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REACTION TO EARNINGS IN A TAKEOVER ENVIRONMENT

by

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ABSTRACT

REACTION TO EARNINGS IN A TAKEOVER ENVIRONMENT

By

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The purpose of this study was to analyze the information content of quarterly earnings announcements disclosed during takeovers to determine if they have differential information content relative to earnings announced when a firm is not involved in a takeover. The analysis considered the target firm market reaction to target firm earnings, the bidder firm reaction to bidder firm earnings, the bidder firm reaction to target firm earnings, and the target firm reaction to bidder firm earnings.

Valuation theory was used to develop models and hypotheses that relate share price to announced earnings during a takeover. Reduced information content of own firm earnings announcement as the probability of success increases was hypothesized. For the target firm, receiving cash instead of stock, being small relative to the bidder when payment was in stock, and manipulating earnings were hypothesized to be associated with reduced information content of target firm earnings. Target firm earnings were hypothesized to have greater information content to bidder firm shareholders. Bidder firm earnings were hypothesized to have greater information content to target shareholders if the form of payment was stock and lesser information content if the payment was cash.

Both a directional and nondirectional approach were used to test the hypotheses. The directional model utilized regression analysis. The nondirectional model used Wilcoxon tests to compare differences in the U-statistic.

The results showed reduced information content for target firm earnings announcements during a takeover. Cash payment for shares was associated with a lower information content of target earnings than stock payment. Earnings are also less informative to shareholders when the target is small relative to the bidder. Earnings management showed no significant differences in information content. For the bidder firm reaction to bidder earnings, the directional test found lower information content of earnings announced during the takeover at later stages of completion. Target firm earnings were not found to have increased information content to bidder shareholders. Bidder firm earnings did not have differential information content to target shareholders when stock was received as payment; but with cash, target firm shareholders found bidder earnings to be less informative.

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CHAPTER 1

INTRODUCTION

Financial accounting research has been exploring the market reaction to the announcement of accounting earnings for some time. These studies have explored the role that earnings announcements play in providing information to investors for the purpose of share price valuation. The findings of Ball and Brown [1968] and others have given support to the belief that accounting earnings are used by investors in forming expectations about the value of a firm.

This paper provides a further exploration into understanding the role that accounting earnings play in providing useful information to investors. It extends the information content literature by examining the information content of earnings announcements in a takeover environment. Specifically, the issue being examined is whether the quarterly earnings announcement for a firm that is involved in a takeover has more, less, or an equal amount of information content to investors than the quarterly earnings announcement of that same firm before it was involved in a takeover. The study focuses primarily upon the target firm share price reaction to the first quarterly target firm earnings announcement following the first takeover announcement. However, this study also investigates the price reaction of bidding firms to bidder earnings announcements as well as the target firm's price reaction to bidding firm earnings announcements and the bidding firm's price reaction to the target

firm earnings announcements. These additional reactions are examined to provide a more complete understanding of how share price reactions to earnings announcements might differ during a takeover.

When a firm is a target in a takeover, investors in that firm may not be as interested in the firm's long-term earnings capacity. Instead, investors may concentrate on the bidding process. This change in focus on the part of investors may relate to a consideration of the source of future cash flows to them. In a company not undergoing a takeover, future cash flows of the company are the future cash flows of the investors, making information on earnings important to firm valuation.

At some point during the takeover negotiations, the bidding firm will propose some bid in cash, stock, debt, or a combination of these. If markets are perfect and no synergy existed between the target and bidding firm, the bidder should only be willing to pay the market price for the shares since, in an efficient market, this price would fully reflect the future earnings of the target firm. However, markets are not perfect. If the bidder has superior information about the target or agency costs can be reduced by a takeover, the bidding entity would be willing to pay more than the current market price for the shares. Allowing for the existence of synergy also causes the size of the bid to differ from the current share price. Thus, while the bid in a takeover is not independent of the discounted future earnings stream of the target, it is influenced by other factors that may make announced target earnings less important to target firm share price valuation.

