnings forecasts.

To summarize the matching procedure, for every firm-observation in the sample of disclosing firms where the month of disclosure is identified as *t*, I identify a control firm with 1.) The same fiscal-quarter-end; 2.) At most a five-percentage point difference in the analysts' forecast errors (computed at the end of month *t*-2); 3.) The closest firm size where firm size is calculated as the market value (price times number of shares outstanding) at the end of month *t*-2. In sum, I have created a control group that consists of firms that are faced with similar magnitude of negative earnings surprises (as of the sample firms) but have chosen not to pre-empt the negative surprises early.

The first empirical proxy I develop measures the potential litigation costs faced by the sample and control firms. Stockholder litigation often relates to past seasonal changes in quarterly EPS, i.e. firms are more likely to be sued if their current earnings are low relative to previous year same-quarter earnings (Francis, Philbrick and Schipper 1994). For this reason, I use seasonal earnings changes relative to the previous year same-quarter as a proxy for potential litigation costs (hereinafter referred to as the past seasonal quarterly earnings changes). The past seasonal quarterly earnings changes (PEC) are computed as:

$$PEC = \frac{EPS_{q,t} - EPS_{q,t-1}}{\left|EPS_{q,t-1}\right|}$$

$EPS_{q,t}$ = *Current quarter reported EPS (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9)*

$EPS_{q,t-1}$ = *Quarterly reported EPS of the previous year same-quarter (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9)*

To summarize, I use the past seasonal quarterly earnings change (PEC), which is defined as the change in quarterly earnings per share (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9) of the current quarter (*q,t*) relative to the previous year same-quarter earnings per share (*q,t-1*) to proxy for the potential litigation cost faced by firm. The more negative the past seasonal quarterly earnings changes (PEC), the higher the potential litigation costs.

Relying on the prediction of *Hypothesis 1* and the use of past seasonal quarterly earnings changes (PEC) to proxy for potential litigation costs, firms that release negative earnings forecasts are expected to experience relatively more negative past seasonal quarterly earnings changes (PEC) than their matched control firms.

6.2 The reputation cost

My second hypothesis relates to the enhancement of managerial reputation through the issuance of negative earnings forecasts. It predicts that disclosers of negative earnings forecasts should faced with higher potential reputation cost relative to non-disclosers. In conducting the test of comparing the reputation costs between the disclosers and non-disclosers, I use the same control group of non-disclosers as described in *section 6.1*.

The seasonal earnings change relative to the year-ahead same-quarter is used as a proxy for managerial reputation gains arising from the release of the negative earnings forecasts. The logic here draws on Kasznik and Lev (1995) who suggest that managers voluntarily disclose "bad news" in circumstances where earnings have been permanently impaired. They argue that under a permanent impairment of earnings, managers have greater (relative) benefits by correcting market expectations than they have under a temporary impairment of earnings. Under this hypothesis, disclosers of negative earnings forecasts should typically be followed by several future quarters of low earnings relative to current earnings.

For this reason, I use seasonal earnings changes relative to the year-ahead same-quarter as a proxy for potential reputation costs (hereinafter referred to as the future seasonal quarterly earnings changes). The future seasonal quarterly earnings changes (FEC) are computed as:

$$FEC = \frac{EPS_{q,t+1} - EPS_{q,t}}{\left|EPS_{q,t}\right|}$$

$EPS_{q,t}$ = *Current quarter reported EPS (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9)*

$EPS_{q,t+1}$ = *Quarterly reported EPS of the year-ahead same-quarter (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9)*

The more negative the future seasonal quarterly earnings changes (FEC), the higher the potential reputation costs. In other words, negative FEC would imply that

future earnings have been permanently impaired. From the prediction of *Hypothesis 2* and the use of future seasonal quarterly earnings changes (FEC) as proxy for potential reputation costs, firms that release negative earnings forecasts are expected to experience relatively more negative future seasonal quarterly earnings changes (FEC) than their matched control firms.

6.3 The market alignment cost

The third hypothesis pertains to the firms' incentives to align market expectation of their earnings per share. It predicts that disclosers of negative earnings forecasts should faced with higher market alignment cost relative to non-disclosers. As in *section 6.1* and *6.2*, I use the same control group of firms to conduct the test of comparing the market alignment costs between the disclosers and non-disclosers.

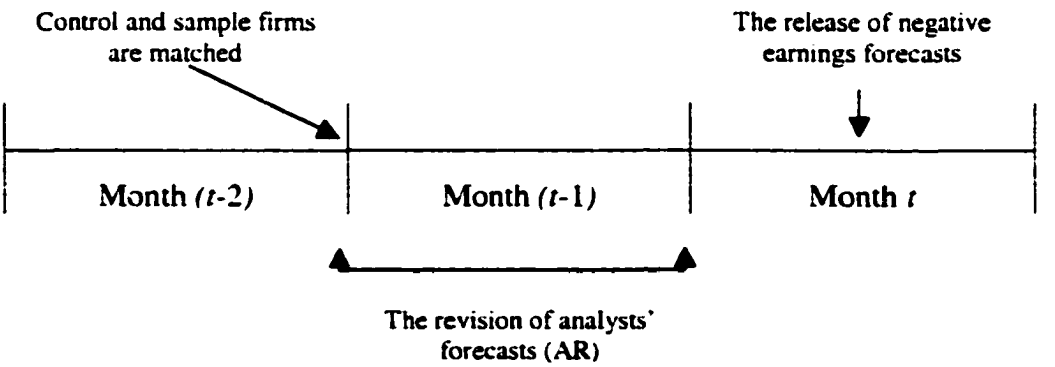
The revision of earnings per share forecast by financial analysts is employed to proxy for the potential market alignment costs. Given that I use the analysts' forecast errors at the end of month t-2 to match the control firms to the sample firms, any downward revisions of earnings per share forecasts by analysts after month t-2 would reduce the expectation gap, and therefore lower the market alignment costs. Likewise, any upward revisions of earnings per share forecasts by analysts after month t-2 would widen the expectation gap, and consequently increase the market alignment costs.

The revision of earnings per share forecast by analyst measures the change in consensus of analysts' EPS forecast from the beginning of the measurement period (i.e. the end of month t-2) to the month prior to the release of the negative earnings forecasts

(end of month t-1). The consensus used in this empirical test comprises of both the average or median analysts' EPS forecast (hereinafter referred to as the revision of analysts' forecasts, AR).

Timeline B summarizes this empirical test. Month t represents the month when the negative earnings forecasts are released. The control and sample firms are matched using the analysts' forecast errors (AFE) at the end of month t-2. The revision of analysts' forecasts (AR) measures the percentage change in the consensus analysts' EPS forecast from the end of month t-2 to the end of month t-1.

Timeline B



The revision of analysts' forecasts (AR) is computed as:

$$AR = \frac{Consensus_{t-1} - Consensus_{t-2}}{|Consensus_{t-2}|}$$

$Consensus_{t-1}$ = *Average (or median) analysts' EPS forecasts at the end of month t-1*

$Consensus_{t-2}$ = *Average (or median) analysts' EPS forecasts at the end of month t-2*

In effect, the percentage change in consensus analysts' EPS forecast between the end of month t-1 and month t-2 proxy for the potential market alignment costs. From the prediction of *Hypothesis 3* and the use of the revision of analysts' forecast (AR) as proxy for potential market alignment costs, firms that release negative earnings forecasts are expected to experience smaller downward revisions or greater upward revisions, relative to the matched control firms.

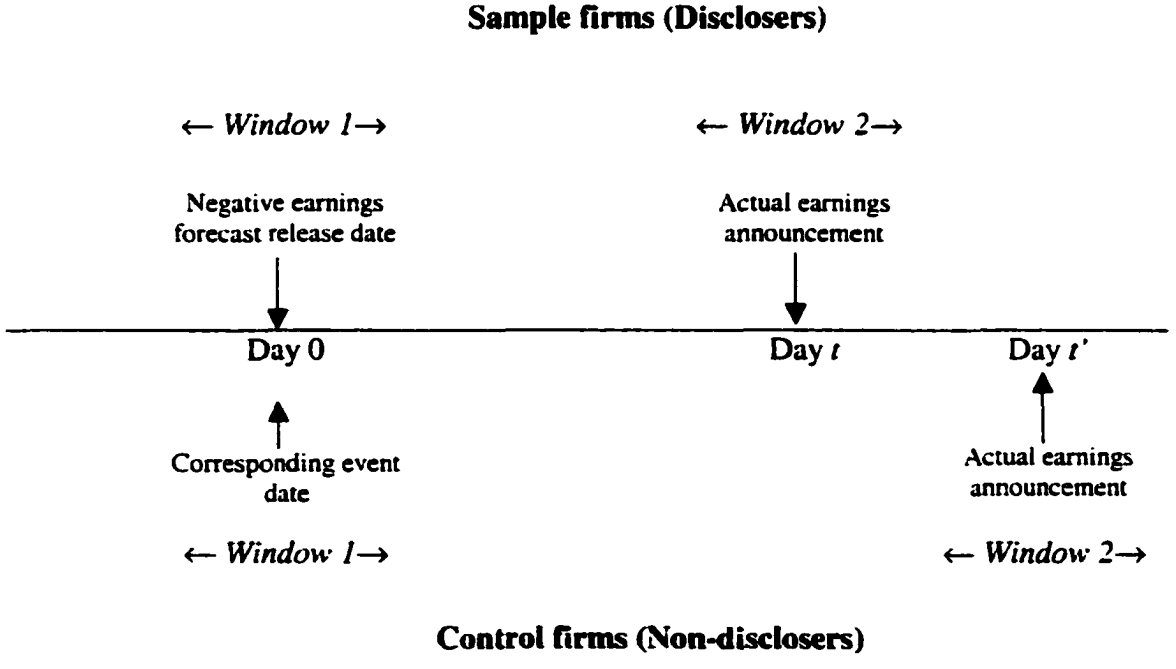
6.4 The returns to shareholders

This empirical analysis examines the combined market adjusted stock returns surrounding the release of the negative earnings forecasts and the subsequent earnings announcements. The reason for this empirical analysis is to confirm the findings of Kasznik and Lev (1995), i.e. firms disclosing negative earnings forecasts suffer greater declines in their market adjusted stock returns relative to firms that do not provide any earnings forecast when faced with negative earnings surprises.

Since the fourth hypothesis (the wealth effect hypothesis) draws from the findings of Kasznik and Lev (1995), it is critical to ensure that my sample and control firms experience similar market adjusted stock returns as documented by Kasznik and Lev. In order to compare the market adjusted stock returns between the disclosers and non-disclosers, I use the same control group of non-disclosers as described in *section 6.1*.