However, if the takeover is at a very early stage (more than one bidder still exists, the terms of the offer are not agreed upon, etc.), investors in the target firm may perceive earnings announcements by the

target firm as influencing the takeover negotiations, making the earnings announcement more informative than before the takeover was announced. DeAngelo [1986] discusses the importance of target firm earnings to both investment bankers and the courts in assessing the appropriateness of a bid. Thus, the bid is believed to be in part a function of reported target earnings. She also points out that investment bankers may remove a fair opinion on a bid in light of earnings announcements by the target firm made during the takeover negotiations. This seems to imply that earnings announcements made during a takeover may influence the negotiations. Shareholders may, therefore, perceive these earnings announcements as providing more information content (information on the likely completion and terms of the takeover) than when the firm is not involved in a takeover.

Investors in the bidding firm may also find earnings announcements by the bidder less informative during a takeover. For successful takeovers these shareholders will receive their future cash flows from the combined operations of the bidder and the target. Thus, bidder stand-alone earnings may not be as informative in assessing the amount and timing of future cash flows during a takeover. Since it is the combined firm that will provide these bidding firm shareholders with their future cash flows, these shareholders may find the target firm's earnings announcement more informative than before the takeover process began. However, to the extent that the target firm is small relative to the bidding firm, the effect of the acquisition on the combined firm cash flows would be minimal. In this case, bidding firm shareholders may not find target firm earnings announcements more informative nor bidder firm earnings any less informative. If target firm shareholders are to remain

shareholders of the combined firm, they may find bidding firm earnings announcements during the takeover to be more informative than in the past. The target shareholders who will not remain shareholders in the combined firm would not seem to find the acquiring firm's earnings announcement more informative than before the takeover because they will receive a cash payment for their shares.

Given the prevalence of merger and acquisition activity in our economy (Accounting Today [1989]), research is needed to determine what factors are important to investors in determining share price value during a takeover. Earnings announcements by firms have been shown to be useful in share price valuation (Ball and Brown [1968]) when investors' future cash flows are likely to come from the firm in which they currently own stock. In a takeover, the source of future cash flows becomes uncertain until the negotiations reach some stage where the likely outcome of the takeover becomes known. During these takeover negotiations, earnings announcements may have more, equal, or less information content than usual. Knowledge of this relative importance of earnings to investors should be of interest to accounting academicians. This paper empirically examines whether the information content of earnings announcements is different during a takeover than when the firm is not involved in a takeover.

Lev [1989] has called for research on the role of financial variables in transactions observed in the market for corporate control. Currently, little is known about what financial variables are useful to shareholders during a takeover. This study makes a contribution to our understanding of how earnings are used by investors during takeover

transactions and how other factors (like type of payment) influence the usefulness of earnings announcements during a takeover.

The most significant contribution that this study makes is to improve the academic community's understanding of the role of earnings in firm valuation. This paper examines a situation where accounting earnings are competing with other value relevant information, namely the takeover bid. Because of this competition, earnings may possess differential information content during a takeover. This study investigates the conditions necessary for earnings to provide as much, more, or less information about firm value than when a takeover bid is not present. Thus, useful knowledge is gained about how investors use earnings when other information is available.

Earnings are generally thought to provide information about future cash flows. In the setting examined in this study, earnings may also be providing information about the probability of success of the takeover or about the terms of the transaction.[1] Thus, earnings may be useful not only in firm valuation but also in reducing uncertainty about the transaction during a takeover. The tests performed in this study examine whether earnings play a role beyond valuation in transactions for corporate control. Also, by explaining the conditions necessary for a differential reaction to earnings to occur, the paper provides useful information on when firms involved in a takeover should be controlled for in future examinations of reactions to earnings announcements.

The results of this study may also be of interest to financial analysts. Any indications that target shareholders find bidding firm

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[1] See Wilke and Smith [1991] as an example of how reported earnings can influence the bidding process.

earnings announcements informative or bidding firm shareholders find target firm earnings announcements more informative would imply that financial analysts may want to include information on the bidder (target) in research reports on the target (bidder) to provide clients with more complete information that is of interest to them. Also, this study finds a possible explanation for the result in Pound [1988] that financial analysts revise earnings forecasts less frequently for target firms in a takeover than firms not involved in a takeover by documenting that earnings announcements are less informative to target shareholders during a takeover. This result suggests that financial analysts may be behaving rationally by not revising annual earnings forecasts for such firms since their clients are less interested in the future expected earnings of these firms relative to other firms that the analyst follows.