Firm's stock returns are affected by a voluntary disclosure by managers both at the time of the disclosure and at the subsequent earnings announcement that confirms the manager's forecast. The impacts at both these dates form a part of this empirical analysis. I begin by defining Day 0 as the release date of the forecast. If the forecast is released on a non-trading day (or after regular trading hours) then I assign the next immediate trading day as the event day (Day 0). Accordingly, Day 1 is defined as the next trading day after the event day, with Day −1 as the trading day preceding the event day. Since the control firms of non-disclosers do not have forecast release dates, I assign the forecast release dates of the matched sample firms as the corresponding "event" dates for the control firms. Thus, the sample and control firms will have the same calendar dates as the event days (Day 0). *Timeline C* summarizes the computation of the returns to shareholders.

Timeline C



Since the sample and control of firms are first matched by fiscal-quarter-ends (then by percentage analysts' forecast error and firm size), it is possible that the sample and control firms have different actual earnings announcement dates. This is represented by Day *t* and Day *t'* in *Timeline C*. Summarized briefly, both sample and control firms will have the same calendar dates for "event" day (Day 0) but may not have the same calendar dates for the actual earnings announcements (Day t or Day t').

Two different measures of returns to shareholders are analyzed – a short window returns and a long window returns. The purpose of the short window returns measure is to confirm the findings of Kasznik and Lev (1995). For the short window returns measure, I compute the market adjusted stock returns (for both disclosers and non-disclosers) 3-days surrounding the release of the negative earnings forecasts (Day −1, Day 0 and Day +1) plus 3-days surrounding the actual earnings announcements (depicted as *Window 1* and *Window 2* in *Timeline C*). Altogether, the short window returns look at the firms' market adjusted stock returns over six trading days.

As for the long window returns measure, I compute the long-term market adjusted stock returns of disclosers and non-disclosers 250 trading days after the event date (or equivalently one calendar year from Day 0). The reason for computing the long window returns measure is related to the reputation cost hypothesis, as discussed in *section 6.2*. The reputation cost hypothesis predicts that firms are more likely to disclose negative earnings forecasts when they faced permanent impairment in their earnings. In *section 6.2*, I introduce future seasonal quarterly earnings changes (FEC) as a proxy for potential

reputation costs. Here, I use the firms' long-term market adjusted stock returns as an alternative measure to proxy for the potential reputation costs.

Relying on the prediction of *Hypothesis 2* and the use of firms' long term stock price performance to proxy for potential litigation costs, firms that release negative earnings forecasts are expected to experience greater decline in their long term stock price performances than their matched control firms.

The firms' market adjusted stock returns are computed based on the market model. Assume that security returns follow a single factor market model,

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

R_{jt}	=	*The rate of return of the common stock of the j^{th} firm on day t*
R_{mt}	=	*The rate of return of CRSP value weighted market index on day t*
ε_{jt}	=	*Random variable with expected value of zero*
β_j	=	*Parameter that measures the sensitivity of R_{jt} to R_{mt}*

I use 60 to 300 trading days prior to the release of the negative earnings forecasts (t = –60 to t = –300) as the estimation period to measure the firm specific α_j and β_j. The market adjusted stock return (MA_{jt}) is then calculated as the difference between the firm's actual return and expected return,

$$MA_{jt} = R_{jt} - (\alpha_j + \beta_j R_{mt})$$

To compute the average market adjusted stock returns for the sample and control firms, I use the sample mean:

$$AMA_t = \frac{\sum_{j=1}^{N} MA_{jt}}{N}$$

AMA_t = *Average market adjusted stock returns on trading day t (which is relative to the event date, t = 0)*

MA_{jt} = *Market adjusted stock return for firm j on day t*

6.5 The wealth effect

My fourth and last hypothesis relates to the wealth effect on managers as a result of the release of the negative earnings forecasts. It predicts that managers are more likely to disclose negative earnings forecasts if they are successful in selling their stock holdings prior to the release of the forecasts. One of the immediate consequences from the release of the negative earnings forecasts is the decline in the firms' stock prices. For this reason, managers who are successful in selling their stock holdings (prior to the release of the forecasts) are able to minimize their losses due to the drop in the firms' stock prices.

I use the level of abnormal sales by insiders (prior to the release of the negative earnings forecasts) to proxy for the reduction in the potential wealth effect. The logic behind the choice of abnormal sales (rather than total insider sales) is to control for "background" sales that take place on a regular basis. For example, managers may sell a certain amount of equity at periodic intervals for diversification purposes. When managers are anticipating some "bad news", that, if made public, would cause their firms' stock prices to drop, they have the incentives to want to sell more of their share holdings. To ensure that the insider sales in the event period are not just "background"

sales, I use the level of abnormal insider sales to proxy for the reduction in the potential wealth effect on the managers.

In measuring the level of abnormal insider sales prior to the release of negative earnings forecasts, I use both the metrics number of insider sales transactions and number of shares sold.[23] The number of insider sales transactions refers to the total number of times insiders execute open market sales within a period of time, whereas the number of shares sold refers to the total number of shares sold by insiders.

I define abnormal insider sales (either transactions or shares sold) as the ratio of the number of insider sales in the event period and the number of insider sales in the estimation period (or "non-event" period). The number of insider sales in the event period is the total number of insider sales transactions (or total number of shares sold) in the 30-day period prior to the release of the negative earnings forecasts. Likewise, the number of insider sales in the estimation period (hereinafter referred to as the expected insider sale) is the average number of sale transactions per 30-day period in the 12-month prior to the event period (or equivalently from $t = -31$ to $t = -390$, where $t = 0$ refers to the release of the negative earnings forecast). There, the expected insider sale is computed as:

$$E(IS_j) = \frac{\sum_{t=-31}^{-390} IS_{jt}}{12}$$

IS_{jt} = *Insider sales (number of transactions or number of shares sold) for firm j at day t, from t = -31 to t = -390*

[23] Both these metrics have been used interchangeably in previous studies that investigated insider trading surrounding corporate announcements.

Accordingly, each firm has its firm-specific expected insider sale. Finally, I include only insider sales executed by officers that are directly related to the firms.

The sample and control group of firms used in this empirical analysis (pertaining to the wealth effect hypothesis) differs from those used in the empirical tests discussed in the sections earlier. In this test, sample firms that had zero insider sales in the event periods and non-event periods are eliminated (together with their matched control firms). This left me with 507 sample firms (and their matched 507 control firms) with non-zero insider sales in either the event periods or non-event periods.

From the prediction of *Hypothesis 4* and the use of abnormal insider sales to proxy for reduction in the potential wealth effect, managers that release negative earnings forecasts are expected to experience higher level of abnormal insider sales prior to the release of the negative earnings forecasts, relative to the matched control firms.

To summarize, the empirical tests discussed in this chapter focus on explaining why some firms disclose negative earnings forecasts while others do not. It should be the case that disclosers inherit firm-specific economic characteristics that may increase the net value of releasing negative earnings forecasts. Among the firm's economic characteristics examined are: 1.) The potential litigation cost faced by the firm; 2.) The potential reputation cost imposed on the manager; 3.) The potential market alignment cost; and 4.) The effect on the managers' wealth.

The time series of the firms' reported earnings is used to proxy for the potential litigation costs (*Section 6.1*) and reputation costs (*Section 6.2*). The past seasonal quarterly earnings changes (PEC) is the percentage change in earnings per share of the current quarter relative to same quarter a year-ago, while the future seasonal quarterly earnings change (FEC) is the percentage change relative to same quarter year-ahead earnings per share. PEC and FEC will be used in the statistical analysis as proxies for litigation cost and reputation cost, respectively.

The revision of earnings per share forecast by financial analysts is used to proxy for the potential market alignment cost (*Section 6.3*). In order to conduct the statistical analysis, the percentage change in consensus analysts' EPS forecast between the end of month t-1 and month t-2 is used to measure the potential market alignment cost. Finally, the level of abnormal insider sale prior to the release of the negative earnings forecasts proxies for the reduction in the potential wealth effect.

6.6 The disclosure likelihood model

In this section, I combine all the four hypotheses into a unified framework, in order to examine if the decision to release negative earnings forecasts is a function of the potential litigation cost, reputation cost, market alignment cost, and/or wealth effect. In other words, this unified test enable me to investigate, of the four factors, which is the most dominant in explaining the firm's decision to release negative earnings forecast.

The following probability model is employed to specify the functional relationship between the firm economic characteristics and its disclosure likelihood in a given period. Let $p(i,t)$ be the probability that firm i will release negative earnings forecasts in the period t, with $x(i,t)$ being a vector of measured economic characteristics of the firm and β a vector of unknown parameters to be estimated. Then,

$$p(i,t) = 1/[1+e^{-\beta x(i,t)}]$$

The intuition behind the above model is as follows. Whether or not a firm releases earnings forecast when faced with negative earnings surprise depends on the firm's economic characteristics and attributes. In the above model, the relevant economic characteristics of the firm can be quantitatively measured are denoted by $x(i,t)$ and enter the model explicitly.

Thus, $p(i,t)$ is a logit probability function of the measured economic characteristics of the firm. In *Chapter 4* (Hypotheses Development), I identify four potential determinants of a firm's disclosure policy on negative earnings forecasts. The four hypotheses and the variables they imply are summarized in *Exhibit C*. The hypothesized sign of each variable shows whether the disclosure likelihood is expected to increase (+) or decrease (-) with that variable.

Exhibit C Disclosure likelihood hypotheses and independent variables

Hypothesis	Variable(s)	Expected sign
1. Litigation cost	Past earnings' changes (PEC)	-
2. Reputation cost	Future earnings' changes (FEC)	-
3. Market alignment cost	Revision of analysts' forecast (AR)	+
4. Wealth effect	Abnormal insider sales (AINSD)	+

The parameters of the model are estimated using maximum likelihood where the dependent variable is assigned a value of one for disclosers of negative earnings forecasts and zero for non-disclosers.

To summarize, I estimate the following binomial logistic regression model:

$$P(Disclose_{i,q} = 1) = logit\,(\alpha_0 + \alpha_1 PEC_{i,q} + \alpha_2 FEC_{i,q} + \alpha_3 AINSD_i + \alpha_4 AR_{i,q} + \alpha_5 NumANA_{i,q})$$

$Disclose_{i,q}$ = An indicator variable that takes on the value of one if firm i releases negative earnings for quarter q, zero otherwise,

$PEC_{i,q}$ = The percentage change in past seasonal quarterly EPS for firm i and quarter q,

$FEC_{i,q}$ = The percentage change in future seasonal quarterly EPS for firm i and quarter q,

$AINSD_i$ = An indicator variable that takes on the value of one if firm i experience abnormal insider sales 30 days prior to the release of the negative earnings forecast, zero otherwise,

$AR_{i,q}$ = The percentage change in analysts' revision of EPS forecast for firm i and quarter q,

For this binomial logistic regression test, I use the same sample and control of firms as discussed in *section 6.5*. Sample firms that had zero insider sales in the event periods and non-event periods are eliminated (together with their matched control firms). This reduced dataset consists of 507 sample firms and 507 control firms.

6.7 Sensitivity Analysis

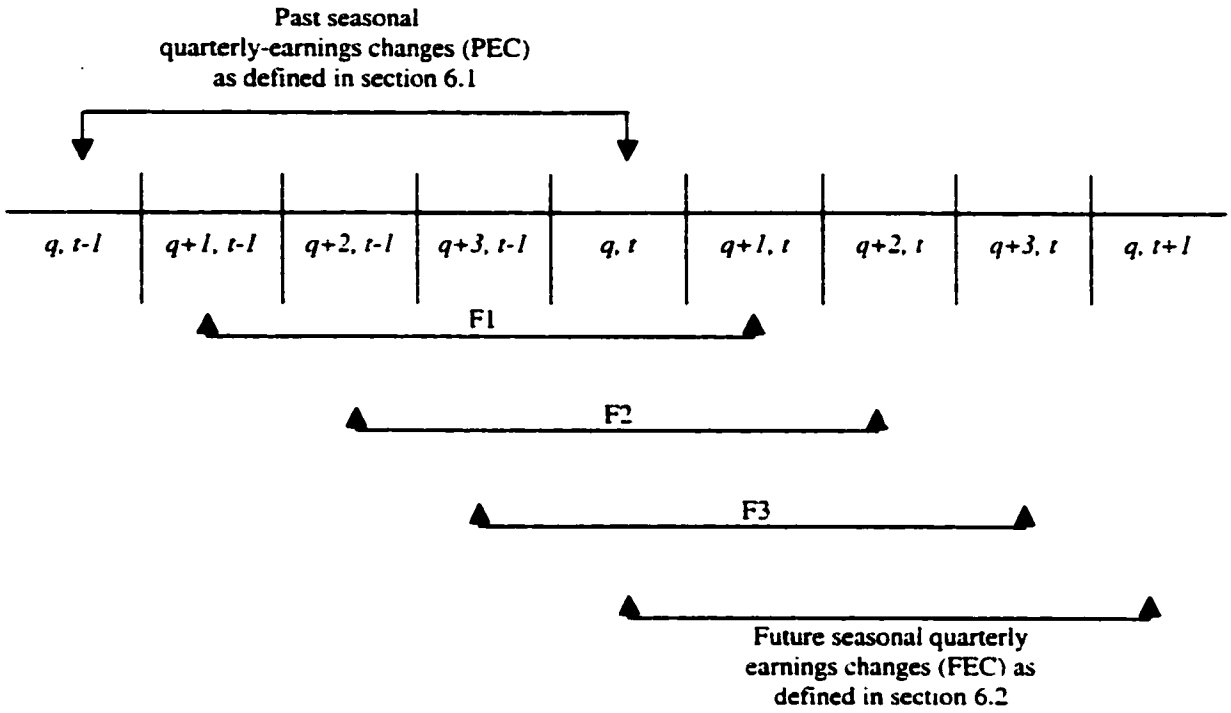
6.7.1 The reputation cost

The reputation cost hypothesis predicts that firms are more likely to disclose negative earnings forecasts if they face (relatively) higher reputation cost. In the initial test as described in *section 6.2*, I use the seasonal earnings changes relative to the year-ahead same quarter as proxy for potential reputation costs.

As sensitivity tests, I use alternative measures to proxy for changes in future earnings. *Timeline D* illustrates each of these measures. Assume that the event quarter is *(q, t)* where the negative earnings forecast is disclosed. Accordingly, *(q+1, t)* is the quarter after the event quarter, while *(q+3, t-1)* is the quarter prior to the event quarter.

Relative to the event quarter *(q, t)*, F1 measures the change in quarterly earnings per share from the subsequent quarter *(q+1, t)* to the previous year same quarter *(q+1, t-1)*. F2 and F3 are defined in similar manners, where the change in earnings per share is measured from *(q+2, t)* and *(q+3, t)*, to *(q+2, t-1)* and *(q+3, t-1)* respectively.

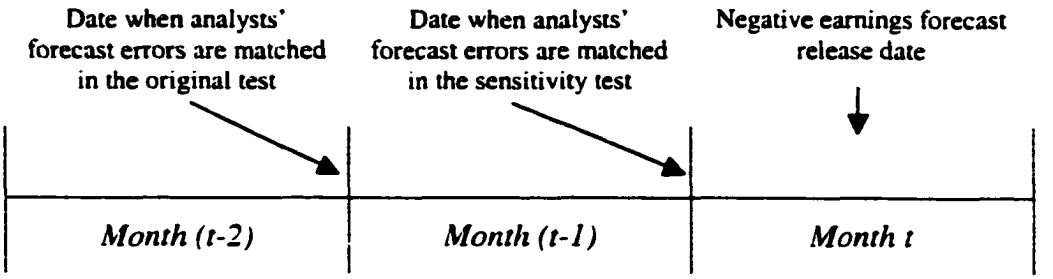
Timeline D



6.7.2 *Alternative control firms*

To ensure that the results obtained from the empirical tests discussed above do not depend on my choice of control firms of non-disclosers, I form an alternative control group using the consensus analysts' EPS forecasts at the end of month t-1 (instead of month t-2) to compute the analysts' forecast errors. The initial control firms are matched using the consensus analysts' EPS forecasts at the end of month t-2. *Timeline E* compares the construction of the initial and alternative control firms.

Timeline E



The analysts forecast error (of the alternative control firms) is then computed as:

$$AFE = \frac{EPS - Consensus}{|Consensus|}$$

EPS = *Reported EPS from I/B/E/S*

Consensus = *Average analysts' earnings per share forecast at the end of the month t-1*

The other matching criteria are similar to those discussed in *section 6.1*. This alternative method of constructing the control firms produces 533 sample firms and 533 control firms.

Chapter 7: Results

7.1 The litigation cost

Economic rationality dictates that managers should be better off, ex-ante, by releasing negative earnings forecasts rather than allowing the negative earnings surprise to be revealed later through related mandatory disclosures. One of the benefits of disclosing "bad news" early is the reduction in litigation cost. Skinner (1994, 1997) finds that managers release negative earnings forecasts to lower the costs of litigation. Since the cost of litigation is related to past seasonal changes in quarterly EPS, disclosers of negative earnings forecasts are expected to experience more negative past seasonal changes in quarterly EPS relative to their matched non-disclosers.

Panel A of *Table 3* describes the percentage change in past seasonal quarterly EPS for disclosers of negative earnings forecasts and non-disclosers. The average (median) change is –26.2% (-25.0%) for disclosers compared to –16.8% (-14.6%) for non-disclosers. The average percentage change in past seasonal quarterly EPS for disclosers (-26.2%) and non-disclosers (-16.8%) are both statistically different from zero (*t-statistics –8.37 and –4.16 respectively*). The difference in the average percentage change in past seasonal quarterly EPS between disclosers and non-disclosers is statistically significant at 5% level (*t-statistics –2.49*). This indicates that disclosers, on average, experience greater decline in earnings (relative to the previous year same-quarter's earnings) than non-disclosers.

In addition, I perform a chi-square test to test for the independence of the firms' disclosure policy (i.e. to disclose or withhold the "bad news") and the sign of the change in the past seasonal quarterly EPS.[24] The chi-square statistic is 9.05, which is significant at 5% level. Thus, the null hypothesis of independence between disclosure policy and the sign of change in seasonal quarterly EPS is rejected. This is consistent with my earlier finding, i.e. firms are more likely to release negative earnings forecasts when their current level of earnings are lower relative to the previous year same quarter's earnings, after controlling for the percentage analysts' forecast errors.

The results in this section support *Hypothesis 1*. Firms are more likely to disclose negative earnings forecasts when faced with greater decline in earnings (relative to previous year same-quarter's earnings) after controlling for analysts' forecast error. Since the percentage change in past seasonal quarterly EPS proxy for potential litigation cost, my results are consistent with the notion that firms disclose negative earnings forecasts to reduce the cost of litigation.

Panels A1 and A2 of *Table 3* present the percentage change in past seasonal quarterly EPS for disclosers of negative earnings forecasts and non-disclosers, partitioned by years, i.e. the first includes negative earnings forecasts from 1992 to 1995 while the second from 1996 to 1999. The results indicate that firms releasing negative earnings forecasts after 1995 experience greater decline in earnings (relative to previous year same-quarter's earnings) in comparison to firms that do so prior to 1996. Firms' greater

[24] The sign is positive if the change in the past seasonal quarterly EPS is greater than zero, negative otherwise.

exposures to litigation after 1995 motivate them to release "bad news" on a timely basis to reduce the cost of litigation.

7.2 The reputation cost

The second hypothesis predicts that firms releasing negative earnings forecasts are, on average, face with a higher potential reputation cost relative to firms that withhold the negative earnings surprise. Since reputation cost is proxy by the future seasonal changes in quarterly EPS, firms that disclose negative earnings forecasts are expected to experience more negative change in future seasonal changes in quarterly EPS relative to their matched non-disclosers.

Panel B of *Table 3* presents the percentage change in future seasonal quarterly EPS for disclosers and non-disclosers. Four different measures of change in future seasonal EPS are described (as discussed in *sections 6.2* and *6.7.1*). They are F1, which is defined as the one-quarter ahead change in seasonal quarterly EPS, with F2, F3 and FEC as the two, three and four-quarter ahead changes, respectively (refer to *Timeline C*).

Overall, the percentage change in future seasonal quarterly EPS of disclosers are significantly more negative in comparison to non-disclosers. The average (median) one-quarter ahead change in seasonal quarterly EPS (F1) is –20.4% (-11.1%) for disclosers, while for non-disclosers the change is -9.8% (-12.0%). The average change of –26.0% for disclosers is statistically different from zero (*t-statistics –5.79*) while the change of –9.8% for the non-disclosers is not significantly different from zero. The difference in the average percentage change in future seasonal quarterly EPS between disclosers and non-

disclosers is statistically significant at 5% level (*t-statistics –2.12*). However, the chi-square test results indicate that there is no association between the decision to provide negative earnings forecasts and the firms' future earnings performance (F1). The chi-square statistic is 0.54, which is not significant at 5% level.

The two, three and four-quarter ahead future seasonal change in quarterly EPS are also consistent with the prediction of *Hypothesis 2*, i.e. disclosers of negative earnings forecasts face with higher potential reputation cost relative to non-disclosers. They are –18.2% (-14.1%), –14.2% (-5.8%) and 10.7% (10.1%) for disclosers and –13.6% (-14.5%), 3.8% (5.0%) and 21.2% (20.0%) for non-disclosers. The difference in the average percentage change between disclosers and non-disclosers is statistically significant for F3 (*t-statistics –3.07*), but not for F2 and F4. Similarly findings are obtained when chi-square tests are performed.

In sum, firms are more likely to provide negative earnings forecasts if they anticipate a permanent decline in future earnings. This is consistent with the findings of Kasznik and Lev (1995). Firms have more incentives to want to inform financial analysts and investors of the impending "bad news" early if they do not expect any "good news" to occur in the near future. In other words, if the "bad news" is going to suppress future stream of earnings, managers are more likely to warn investors of the "bad news" in order to enhance their reputations.