The purpose of this study is to analyze the information content of quarterly earnings announcements during takeovers and investigate the conditions necessary for the information content of these announcements to differ from earnings announcements made before the takeover was announced. The factors considered in this analysis are the degree of completion of the takeover, type of payment (cash, stock, debt, or a combination of these), form of transaction (merger, tender offer, or leveraged buyout), resistance by target management, management and director share ownership, and relative size of the target to the acquirer.

The rest of this paper is organized as follows. Chapter 2 provides a review of the literature. The theory and hypotheses related to the target reaction to target earnings are discussed in Chapter 3. Chapter 4 explains the data to be used. The methodology is developed in Chapter 5. Chapter 6 discusses the theory and tests for the bidder reaction to

bidder firm earnings, the bidder firm reaction to target firm earnings, and the target firm reaction to bidder firm earnings. The results are presented and analyzed in Chapter 7. Chapter 8 provides a summary and conclusion, the limitations and contributions of the study, and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to briefly review the information content literature in accounting research, the takeover studies of finance research, and other relevant research. The importance of these papers to the current research is also examined.

2.1 Information Content of Earnings Announcements

Ball and Brown [1968] examined the information content of earnings, using an association study. By comparing abnormal returns with unexpected annual earnings, they showed that market participants find information in annual reports useful in valuing a firm. They also found that the sign of abnormal returns is positively related to the sign of unexpected earnings.

Beaver [1968] also examined the information content of annual earnings. However, he used an event study. This paper will use methodology similar to that used in Beaver's paper.

Beaver [1968] defined information as "a change in expectations about the outcome of an event" (p. 68). He further explained that an earnings report has information content "if it leads to a change in investors' assessment of the probability distribution of future returns (or prices), such that there is a change in the equilibrium value of the current market price" (p. 68). Therefore, if an earnings announcement has information

content, investors will be motivated to trade which will increase the variability of the stock price.

Beaver tested for information content of earnings announcements by comparing the squared abnormal returns for the week of the earnings announcement to the variance of returns during the nonannouncement period. If earnings announcements have information content, the variance of the return in the announcement period, as measured by the squared abnormal return, should exceed the variance in the nonannouncement period. Using this methodology, Beaver found that earnings announcements have information value to investors.

This ratio of squared abnormal returns during the announcement period to the variance of the nonannouncement period is known as the U-statistic. When it is greater than 1.0 for an event, the event is said to have information content. The importance of the U-statistic is that it allows for a nondirectional test. This provides the researcher with a means to test for information content without specifying an expectations model. This U-statistic methodology will be used in this paper. The statistic will be developed in the methodology section of the paper.

Other researchers have examined situations where the information content of earnings differs systematically across firms. Grant [1980] investigated whether firms trading over the counter (OTC) have greater information content in their annual earnings announcements than firms trading on the New York Stock Exchange (NYSE). His results showed that OTC firms had U-statistics significantly greater than one while NYSE firms' U-statistics were not significantly greater than one during the week when annual earnings are reported. Thus, Grant documented a differential earnings reaction between OTC and NYSE firms.

Atiase [1985] examined "whether there are systematic cross-sectional differences in security price reactions to earnings announcements which are associated with specific firm characteristics that lead to differential amounts of predisclosure information" (p. 21). He argued that the information available about a firm in the financial market is positively related to its size. The results showed that the information content of quarterly earnings announcements was inversely related to the capitalized value of the firm. Thus, firm size has been shown to differentially influence the value of the U-statistic.

Kross and Schroeder [1989] extended this result by examining whether prominent and obscure firms have differential information content of quarterly earnings while using a directional test. They defined prominent firms in terms of number of inches of Wall Street Journal Index (WSJI) coverage as well as market value of common stock. The results showed that prominent firms (large size and more WSJI coverage) have a lower magnitude of reaction to quarterly earnings for any level of unexpected earnings.

These papers all document systematic differential reactions to earnings announcements across firms. This study extends this differential reaction literature to the takeover environment to determine if any systematic differential reaction can be documented between firms involved in a takeover and those not involved in a takeover.