If, as hypothesized, warnings tend to be issued for permanent earnings disappointments (and if the degree of permanence is reflected by the extent of analysts' forecast revisions), then the revision of the earnings forecasts of disclosers will be more negative than the forecast revision of the non-disclosers. This indeed is the case as evidenced by the results in *Table 5*. Both the mean and median forecast revisions of the disclosing firms (-18.0% and –13.0%) are more negative than the mean and median revisions of the non-disclosing firms (-12.6% and –6.0%). The difference in the mean forecast revisions is statistically significant (*t-statistics -3.34*). The evidence is thus supportive of the conjecture that managers are more likely to provide negative earnings forecasts if they anticipate a permanent decline in future earnings.

Finally, I calculate the long-term price performance as an alternative measure of the permanent/transitory decline in future stream of earnings. *Panel B* of *Table 5* shows the market-adjusted returns spanning 250 trading days after the release of negative earnings forecasts for the sample firms and the corresponding "calendar" period for the control firms.

In the 30-trading day window prior to the release of the negative earnings forecasts (t = -30 to t = –1), disclosers experience cumulative average market adjusted return of –8.94% while for non-disclosers they experience only a decline of –2.17%. In the next 30 trading days after the release of the negative earnings forecasts (t = 0 to t = 30), disclosers continue to experience a decline in their stock prices (-11.96%) while for non-disclosers their stock prices remain unchanged. In the subsequent 30-trading day

window (t = 31 to t = 60), both sample and control firms experience a small decline in their stock prices (-0.75% for sample firms and –0.57% for control firms). This is followed by an increase in the stock prices of both the sample and control firms from t = 61 to t = 250.

The long-term price performance results indicate that disclosers suffer a decline in stock price while non-disclosers experience a slight increase in stock price (in the 250-trading day window). These results support my earlier finding that disclosers of negative earnings forecasts experience persistence decline in their future stream of earnings.

7.3 The market alignment cost

Ajinkya and Gift (1984) argue that management forecasts are made to align investors' expectations with those of management. This implies that the larger the "expectation gap", the greater management's incentive to make a public disclosure. I characterize this "expectation gap" in term of the accuracy and dispersion of the analysts' forecasts. Inaccurate forecasts, if left uncorrected will jeopardize the relation between managers and financial analysts.

Managers facing inaccurate and/or diffuse financial analyst forecasts may find it more efficient to release an earnings forecast as a way of avoiding costly adjustments by analysts, thereby improving their relations with the financial analysts community (Lees 1981). In addition, a public earnings forecast, as opposed to discussions with individual analysts, reduces the firm's exposure to charges of selective disclosure.

Panel A of *Table 4* shows the revisions in analysts' forecasts one month prior to the release of negative earnings forecasts (i.e. the percentage change in the consensus analysts' EPS forecasts from the end of month t-2 to the end of month t-1). Two different consensus measures are presented. When using mean consensus as proxy for market expectation, disclosers experience an average (median) of –5.8% (-3.0%) change in the consensus of analysts' EPS forecast while non-disclosers experience a larger adjustment of –11.9% (-10.0%). The average percentage decline in analysts' forecasts for disclosers and non-disclosers are statistically different from zero (*t-statistics of –8.78 and –10.5* respectively). The difference in average percentage decline between disclosers and non-disclosers is also statistically significant (*t-statistics 4.70).* Focusing only on the signs of the revisions of analysts' forecasts, chi-square test indicates that there is an association between the signs of the analysts' revisions and the firms' decision to disclose negative earnings forecasts (chi-square = 5.18).

When using median consensus as proxy for market expectation, disclosers experience an average (median) of –6.0% (-2.0%) change in consensus of analysts' forecast revisions while non-disclosers experience a larger adjustment of –11.7% (-9.8%). The average percentage decline in analysts' forecasts for disclosers and non-disclosers are statistically different from zero (*t-statistics of –7.32 and –10.1* respectively). Moreover, the different in average percentage decline between disclosers and non-disclosers are also statistically significant (*t-statistics 4.04*).

Overall, the findings here indicate that disclosers have more of an incentive to align the market expectation because the financial analysts are not adjusting their EPS forecasts on a timely basis in order to reflect on the impending "bad news". The findings reported in this section are consistent with *Hypothesis 3*, i.e. firms that face higher market alignment costs are more likely to release negative earnings forecasts.

Lastly, the dispersion in analysts' forecasts for disclosers is 0.027 while for non-disclosers 0.028 (results not reported in table). The dispersion in analysts' forecasts prior to the release of the negative earnings forecasts is closely identical for the sample and control firms, indicating that dispersion in analysts' forecasts is not causing firms to disclose "bad news" early.

7.4 The returns to shareholders

The primary consequence from releasing a negative earnings forecast relates to a decline in stock price. Kasznik and Lev (1995) find that firms that disclose negative earnings forecasts suffer greater stock price declines relative to firms that withhold the "bad news".

This section describes the stock price reactions surrounding the release of the negative earnings forecasts and the actual earnings announcements. *Panel A* of *Table 6* shows the cumulative market adjusted return for the 3-day window surrounding the forecasts and the actual announcements for both the disclosers and non-disclosers. The average (median) cumulative market adjusted return for disclosers within the 3-trading

day window surrounding the release of the negative earnings forecast is –14.12% (-10.41%), while the average (median) cumulative market adjusted return within the 3-trading day window surrounding the actual earnings announcement is 0.83% (0.40%). The combined 6-trading day average (median) cumulative market adjusted return is –13.19% (-10.15%).

The average (median) cumulative market adjusted return for the non-disclosers is 0.09% (-0.32) surrounding the release of the forecasts and –0.36% (-0.39%) around the actual announcements. The combined return, on average, is only –0.25%. The more severe negative market adjusted returns experienced by disclosers of negative earnings forecasts (relative to non-disclosers) is consistent with the finding of Kasznik and Lev (1995).

7.5 The wealth effect

Panel A of *Table 7* reports the abnormal insider sales 30 calendar days prior to the release of the negative earnings forecasts. Two different measures of insider sales are presented, i.e. insider sale transactions and number of sales sold. Since the inferences drawn from the results of these two measures are similar, I will focus only on the number of shares sold.

For the sample firms of disclosers, the abnormal insider sales (number of shares sold) 30-day before the release of the negative earnings forecasts are, on average 2.12 (median = 1.21) times more than the expected level of insider sales. This indicates an increase in the level of insider sales in anticipation of the release of the negative earnings

forecasts. This empirical finding is consistent with the wealth effect hypothesis that predicts opportunistic selling by managers (prior to the release of the negative earnings forecasts) to offset the potential losses due to stock price declines.

Within the same time period, the managers of the control firms do not sell as much as the managers of the sample firms. The average (median) level of abnormal insider sale is 2.01 (1.06).

Panel B of *Table 7* reports the abnormal insider sales 10 calendar days prior to the release of the negative earnings forecasts. The results also indicate that managers of the sample firms are selling more (3.48 times above the expected level of insider sales) prior to the release of the negative earnings forecasts. However, within the same 10-calendar day period, the average (median) level of abnormal insider sale for the control firms is 2.61 (1.91). Overall, the level of abnormal insider sale for the control firms is lower relative to the sample firms of disclosers.

7.6 The disclosure likelihood model

In *Chapter 4*, I hypothesize that a firm is more likely to release negative earnings forecast when the firm faces higher litigation cost (relative to a control firm of non-discloser), higher reputation cost, higher market alignment cost and lower wealth effect. The percentage change in past seasonal quarterly EPS (PEC), percentage change in future seasonal quarterly EPS (FEC), level of abnormal insider sales (AINSD) and analysts' revision of EPS forecast (AR) proxy for these constructs, respectively. Accordingly, I predict negative coefficients for both percentage change in past seasonal quarterly EPS

(PEC) and future seasonal quarterly EPS (FEC), while level of abnormal insider sales (AINSD) and analysts' revision of EPS forecast (AR) are expected to have positive coefficients. I use the number of analysts following a particular firm (NumANA) as control variable.

The parameter estimates of the binomial logistic regression model and the associated *p-values* are presented in *Table 8*. Also presented in the table is the likelihood ratio statistic that tests for the statistical significance of the model. The likelihood ratio statistic, which is asymptotically chi-square distributed, is statistically significant (*chi-square statistic 16.02, p-value 0.001*). This implies that the binomial logistic regression model provides a statistically significant explanation of a firm's disclosure probability.

The explanatory variables percentage change in past seasonal quarterly EPS (PEC), percentage change in future seasonal quarterly EPS (FEC) and level of abnormal insider sales (AINSD) are all statistically significant at 10% level with p-values of 0.04, 0.10 and 0.09 respectively. The signs of the coefficients of these explanatory variables are consistent with the hypotheses. However, the explanatory variable analysts' revision of forecast (AR) is statistically insignificant at the 10% level. Finally, the control variable number of analysts (NumANA) is statistically significant at 10% level.

The coefficient for the percentage change in past seasonal quarterly EPS (PEC) is –0.01 with an odds ratio of 0.98. This indicates that, *ceteris paribus*, a more negative change in past seasonal quarterly EPS increases the likelihood of a firm issuing a

negative earnings forecast. Likewise, the coefficient for the percentage change in future seasonal quarterly EPS (FEC) is also –0.01 with an odds ratio of 0.98, implying that firm facing a greater decline in future seasonal quarterly EPS is more likely to issue a negative earnings forecast. The significant of these two explanatory variables PEC and FEC support the litigation and reputation hypotheses, i.e. firms release negative earnings forecasts to reduce their litigation costs and to enhance their reputation.

The coefficient for abnormal insider sales (AINSD) is 0.08 with an odds ratio of 1.08. This implies that managers that are successful in selling their stock holdings prior to the release of the negative earnings forecasts are more likely to go ahead with the issuance. The odd of disclosing negative earnings forecast increases by 8% when managers are able to reduce the wealth effect of the stock price decline via insider sales.

The explanatory variable analysts' revision of forecast (AR) has coefficient of 0.05 with an odds ratio of 1.05. This implies that the less negative the analysts' revision of forecast, the more likely the firm to release negative earnings forecasts when faced with negative earnings surprises.

Overall, the results from the binomial logistic regression indicate that past seasonal quarterly EPS (PEC) and abnormal insider sales (AINSD) are the main predictors of firm's disclosure policy. Firms that are faced with high potential litigation costs are more likely to disclose negative earnings forecasts, while managers who are able to offset their losses through insider sales prior to the forecasts are more likely to be

actual disclosers. To analyze further the association between litigation cost and insider sales (prior to the release of the negative earnings forecasts) I perform additional tests that investigate managers' trading behavior when faced with different levels of litigation risks.

7.7 Additional tests

In this section, I classify the sample and control firms as low or high litigation risk based on the following criterion: Firms will be classified as facing high litigation risk if the past seasonal quarterly earnings change (PEC) is negative, and firms will be classified as low risk when their PEC is unchanged or positive. It is perceived that firms in the high litigation risk face higher litigation costs, and therefore are expected to have more incentives to want to disclose, regardless of whether they are successful in selling their stock holdings. Likewise, when firms are faced with low litigation risk, they have less incentive to want to disclose the "bad news".