2.2 Reaction to Takeover Announcements

A large literature exists in finance research relating to takeover activity. This literature has focused primarily on the initial announcement of the takeover. While this paper examines the reaction to earnings announcements after the initial announcement of the takeover has been made, a brief review of the finance literature in this area is given

to document the effects of takeover announcements on the parties to the transaction.

Jensen and Ruback [1983], Halpren [1983], Roll [1986], and Krinsky, Rotenberg, and Thornton [1988] all provide reviews of the takeover literature. The early finance studies that examined the market reaction to the takeover announcements distinguished between mergers, tender offers, proxy fights, and going private/leveraged buyouts. In a merger, the target's board of directors negotiates with the boards of bidding firms and accepts an offer before it is submitted to the shareholders for a vote of approval. A tender offer involves the bidder contacting the target shareholders directly, by offering to buy shares tendered at a given price. In a tender offer, shareholders decide individually whether they will tender their shares or not. A proxy fight occurs when a group of dissident shareholders solicit proxies of the other shareholders for a new slate of directors. Going private or leveraged buyout transactions occur when the stock is purchased from the current shareholders and is no longer traded publicly. The purchaser is usually someone close to the firm (a member of management or a director). Leveraged buyouts are generally financed by issuing bonds backed by the assets of the acquired firm. These distinctions were made because the results showed that the market reaction differed across the various types of transactions.

The review articles summarize the results of the tests of market reactions to the announcement of takeover transactions. These studies have documented that target firm shareholders receive a significant gain from the announcement of a tender offer or merger with the gains from a tender offer exceeding those for a merger. For the bidding firm, the results have not been consistent across studies. Generally, bidders in

tender offers have had a small significantly positive return and those involved in mergers have had no significant abnormal return. Some studies, however, have documented significant share price losses for bidders. If the takeover is not successful, target firm share prices return to pre-offer levels while bidding firm share prices fall significantly below the pre-offer levels. The research studies have documented that the market reacts quickly to the takeover announcements with subsequent abnormal returns occurring in response to information that changes the probability of success of the takeover. Halpren [1983] concludes that both tender offers and mergers are wealth maximizing events.

Only Jensen and Ruback [1983] mention results of papers that examined going private/leveraged buyout transactions. These studies have documented a significant positive share price reaction for target shareholders. Torabzadeh and Bertin [1987] also studied the returns to shareholders of firms acquired through leveraged buyouts. Their results showed significant positive returns during the month of the initial announcement, but no significant returns in either the month before or after the announcement. The return documented was also considerably lower than those previously documented for mergers. These lower gains may result because the gains in the transaction may be lower. The economic gains that can exist in such a transaction can come from cost savings through changes in the organizational form or tax savings from changes in the firm's capital structure. These gains are probably smaller than the synergistic gains which exist in many mergers and tender offers.

The review articles focused primarily on the impact of takeover announcements to common stockholders of the target and acquiring firms.

Dennis and McConnell [1986] examined the wealth effects of merger announcements on the owners of common stock, preferred stock, and bonds. They found that the common stock, convertible and nonconvertible preferred stock, and convertible bonds of target firms all experienced significant positive returns at the announcement. Target firm nonconvertible bonds did not experience any significant change. For the bidding firm, common stock and convertible and nonconvertible preferred stock experienced a significant gain in response to the merger announcement. Convertible debt issues experienced no significant change in price while nonconvertible bonds had a significant decrease in price. This study documented that common stockholders are not the only group of security holders to gain from merger announcements.

Asquith and Kim [1982] also examined returns to bondholders in purely conglomerate mergers. Since operating synergies are minimal in such transactions, the gains in these transactions would result from reduced tax costs, agency costs, or bankruptcy costs. Neither the bidding nor target firm bonds experienced a significant price reaction to the merger announcement when they were examined separately. Target firm common shareholders still experienced a significant gain. Bidding firm common stock showed no abnormal price response to the merger announcement. The study also showed that no wealth transfers occurred between bondholders and shareholders. These results imply that there are financial gains as well as synergistic gains in mergers.

2.3 Synergy or Information as the Explanation for Gains

Bradley, Desai, and Kim [1983] examined whether tender offers are motivated by information or synergy. The synergy hypothesis states that "the increase in the value of the target shares derives from the transfer

of control of the target resources and their reallocation subsequent to the acquisition" (p. 184). The information hypothesis holds that "the revaluation of the target shares is due to new information that is generated during the tender offer process" (p. 184). They tested these hypotheses by examining the returns to target and bidding firms that received or made unsuccessful tender offers. The synergy hypothesis implies that any gain from the announcement of the tender offer will be lost if the target firm does not experience a change in control. The information hypothesis implies that the gain at announcement of the tender offer will remain regardless of the success of this or subsequent offers. The results showed that those firms that were not taken over lost all of the gain from the tender offer announcement within two years. Target firms that received a subsequent successful tender offer maintained the gain and even experienced another gain at the announcement of the new offer. The unsuccessful bidders experienced no significant abnormal return if the target firm was not acquired by another firm, but the unsuccessful bidders had a significant negative return if the target was acquired by another firm. These results are consistent with the synergy hypothesis and not the information hypothesis.

Pound [1988] also found evidence inconsistent with the information hypothesis. He examined whether analysts' earnings forecasts of target stand-alone earnings shifted systematically in reaction to tender offer announcements and management resistance to those tender offer announcements. A systematic shift would imply that tender offers or managerial resistance provide some information about the stand-alone value of the target firm. Finding a lack of systematic revision of annual earnings forecasts would provide further support for the synergy

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hypothesis. To test for a revision associated with the tender offer announcement, Pound compared the IBES consensus forecast in the month before the announcement to the forecast made in the month after the bid. He found that there were no systematic revisions in the earnings forecasts for the target firms. He reported that for 43 percent of the target firms the forecast was unchanged. For the IBES universe only 19 percent of the forecasts were unchanged. These results imply that the takeover announcement does not provide information about the future stand-alone earnings of the target firm and provides further evidence that synergy, not information, drives the share price reaction.

When the subset of target firms that experienced management resistance to the tender offer was examined, Pound found a significant negative revision in the earnings forecast when comparing the forecast before the bid to the forecast after resolution of the bid. This revision was a seven to ten percent decrease in the stand-alone earnings forecast for the target. This implies that resistance not only reduces the likelihood of completion of the takeover but also reduces the expected stand-alone value of the firm.

Pound also examined the forecast accuracy for those firms that remained independent relative to the accuracy for the IBES universe. He found that the forecasts for the firms involved in the tender offers were slightly more accurate than the IBES universe forecasts. Thus, takeover contests do not seem to create uncertainty about the target firm's future earnings performance. Therefore, documenting increased information content of earnings announcements should not be a result of the market having a more difficult time forming earnings expectations for firms involved in a takeover.

Both Bradley, Desai and Kim [1983] and Pound [1988] provide support for the synergy hypothesis while failing to find support for the information hypothesis. This finding has important implications for the research proposed in this paper. If synergy explains the gains at the date of the takeover announcement, then the earnings of the combined firm will exceed the sum of the earnings of the two firms separately. This presence of a synergistic effect on earnings may make the information content of reported stand-alone firm earnings of either the target or the bidder lower because it is not providing as clear a signal about the future cash flows of the combined firm. Thus, the presence of synergy is important for creating a situation where a differential reaction to stand-alone earnings announcements can occur.

The finding by Pound [1988] that the takeover announcement does not contain information about stand-alone target earnings is important for interpreting the results of this study. If the takeover announcements include information that enables the market to better estimate earnings, the information content of earnings once they are released may be lower than usual because the market would be able to make a more accurate earnings expectation. Pound provides evidence that takeover announcements do not provide information useful for estimating earnings since no systematic forecast revisions for targets were detected. Therefore, earnings announcements during a takeover should not be more readily anticipated by the market, and a lower reaction to them may be attributable to the firm being involved in a takeover not that the takeover announcements enabled the market to infer stand-alone earnings before earnings are actually announced.