Table 10 shows the association tests between the abnormal insider sales and the firms' disclosure policy partitioned by whether the firms are in the low or high litigation risk group. The results suggest the following. When the litigation risk is low, firms that release negative earnings forecasts are more likely to execute open market sales prior to the forecast (*Panel A* of *Table 10*). However, when the litigation risk is high, firms that release negative earnings forecasts are just as likely to execute open market sales prior to the forecast as non-disclosers. This is shown in *Panel B* of *Table 10*.

Panel A of *Table 11* shows the logit disclosure likelihood estimates when the sample is partitioned into low litigation risk. The variable of interest here is the abnormal insider sales (*AINSD*). When the litigation risk is low (which is defined as positive change in past seasonal quarterly EPS), the odds ratio for *AINSD* is 1.61, indicating that managers are more likely to sell their stock holdings before the release of negative earnings forecasts. However, when the litigation risk is high, the odds ratio for *AINSD* is only 1.13 (*Panel B* of *Table 11*), suggesting that managers are more likely to refrain from selling their stock holdings in the case when they have to release the negative earnings forecasts.

7.8 Sensitivity Analysis

This section presents the results of the sensitivity analysis as explained in *section 6.8*. The alternative control firms are matched to the sample firms based on the analysts' forecast errors at month t-1, instead of month t-2. *Table 12* through *Table 17* reports the empirical tests using these alternative control firms. The empirical findings are not significantly different from the findings using the initial control firms. This shows that the empirical results found in the earlier sections are not sensitive to the choice of the control firms.

The consensus earnings forecasts used in this study are provided by I/B/E/S. For this reason, I also use the firms' reported earnings as provided by I/B/E/S. These earnings differ from those reported on the financial statements and from those contained in the COMPUSTAT database. Using different measures of reported earnings leads to variations in the realized forecast error, and therefore, to a different set of matched

control firms. Using COMPUSTAT earnings instead of I/B/E/S earnings resulted in approximately a 20% difference in the control firms. However, this variation had no impact on the empirical findings.

The calculation of forecast error used the absolute value of the consensus analyst forecast in the denominator (see *Section 6.1*). To the extent that negative and positive earnings (and forecasts) are not treated symmetrically, the use of the absolute value introduces noise into the tests. To see if this effect was significant, I ran the tests on the sample restricted only to firms whose consensus forecasts were positive. The findings were qualitatively similar and the levels of significance did not differ from those obtained when the entire sample was used.

The empirical findings (from *Section 7.1*) suggest that fear of litigation may be a significant factor driving the disclosure of "bad news". The Private Securities Litigation Reform Act (1995) (hereafter, PSLRA) significantly affected the ability to sue firms for inaccurate disclosures. For this reason, I tested for structural differences in the pre and post 1995 sample. The results provide some indication of a structural shift across these two periods; specifically, the litigation proxy is not significant in the pre-1995 sample whereas it is strongly significant in the post-1995 sample. These findings suggest that higher levels of litigation risk may have caused all firms with similar analysts' forecast errors (AFE) to disclose in the pre-1995 period whereas only those with negative past seasonal quarterly earnings change faced such litigation risk in the post-1995 period. This is consistent with the provisions of the PSLRA in that in the pre-1995 period, AFE

that arose due to voluntary information releases could form the basis for litigation whereas in the post-1995 environment, only audited statements could be used as a basis for lawsuits. However, the findings have to be treated with some caution because the pre-1995 sample is very small compared with the post-1995 sample.

Lastly, I included firm size (proxy by market value) as an additional control variable in the logistic regression model. The coefficient for number of analysts remains positive (0.05, with an odds ratio of 1.06) indicating that after controlling for size effect, managers are more likely to disclose negative earnings forecasts when the number of analysts following is high.

Chapter 8: Conclusions

Early studies (Patell 1976; Penman 1980) show that earnings forecasts released voluntarily by managers convey value-relevant information to various market participants. However, not all managers have the same incentives for providing earnings forecast when faced with earnings surprises, particularly negative ones. This dissertation addresses the question of what attributes distinguish firms that alert investors to an impending *negative earnings surprise* from those that keep silent?

Because negative earnings forecasts are made by deliberate choice of management, economic rationality dictates that management should be better off, ex-ante, by making the forecast rather than allowing the negative earnings surprise to be revealed later through related mandated announcements. Phrased differently, managers will only release negative earnings forecasts if the benefits of doing so outweigh the costs (or the net values of releasing the negative earnings forecasts are positive). The fact that one firm chooses to voluntarily release negative earnings forecast while the other firm chooses to withhold (the negative earnings surprise) suggests that firms should differ in some ways that makes the correction of the negative earnings surprise more valuable or less costly for the disclosers. In this dissertation, I identify a series of factors that may increase the net value of negative earnings forecasts.

Relying on prior studies that investigate on managers' incentives to voluntarily disclose "bad news", and the economic rationality discussed above, this dissertation predicts the following: 1.) Disclosers of negative earnings forecasts, when compared to

non-disclosers, should be faced with a greater incentive to align market expectations (Ajinkya and Gift 1984), higher litigation risk (Skinner 1994, 1997), and/or higher reputation losses (Trueman 1986) ; 2) A comparison of disclosers with non-disclosers who face the same level of negative forecast error should demonstrate that disclosers face a much greater level of negative market returns (Kasznik and Lev 1995); and 3) Disclosers of negative earnings forecasts, when compared to non-disclosers, should be faced with lower effects on the managers' wealth resulting from the issuance of the negative earning forecasts.

Given that there are both benefits and cost resulting from the release of negative earnings forecasts, it must be the case that disclosers of negative earnings forecasts (relative to non-disclosers) have greater benefits and/or lower costs from the release of the forecasts. To summarize, disclosers of negative earnings forecasts should profit more from the forecasts (relative to non-disclosers), after controlling for the level of potential costs. Likewise, given a certain level of potential benefits, disclosers should face lower level of costs from the release of the forecast (relative to non-disclosers).

In order to test for the predictions stated above, this dissertation extends and refines the matched pair design used in Kasznik and Lev (1995). The first set of empirical tests is performed within a univariate framework. Overall, the results show that disclosers of negative earnings forecasts experience greater incentive to want to align market expectation, higher litigation costs and higher reputation loss, when compared to the

control group of non-disclosers. Measuring the incentive to align market expectation via analysts' forecasts revisions, I find that disclosers experience less of an analysts' forecasts revision relative to non-disclosers.

Using the percentage change in past seasonal quarterly EPS as proxy for the litigation risk, results indicate that disclosers of negative earnings forecasts suffered a greater negative change in past seasonal quarterly EPS when compared to non-disclosers. Likewise, measuring the potential loss in reputation via future accounting earnings and future stock prices performances, I find that disclosers of negative earnings forecasts experience greater decline in both the future earnings and stock prices.

The second set of empirical test focuses on the reduction of costs. Given that managers' compensation is increasingly a function of the firm's stock price, managers have the incentives to sell their stock holding before "bad news" become public. On the other hand, if they cannot sell their stocks, they face greater costs from disclosing "bad news" and are less likely to make such a voluntary disclosure. The empirical findings support the notion that managers are more likely to release negative earnings forecasts if they are successful in selling some of their stock holdings prior to the release.

To summarize. I provide the following evidence within a univariate framework: Managers are more likely to be disclosers of negative earnings forecasts when the risk of litigation is high, reputation loss is high and when there is more incentive to align market

[25] It is widely believed that managers wish, in general, to align investors' expectations with the forthcoming financial results, in order to reduce investors' transaction costs, avoid large stock price fluctuations, and

expectation. Further, managers are more likely to disclose if they have the opportunities to sell their stock holdings prior to the release of the "bad news".

Recognizing that the levels of benefits and costs are heterogeneous across firms, I perform a multivariate binomial logistic regression. This set of empirical tests identifies the competing incentives that drive managers to release negative earnings forecasts. The results indicate that, *ceteris paribus*, the risk of litigation is the leading predictor of the managers' decisions to release negative earnings forecasts. I find that other factors, such as long-term impairment of earnings contribute less to the decision to make a disclosure. The level of insider trading also contributes significantly to the likelihood of a voluntary disclosure of "bad news". In particular, managers are 1.08 times more likely to disclose negative earnings forecasts when they are successful in selling some of their stocks prior to the release of the "bad news".

Despite SEC regulations and voluntary blackout periods enforced by firms, there is a significant level of selling by senior corporate officials prior to voluntary disclosures of "bad news". In fact, approximately 30% of all voluntary "bad news" disclosures are preceded by open market trades by senior executives in the month prior to the disclosure. The profit on these trades totaled $41 millions. It is important to emphasize that this finding does not necessarily constitute evidence of illegal insider trading. Rather, it provides evidence that the decision to make voluntary disclosures may be driven by the ability to trade prior to the disclosure. By first reducing their exposure to stock price declines through the sale of their holdings, managers are more willing to communicate

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shield financial analysts from embarrassment.

"bad news" and capture benefits that may accrue to them as timely and accurate providers of information to the market.

Table 1

Characteristics of sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A Distribution of firm-observations by their sector memberships from 1992 to 1999

Sectors	*Sample (Disclosers)*		*Control (Non-Disclosers)*	
	No. Forecasts	*No. Firms*	*No. Forecasts*	*No. Firms*
Basic Industries	41	34	54	36
Capital Goods	63	43	77	52
Consumer Durables	33	22	27	21
Consumer Non-Durables	50	34	40	29
Consumer Services	101	84	90	63
Energy	11	11	21	16
Finance	15	12	30	21
Health Care	40	37	45	38
Public Utilities	15	12	14	12
Technology	164	132	135	95
Transportation	15	14	15	9
Total	**548**		**548**	

Panel B Descriptive statistics on firm-specific characteristics for the sample firms and control firms (from 1992-1999)

Variable		*Sample (Disclosers)*	*Control (Non-Disclosers)*	*Sig. Diff.*[e]
Analysts' forecast error[a] *(%)*	Mean	-52.7	-53.4	*0.29*
	Median	-42.3	-43.2	
	Smallest	-0.5	-0.6	
	Largest	-200.0	-200.0	
Market value[b] *($mil)*	Mean	5123	4149	*1.03*
	Median	578	394	
	Min	23	4	
	Max	191377	162365	
Beta[c]	Mean	0.91	0.84	*2.83*
	Median	0.86	0.79	
	Min	0.01	0.05	
	Max	1.99	1.97	
Number of analysts[d]	Mean	5.95	4.76	*4.35*
	Median	5	3	
	Min	1	1	
	Max	25	28	

Table 1 (Continued)
Characteristics of sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel C Summary statistics on the differences in the firm-specific characteristics between the sample firms and control firms (from 1992-1999)[f]

	Mean	Median	Max	Min
Analysts' forecast error (%)	0.7	0.2	5.0	-5.0
Market value ($mil)	1071	79	29,012	-16,384
Beta	0.11	0.08	2.46	-2.34
Number of analysts	1	1	14	-13

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] *Analysts' forecast error* is the calculated as (reported EPS – consensus EPS) / absolute (consensus EPS). The reported EPS is obtained from COMPUSTAT Industrial Quarterly (Item 9. Diluted EPS excluding extraordinary items) and the consensus EPS is the average analyst earnings per share forecast at the end of month t-2, where t is the month when the negative earnings forecast is released.

[b] *Market value* is computed as the number of share outstanding (at the end of the fiscal-quarter prior to the release of the forecast) times the price of the share at the end of the prior fiscal-quarter.

[c] *Beta* is calculated using the market model from t = -300 days to t = -60 days, where t = 0 refers to the release date of the negative earnings forecast.

[d] *Number of analysts* is the total number of analysts following a particular firm at the end of month t-2, where t is the month when the negative earnings forecast is released.

[e] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[f] The differences in the firm-specific characteristics are computed as the characteristics of the sample firms minus the characteristics of the control firms.

Table 2
Negative earnings forecasts over time and per firm

Panel A Distribution of negative earnings forecasts over fiscal-quarters from 1992 to 1999

	1st	*2nd*	*3rd*	*4th*	*Total*
No. of forecasts	105	120	167	156	**548**
% of forecasts	20	22	30	28	

Panel B Distribution of negative earnings forecasts (by years)

	1992	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
No. of forecasts	15	17	12	6	7	100	222	169
% of forecasts	2.7	3.1	2.2	1.1	1.3	18.2	40.5	30.9

Panel C Number of negative earnings forecasts per firm (from 1992 to 1999)

No of forecasts	*Sample (Disclosers)*	*Control (Non-disclosers)*
1	349 (80.1%)	269 (68.8%)
2	65 (14.9)	97 (24.7)
3	16 (3.7)	23 (5.9)
4	4 (1.0)	1 (0.2)
5	1 (0.3)	-
6	-	2 (0.4)

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

Table 3
The characteristics of the time series of reported earnings of the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A Descriptive statistics on the past seasonal quarterly earnings change[a] (%)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-26.2 *(-8.37)*	-16.8 *(-4.16)*	*-2.49*
Median	-25.0	-14.6	
Q1	-66.7	-63.3	
Q3	3.4	14.3	
No. Pos	138	123	$\chi^2 = 9.05$[d]
No. Neg	310	173	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] The *past seasonal quarterly earnings change (%)* is defined as the percentage change in the quarterly earnings per share of the current quarter (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9) relative to the previous year same quarter earnings per share.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 3 (Continued)
The characteristics of the time series of reported earnings of the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A1 Descriptive statistics on the past seasonal quarterly earnings change[a] (%) from 1992-1995

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	0.9 *(0.11)*	9.2 *(1.01)*	*-0.67*
Median	3.8	8.3	
Q1	-20.0	-5.3	
Q3	20.8	33.3	
No. Pos	28	23	$\chi^2 = 0.47$[d]
No. Neg	17	10	

Panel A2 Descriptive statistics on the past seasonal quarterly earnings change[a] (%) from 1996-1999

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-29.3 *(-8.79)*	-20.1 *(-4.59)*	*-1.67*
Median	-30.3	-20.0	
Q1	-72.5	-71.4	
Q3	0.0	12.0	
No. Pos	110	100	$\chi^2 = 8.48$[d]
No. Neg	293	163	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

Panel A1 consists of sample firms that release negative earnings forecasts from 1992 to 1995, and their corresponding control firms. The total number of firm-quarter observations in Panel A1 is 50. Panel A2

consists of sample firms that release negative earnings forecasts from 1996 to 1999, and their corresponding control firms. The total number of firm-quarter observations in Panel A1 is 498.

[a] The *past seasonal quarterly earnings change (%)* is defined as the percentage change in the quarterly earnings per share of the current quarter (Earnings before extraordinary items, COMPUSTAT Industrial Quarterly Item 9) relative to the previous year same quarter earnings per share.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 3 (Continued)
The characteristics of the time series of reported earnings of the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel B Descriptive statistics on the future seasonal quarterly earnings change[c] (%)

One-quarter ahead (F1)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-20.4 *(-5.79)*	-9.8 *(-1.91)*	*-2.12*
Median	-11.1	-12.0	
Q1	-65.0	-58.3	
Q3	16.0	23.9	
No. Pos	193	147	$\chi^2 = 0.52$[d]
No. Neg	264	181	

Two-quarter ahead (F2)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*
Mean *(t-statistics)*	-18.2 *(-5.34)*	-13.6 *(-2.78)*	*-0.77*
Median	-14.1	-14.5	
Q1	-60.4	-61.8	
Q3	17.6	22.1	
No. Pos	192	150	$\chi^2 = 2.25$
No. Neg	271	170	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

[e] The *future seasonal quarterly earnings change (%)* is computed as defined in *Section 6.2.*

Table 3 (Continued)
The characteristics of the time series of reported earnings of the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel B Descriptive statistics on the future seasonal quarterly earnings change[c] (%)

Three-quarter ahead (F3)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-14.2 *(-4.13)*	3.8 *(0.76)*	-3.07
Median	-5.8	5.0	
Q1	-57.8	-50.0	
Q3	22.6	46.3	
No. Pos	216	169	$\chi^2 = 4.45$[d]
No. Neg	241	138	

One-year ahead (F4)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*
Mean *(t-statistics)*	10.7 *(2.46)*	21.2 *(3.75)*	-1.49
Median	10.1	20.0	
Q1	-30.2	-26.1	
Q3	51.4	76.9	
No. Pos	234	174	$\chi^2 = 1.85$
No. Neg	169	101	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

[e] The *future seasonal quarterly earnings change (%)* is computed as defined in *Section 6.2*.

Table 4

The revision of analysts' forecasts for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A Percentage change in the (mean) consensus of analysts' forecasts of EPS[a]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean	-5.8	-11.9	*4.70*
(t-statistics)[c]	*(-8.78)*	*(-10.5)*	
Median	-3.0	-10.0	
Q1	-9.0	-16.0	
Q3	0.0	0.0	
No. Pos	188	202	$\chi^2 = 5.18$[d]
No. Neg	274	216	

Panel B Percentage change in the (median) consensus of analysts' forecasts of EPS

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*
Mean	-6.0	-11.7	*4.04*
(t-statistics)	*(-7.32)*	*(-10.1)*	
Median	-2.0	-9.8	
Q1	-9.0	-16.5	
Q3	0.0	0.0	
No. Pos	202	219	$\chi^2 = 6.49$
No. Neg	258	198	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] The percentage change in analysts' forecasts is computed as the percentage change in the consensus analysts' forecasts from the end of month $t-2$ to month $t-1$, where t represents the month when the negative earnings forecasts are released. Refer to *Timeline B* for further details.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 5

The analysts' revisions of long-term earnings forecasts for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Percentage change in the (mean) consensus of analysts' forecasts of long term EPS[a]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean	-18.0	-12.6	*-3.34*
(t-statistics)[c]	*(-17.7)*	*(-10.1)*	
Median	-13.0	-6.0	
Q1	-26.0	-21.0	
Q3	-5.0	0.0	
No. Pos	34	89	$\chi^2 = 38.2$[d]
No. Neg	333	238	

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] The percentage change in analysts' forecasts of long term EPS (LTG) is computed as follows. For the sample firms, LTG is the percentage change in the mean analysts' forecasts from the end of month $t-1$ to month $t+1$, where t represents the month when the negative. I use the forecast of firm's next year's EPS to compute LTG. As for control firms, LTG is the percentage change in the mean analysts' forecasts from the end of month $t-1$ to month $t+1$, where t represents the month when the control firms report their EPS.

[b] The numbers are *t-statistics* from a *t-test* used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are *t-statistics* from a *t-test* to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 6

The returns to shareholders for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A: Short-window returns (the combined cumulative abnormal returns (CAR[a]) surrounding the earnings forecasts and the actual earnings announcements)

		3-day window surrounding negative earnings forecasts	*3-day window surrounding actual earnings announcements*	*Combined (CAR at forecast + CAR at actual announcement)*
Disclosers	Mean (%)	-14.12	0.83	-13.19
	Median (%)	-10.41	0.40	-10.15
	No. Pos	100	338	129
	No. Neg	536	292	501
Non-disclosers	Mean (%)	0.09	-0.36	-0.25
	Median (%)	-0.32	-0.39	-0.12
	No. Pos	296	303	303
	No. Neg	333	318	317

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] CAR is the cumulative abnormal return (in percent) over a three-trading day window around the negative earnings forecasts and actual earnings announcements. This variable is calculated by compounding daily abnormal returns. A daily abnormal return is defined as the difference between the return on an individual stock and the return on the CRSP value-weighted NYSE/AMEX index, adjusting the beta. A daily portfolio abnormal return is the average of daily abnormal returns across all observations in the portfolio.

Table 6 (Continued)
The returns to shareholders for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel B: Long-window returns (250 trading days after the release of the negative earnings forecasts)

Trading Days (t)		*-30 to -1*	*0[b] to 30*	*31 to 60*	*61 to 120*	*121 to 250*
CAR[a]	Sample (Disclosers)	-8.94	-11.96	-0.75	0.72	4.64
	Control (Non-disclosers)	-2.17	0.00	-0.57	1.73	3.20

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] CAR is the cumulative abnormal return (in percent). This variable is calculated by compounding daily abnormal returns. A daily abnormal return is defined as the difference between the return on an individual stock and the return on the CRSP value-weighted NYSE/AMEX index, adjusting for beta. A daily portfolio abnormal return is the average of daily abnormal returns across all observations in the portfolio.

[b] Day 0 refers to the release date of the negative earnings forecast.

Table 7

Abnormal insider sales prior to the release of the negative earnings forecasts for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel A Abnormal insider sales 30-day prior to the release of the negative earnings forecasts

		Abnormal number of insider sale transactions[a]	Abnormal number of shares sold[b]
Sample (Disclosers)	Mean	2.51	2.12
	Median	1.71	1.21
	Q1	1.09	0.34
	Q3	3.43	3.23
Control (Non-disclosers)	Mean	2.46	2.01
	Median	1.76	1.06
	Q1	1.00	0.30
	Q3	3.24	2.99

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] Abnormal number of insider sale transactions is defined as the total number of sales transactions in the 30-day period prior to the release of the negative earnings forecasts divided by the expected number of sales per 30-day period. The expected number of sales is the average number of sales per 30-day period in the 12-month period leading up to the event period.

[b] Abnormal number of shares sold is defined as the total number of shares sold in the 30-day period prior to the release of the negative earnings forecasts divided by the expected number of shares sold per 30-day period. The expected number of shares sold is the average number of shares sold per 30-day period in the 12-month period leading up to the event period.

Table 7 (Continued)

Abnormal insider sales prior to the release of the negative earnings forecasts for the sample firms (disclosers of negative earnings forecasts) and control firms (non-disclosers)

Panel B Abnormal insider sales 10-day prior to the release of the negative earnings forecasts

		Abnormal number of insider sale transactions[c]	Abnormal number of shares sold[d]
Sample firms (disclosers)	Mean	3.94	3.48
	Median	3.91	3.02
	Q1	2.41	1.54
	Q3	4.65	4.74
Control firms (non-disclosers)	Mean	3.86	2.61
	Median	2.77	1.91
	Q1	1.80	0.56
	Q3	6.00	3.27

The sample consists of firms that voluntarily released negative earnings forecasts. It comprises of 548 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[c] Abnormal number of insider sale transactions is defined as the total number of sales transactions in the 10-day period prior to the release of the negative earnings forecasts divided by the expected number of sales per 10-day period. The expected number of sales is the average number of sales per 10-day period in the 12-month period leading up to the event period.

[d] Abnormal number of shares sold is defined as the total number of shares sold in the 10-day period prior to the release of the negative earnings forecasts divided by the expected number of shares sold per 10-day period. The expected number of shares sold is the average number of shares sold per 10-day period in the 12-month period leading up to the event period.

Table 8
Estimates of the logit disclosure likelihood model[a]

Model A: $Disclosure\ policy^{b} = \alpha + \beta_1 PEC + \beta_2 FEC + \beta_3 AINSD + \beta_4 AR + \beta_5 NumANA$

Variables	*Expected sign*	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Past earnings' changes (PEC)	-	-0.01	0.84	0.98
Future earnings' changes (FEC)	-	-0.01	0.26	0.98
Abnormal insider sales (AINSD)	+	0.08	0.78	1.08
Analysts' revision (AR)	+	0.05	0.78	1.05
Number of analysts (NumANA)	+	0.07	0.00	1.07
Intercept		-0.03	0.82	
Likelihood ratio statistic[c]		16.02 (0.00)		

Model B: $Disclosure\ policy^{b} = \alpha + \beta_1 PEC + \beta_2 FEC + \beta_3 AINSD + \beta_4 AR + \beta_5 NumANA + \beta_6 MV$

Variables	*Expected sign*	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Past earnings' changes (PEC)	-	-0.06	0.32	0.94
Future earnings' changes (FEC)	-	-0.01	0.21	0.99
Abnormal insider sales (AINSD)	+	0.00	0.99	1.00
Analysts' revision (AR)	+	-0.01	0.97	0.99
Number of analysts (NumANA)	+	0.05	0.03	1.06
Market value (MV)	+	0.00	0.99	1.00
Intercept		0.24		
Likelihood ratio statistic[c]		10.99 (0.09)		

[a] From a sample of 548 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 132 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:

PEC is the percentage change in past seasonal quarterly EPS. Changes in past seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the previous year same quarter.

FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AR is the analysts' revision of forecast (%) one month prior to the release of negative earnings forecasts. The analysts' revision of forecasts (*AR*) is computed as the percentage change in the consensus analysts' forecasts from the end of month $t-2$ to month $t-1$, where t represents the month when the negative earnings forecasts are released. Refer to *Timeline B* for further details.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

MV (log) is computed as the number of share outstanding (at the end of the fiscal-quarter prior to the release of the forecast) times the price of the share at the end of the prior fiscal quarter

Table 9
Estimates of the logit disclosure likelihood model[a]

Model : $Disclosure\ policy^{b} = \alpha + \beta_1 PEC + \beta_2 FEC + \beta_3 AINSD + \beta_4 AR + \beta_5 NumANA + PrePost1995$

Variables	*Expected sign*	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Past earnings' changes (PEC)	-	0.00	0.95	1.00
Future earnings' changes (FEC)	-	-0.01	0.27	0.98
Abnormal insider sales (AINSD)	+	0.08	0.78	1.08
Analysts' revision (AR)	+	0.08	0.64	1.08
Number of analysts (NumANA)	+	0.06	0.00	1.07
Pre or Post 1995		0.77	0.01	2.16
Intercept		-0.71	0.01	
Likelihood ratio statistic[c]		24.04 (0.00)		

[a] From a sample of 548 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 132 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:
PEC is the percentage change in past seasonal quarterly EPS. Changes in past seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the previous year same quarter.

FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AR is the analysts' revision of forecast (%) one month prior to the release of negative earnings forecasts. The analysts' revision of forecasts (*AR*) is computed as the percentage change in the consensus analysts' forecasts from the end of month $t-2$ to month $t-1$, where t represents the month when the negative earnings forecasts are released. Refer to *Timeline B* for further details.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day

period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

Pre or Post 1995 indicates whether the negative earnings forecasts are released from 1992 to 1995 (coded as 0) or from 1996 to 1999 (coded as 1).

Table 10

Tests for the association between the firm's disclosure policy and the level of insider sales partitioned by low and high litigation risk

Chi-square tables to test for the association between the firms' disclosure policy and the level of insider sales, partitioned by low and high litigation risks[a]

Panel A: Low litigation risk[b]

	Sample (Disclosers)	*Control (Non-Disclosers)*	
With abnormal insider sales[c]	20	13	
No abnormal insider sales	128	122	$\chi^2 = 1.03$ [d]

Panel B: High litigation risk

	Sample (Disclosers)	*Control (Non-Disclosers)*	
With abnormal insider sales	24	24	
No abnormal insider sales	333	346	$\chi^2 = 0.02$

[a] From a sample of 548 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 132 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[c] The level of abnormal insider sale 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. The level of abnormal insider sale takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 11
Estimates of the logit disclosure likelihood model[a] partitioned by low and high litigation risk

Model : $Disclosure\ policy^{b} = \alpha + \beta_1 FEC + \beta_2 AINSD + \beta_3 AR + \beta_4 NumANA$

Panel A Low litigation risk[c]

Variables	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Future earnings' changes (FEC)	-0.03	0.40	0.97
Abnormal insider sales (AINSD)	0.48	0.26	1.61
Analysts' revision (AR)	0.82	0.15	2.27
Number of analysts (NumANA)	0.06	0.05	1.06
Intercept	-0.31	0.03	
Likelihood ratio statistic[d]	10.50 (0.88)		

[a] From a sample of 548 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 132 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[d] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:

FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AR is the analysts' revision of forecast (%) one month prior to the release of negative earnings forecasts. The analysts' revision of forecasts (*AR*) is computed as the percentage change in the consensus analysts' forecasts from the end of month $t-2$ to month $t-1$, where t represents the month when the negative earnings forecasts are released. Refer to *Timeline B* for further details.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

Table 11 (Continued)
Estimates of logit disclosure likelihood model[a] partitioned by low and high litigation risk

Model : *Disclosure policy*[b] = $\alpha + \beta_1 FEC + \beta_2 AINSD + \beta_3 AR + \beta_4 NumANA$

Panel B High litigation risk[c]

Variables	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Future earnings' changes (FEC)	0.00	0.89	1.00
Abnormal insider sales (AINSD)	0.12	0.75	1.13
Analysts' revision (AR)	0.00	0.99	1.00
Number of analysts (NumANA)	0.09	0.00	1.09
Intercept	-0.04	0.81	
Likelihood ratio statistic[d]	17.98 (0.00)		

[a] From a sample of 548 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 132 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[d] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:
FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AR is the analysts' revision of forecast (%) one month prior to the release of negative earnings forecasts. The analysts' revision of forecasts (*AR*) is computed as the percentage change in the consensus analysts' forecasts from the end of month $t-2$ to month $t-1$, where t represents the month when the negative earnings forecasts are released. Refer to *Timeline B* for further details.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

Table 12
Sensitivity Analysis (Alternative control firms)
The characteristics of the time series of reported earnings for the sample firms and alternative control firms

Panel A Descriptive statistics on the past seasonal quarterly earnings change[a] (%)

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean	-20.0	-4.0	*-2.46*
(t-statistics)[c]	*(-4.96)*	*(-0.77)*	
Median	-22.4	-2.5	
Q1	-64.7	-59.2	
Q3	9.0	29.4	
No. Pos	164	233	$\chi^2 = 25.4$[d]
No. Neg	326	238	

To ensure that the results obtained do not depend on the choice of control firms of non-disclosers, an alternative control group is formed using the consensus analysts' EPS forecasts at the end of month *t*-1 (instead of month *t*-2) to compute the analysts' forecast errors. The sample comprises of 533 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] *Changes in past seasonal quarterly EPS (%)* is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the same quarter year-ago.

[b] The numbers are t-statistics from a t-test used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are t-statistics from a t-test to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where *a*, *b*, *c* and *d* are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 12 (Continued)
Sensitivity Analysis (Alternative control firms)
The characteristics of the time-series of reported earnings for the sample firms and alternative control firms

Panel B Descriptive statistics on the future seasonal quarterly earnings change (%)

One-quarter ahead (F1)[c]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-31.6 *(-5.45)*	-1.5 *(-0.23)*	*-3.48*
Median	-11.1	5.6	
Q1	-79.3	-43.2	
Q3	21.0	43.0	
No. Pos	213	264	$\chi^2 = 13.47$[d]
No. Neg	267	205	

Two-quarter ahead (F2)[c]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*
Mean *(t-statistics)*	-17.7 *(-3.19)*	-6.2 *(-1.03)*	*-1.39*
Median	-9.4	5.8	
Q1	-64.4	-45.0	
Q3	23.1	40.0	
No. Pos	218	273	$\chi^2 = 17.85$
No. Neg	270	195	

To ensure that the results obtained do not depend on the choice of control firms of non-disclosers, an alternative control group is formed using the consensus analysts' EPS forecasts at the end of month *t*-1 (instead of month *t*-2) to compute the analysts' forecast errors. The sample comprises of 533 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[b] The numbers are t-statistics from a t-test used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are t-statistics from a t-test to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

[e] *Changes in future seasonal quarterly EPS (%)* is computed as defined in Section 6.2.

Table 12 (Continued)
Sensitivity Analysis (Alternative control firms)[f]
The characteristics of the time series of reported earnings for the sample firms and alternative control firms

Three-quarter ahead (F3)[c]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*[b]
Mean *(t-statistics)*[c]	-15.3 *(-2.64)*	4.2 *(0.71)*	*-2.35*
Median	-5.1	12.2	
Q1	-64.5	-30.3	
Q3	25.9	50.0	
No. Pos	234	280	$\chi^2 = 16.21$[d]
No. Neg	249	175	

One-year ahead (F4)[c]

	Sample (Disclosers)	*Control (Non-disclosers)*	*Sig. Diff.*
Mean *(t-statistics)*	19.9 *(2.75)*	41.6 *(6.32)*	*-2.21*
Median	13.7	23.2	
Q1	-30.2	-9.1	
Q3	70.7	91.9	
No. Pos	268	289	$\chi^2 = 11.65$
No. Neg	168	109	

To ensure that the results obtained do not depend on the choice of control firms of non-disclosers, an alternative control group is formed using the consensus analysts' EPS forecasts at the end of month *t*-1 (instead of month *t*-2) to compute the analysts' forecast errors. The sample comprises of 533 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[b] The numbers are t-statistics from a t-test used to test whether the pair of means (disclosers and non-disclosers) are significantly different from each other.

[c] The numbers are t-statistics from a t-test to test whether the mean is significantly different from zero.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

[e] *Changes in future seasonal quarterly EPS (%)* is computed as defined in Section 6.2.

[f] The control firms are matched by percentage analysts' forecast error, using the consensus analysts' forecast at the end of month t-1 as the market expectation.

Table 13
Sensitivity Analysis (Alternative control firms)
The returns to shareholders for the sample firms and alternative control firms

Panel A: Short-window returns (the combined cumulative abnormal returns (CAR[a]) surrounding the earnings forecasts and the actual earnings announcements)

		3-day window surrounding negative earnings forecasts	*3-day window surrounding actual earnings announcements*	*Combined (CAR at forecast + CAR at actual announcement)*
Disclosers	Mean (%)	-14.93	0.92	-13.97
	Median (%)	-11.08	0.57	-10.38
	No. Pos	65	262	87
	No. Neg	436	225	413
Non-disclosers	Mean (%)	0.10	0.10	0.07
	Median (%)	-0.32	-0.10	-0.14
	No. Pos	231	243	241
	No. Neg	265	249	248

To ensure that the results obtained do not depend on the choice of control firms of non-disclosers, an alternative control group is formed using the consensus analysts' EPS forecasts at the end of month t-1 (instead of month t-2) to compute the analysts' forecast errors. The sample comprises of 533 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] CAR is the cumulative abnormal return (in percent) over a three-trading day window around the negative earnings forecasts and actual earnings announcements. This variable is calculated by compounding daily abnormal returns. A daily abnormal return is defined as the difference between the return on an individual stock and the return on the CRSP value-weighted NYSE/AMEX index, adjusting the beta. A daily portfolio abnormal return is the average of daily abnormal returns across all observations in the portfolio.

Table 13 (Continued)
Sensitivity Analysis (Alternative control firms)[f]
The returns to shareholders for the sample firms and alternative control firms

Panel B: Long-window returns (250 trading days after the release of the negative earnings forecasts)

Trading Days (t)		*-30 to -1*	*0[b] to 30*	*31 to 60*	*61 to 120*	*121 to 250*
CAR[a]	Sample (Disclosers)	-9.84	-12.12	-0.54	-0.81	1.73
	Control (Non-disclosers)	-3.50	0.04	-0.98	-1.79	1.62

To ensure that the results obtained do not depend on the choice of control firms of non-disclosers, an alternative control group is formed using the consensus analysts' EPS forecasts at the end of month *t*-1 (instead of month *t*-2) to compute the analysts' forecast errors. The sample comprises of 533 firm-quarter observations from 1992-1999. For each of the sample firm, I select a control firm that is a non-discloser (i.e. a firm that does not provide any earnings forecast when faced with negative earnings surprise) based on the following criteria: (i) the fiscal-quarter-end (of the release of the negative earnings forecast); (ii) the size of the analysts' forecast error; and (iii) the firm size.

[a] CAR is the cumulative abnormal return (in percent). This variable is calculated by compounding daily abnormal returns. A daily abnormal return is defined as the difference between the return on an individual stock and the return on the CRSP value-weighted NYSE/AMEX index, adjusting for beta. A daily portfolio abnormal return is the average of daily abnormal returns across all observations in the portfolio.

[b] Day 0 refers to the release date of the negative earnings forecast.

Table 14
Sensitivity Analysis (Alternative control firms)[a]
Abnormal insider sales prior to the release of the negative earnings forecasts for the sample firms and alternative control firms

Panel A Abnormal insider sales 30-day prior to the release of the negative earnings forecasts

		Abnormal number of insider sale transactions[b]	Abnormal number of shares sold[c]
Sample firms (Disclosers)	Mean	2.60	2.13
	Median	1.71	1.26
	Q1	1.18	0.41
	Q3	3.51	2.98
Control firms (Non-disclosers)	Mean	2.34	2.18
	Median	1.71	1.43
	Q1	0.89	0.30
	Q3	3.21	3.54

[a] The control firms are matched by percentage analysts' forecast error, using the consensus analysts' forecast at the end of month *t*-1 as the market expectation.

[b] Abnormal number of insider sale transactions is defined as the total number of sales transactions in the 30-days period prior to the release of the negative earnings forecasts divided by the expected number of sales per 30-days period. The expected number of sales is the average number of sales in the 12-month period leading up to the event period.

[c] Abnormal number of shares sold is defined as the total number of shares sold in the 30-days period prior to the release of the negative earnings forecasts divided by the expected number of shares sold per 30-days period. The expected number of shares sold is the average number of shares sold in the 12-month period leading up to the event period.

Table 14 (Continued)
Sensitivity Analysis (Alternative control firms)[a]
Abnormal insider sales prior to the release of the negative earnings forecasts for the sample firms and alternative control firms

Panel B Abnormal insider sales 10-day prior to the release of the negative earnings forecasts

		Abnormal number of insider sale transactions[c]	Abnormal number of shares sold[d]
Sample firms (Disclosers)	Mean	3.70	3.42
	Median	3.60	3.16
	Q1	2.40	1.79
	Q3	4.50	4.67
Control firms (Non-disclosers)	Mean	3.47	3.77
	Median	2.25	3.14
	Q1	1.53	1.26
	Q3	5.14	6.51

[a] The control firms are matched by percentage analysts' forecast error, using the consensus analysts' forecast at the end of month *t*-1 as the market expectation.

[c] Abnormal number of insider sale transactions is defined as the total number of sales transactions in the 10-day period prior to the release of the negative earnings forecasts divided by the expected number of sales per 10-day period. The expected number of sales is the average number of sales per 10-day period in the 12-month period leading up to the event period.

[d] Abnormal number of shares sold is defined as the total number of shares sold in the 10-day period prior to the release of the negative earnings forecasts divided by the expected number of shares sold per 10-day period. The expected number of shares sold is the average number of shares sold per 10-day period in the 12-month period leading up to the event period.

Table 15
Sensitivity Analysis (Alternative control firms)[d]
Estimates of the logit disclosure likelihood model

Model[a]: Disclosure policy[b] = $\alpha + \beta_1 PEC + \beta_2 FEC + \beta_3 AINSD + \beta_4 NumANA$

Variables	*Expected sign*	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Past earnings' changes (PEC)	-	-0.01	0.58	0.99
Future earnings' changes (FEC)	-	-0.01	0.12	0.99
Abnormal insider sales (AINSD)	+	0.54	0.01	1.72
Number of analysts (NumANA)	+	0.05	0.00	1.05
Intercept		-0.26	0.02	
Likelihood ratio statistic[c]		21.03 (0.00)		

[a] From a sample of 533 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 33 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

[d] The control firms are matched by percentage analysts' forecast error, using the consensus analysts' forecast at the end of month t-1 as the market expectation.

Explanatory variables:

PEC is the change in past seasonal quarterly EPS. Changes in past seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the same quarter year-ago.

FEC is the change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the same quarter year-ahead.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period.

NumANA is the control variable that measures the number of analysts following a particular firm.

Table 16
Sensitivity Analysis (Alternative control firms)
Tests for the association between the firm's disclosure policy and the level of insider sales partitioned by low and high litigation risk

Chi-square tables to test for the association between the firms' disclosure policy and the level of insider sales, partitioned by low and high litigation risks[a]

Panel A: Low litigation risk[b]

	Sample (Disclosers)	*Control (Non-Disclosers)*	
With abnormal insider sales[c]	29	19	
No abnormal insider sales	116	197	$\chi^2 = 9.45$[d]

Panel B: High litigation risk

	Sample (Disclosers)	*Control (Non-Disclosers)*	
With abnormal insider sales	25	25	
No abnormal insider sales	330	259	$\chi^2 = 0.68$

[a] From a sample of 533 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 33 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[c] The level of abnormal insider sale 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. The level of abnormal insider sale takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

[d] The chi-square χ^2 test statistic is calculated as $n(ac-bd)^2/abcd$ where a, b, c and d are the frequency of occurrences in the 2 X 2 contingency table. The null hypothesis in the χ^2 test states that the 2 factors are independent while in the alternate hypothesis, the 2 factors are not independent.

Table 17
Sensitivity Analysis (Alternative control firms)
Estimates of the logit disclosure likelihood model partitioned by low and high litigation risk

Model[a]: **Disclosure policy[b] = $\alpha + \beta_1 FEC + \beta_2 AINSD + \beta_3 NumANA$**

Panel A Low litigation risk[c]

Variables	*Parameter estimate*[c]	*p-value*	*Odds ratio*
Future earnings' changes (FEC)	-0.04	0.19	0.96
Abnormal insider sales (AINSD)	0.95	0.00	2.59
Number of analysts (NumANA)	0.05	0.05	1.05
Intercept	-0.73	0.00	
Likelihood ratio statistic[d]	13.71 (0.00)		

[a] From a sample of 533 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 33 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[d] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:
FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

Table 17 (Continued)
Sensitivity Analysis (Alternative control firms)
Estimates of the logit disclosure likelihood model partitioned by low and high litigation risk

Model[a]: **Disclosure policy[b] = $\alpha + \beta_1 FEC + \beta_2 AINSD + \beta_3 NumANA$**

Panel B High litigation risk[c]

Variables	*Parameter estimate[c]*	*p-value*	*Odds ratio*
Future earnings' changes (FEC)	-0.01	0.35	0.99
Abnormal insider sales (AINSD)	-0.33	0.30	0.72
Number of analysts (NumANA)	0.07	0.00	1.07
Intercept	-0.08	0.53	
Likelihood ratio statistic[d]	15.13 (0.00)		

[a] From a sample of 533 firms that voluntarily release negative earnings forecasts during the period 1992-1999. For each sample firm, a control firm is matched based on fiscal-quarter-end, the percentage of analysts' forecast error and firm size. For more details on the sample and control firms, see *Chapter 6*. 33 sample firms with zero insider sales in the event and non-event periods are eliminated (together with their matched control firms) from this test.

[b] In estimating the model, the dependent variable is assigned a value one for sample firms (disclosers of negative earnings forecasts) and zero for control firms (non-disclosers).

[c] Firms with positive past seasonal quarterly EPS (> 0) is classified as firms with low litigation risks while firms with negative past seasonal quarterly EPS (< 0) is classified as firms with high litigation risks.

[d] The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equaling the number of parameters in the model.

Explanatory variables:
FEC is the percentage change in future seasonal quarterly EPS. Changes in future seasonal quarterly EPS (%) is defined as the percentage change in earnings per share of the current quarter relative to the earnings per share of the year-ahead same quarter.

AINSD is the level of abnormal insider sales 30-days prior to the release of the negative earnings forecasts. The abnormal insider sale (*AINSD*) is defined as the total insider sale in the 30-day period divided by the expected insider sale. Expected insider sale is the average insider sale in the 12 month before the 30-day period. *AINSD* takes on the value of one if firm experience abnormal insider sales in the 30-day period prior to the release of the negative earnings forecasts, zero otherwise.

NumANA is the control variable that measures the number of analysts following a particular firm.

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