2.4 Market Assessment of Probability of Completion

Mikkelson and Ruback [1985] investigated the valuation effect of a five percent or larger purchase of common stock on both the stock issuer and purchaser from the date of purchase to the eventual outcome of the investment (takeover of the issuer, repurchase of the shares by the issuer, or sale of the shares in the open market). The return at the announcement of the investment was significantly positive for both parties with the largest reactions occurring if the reason for investment was disclosed as an acquisition. They examined a total valuation measure consisting of the two-day return at the initial announcement, two-day return around all intermediate announcements, and two-day return to the reported outcome of the investment. The issuer firms experienced significant positive total returns regardless of the outcome, the largest return being associated with a completed acquisition. The total return for stock buyers was significantly positive for repurchases or sales and insignificant for acquisitions. The pattern of the intermediate event returns showed that they reflect resolution of uncertainty about the outcome of the investment.

Asquith [1983] examined the returns to the announcement of a merger, to the period between announcement and conclusion, to the announcement of the conclusion, and during the post-outcome period. By examining the returns between announcement and completion of the merger, the market's reaction to changes in the probability of the outcome can be examined. During this time period, successful targets experienced significant positive returns while unsuccessful targets and bidders experienced significant negative returns. Successful bidders did not experience any significant return. These results imply that the market reacts to the

changing probabilities of success or failure of the bid. At the completion announcement, bidders do not experience any significant abnormal return. Successful targets experience a significant positive return while unsuccessful targets experience a significant negative return. These results indicate that the actual merger provides information to target shareholders. The uncertainty is not completely resolved until the merger is completed or until the last bidder gives up. However, the results also seem to imply that this lack of certainty does not exist for the bidders. The probability of success or lack thereof seems to reach one sooner for the bidding firm than for the target. This perplexing result may be attributable to relative firm size (the importance of which will be discussed below).

These papers together indicate that there is some probability of success attached by the market to the announcement of a takeover. However, this probability does not seem to reach certainty until the actual completion of the merger. Between the announcement and the completion, the market does seem to be able to properly determine from news items whether the probability of success is rising or falling. These results are important to the investigation of differential information content of earnings during a takeover. No difference would be expected if no probability of success was assigned until the takeover was completed. However, as the probability of success of the takeover increases, the probability that future cash flows will be derived from the target firm alone (or from the bidding firm alone) decreases. Thus, the usefulness of stand-alone earnings for assessing the amount and timing of future cash flows also declines. Since these studies show that the probability of success rises toward one during the period between

announcement and completion for successful bids, the importance of earnings in predicting future cash flows may vary during this same time period. Thus, it will be important to develop some measure to proxy for probability of success of the takeover and control for that probability in the tests for differences in information content of earnings.

2.5 Post Completion Cash Flows

Healy, Palepu, and Ruback [1990] examined the post-acquisition operating performance of merged firms, the source of the merger-induced changes in cash flow performance, and the relationship between merger premium and post-acquisition cash flows. Operating performance was measured by pre-tax operating cash flows, and the merger premium was measured by the return from five days before the announcement of the merger through the day that the target is delisted from the exchange. Their results showed that the industry adjusted cash flow return on assets significantly increased over the first three years after the merger. Thus, corporate performance does seem to improve after a merger, which seems to be consistent with the synergy hypothesis. They also found that the merger premium is significantly correlated with the post-merger cash flow.

The finding of a relationship between the merger premium and post-merger cash flows indicates that market participants are reacting to expected post-merger cash flows to assess current firm value. This may suggest that stand-alone earnings are not as relevant in firm valuation during a merger since valuation will be tied to the future cash flows of the combined firm. Thus, this finding provides some support for finding a differential reaction to earnings announcements made during a takeover.

Cho and Jung [1991] examined annual earnings announcement by acquiring firms before and after a merger to determine if a differential information content is detected. They contend that information content of earnings is a positive function of variance of firm cash flows and a decreasing function of noise in reported earnings. The sample of merger firms was grouped into variance increasing and variance decreasing mergers. The noise influence of the merger was not considered. They showed that the information content of the annual earnings after the merger was significantly lower than before the merger for the variance decreasing mergers. The variance increasing mergers were associated with no significant change in information content of annual earnings.

These results imply that post-merger cash flows do differ in character from pre-merger cash flows. Because of these differences, shareholders in the bidder firm will need to consider the character of post-transaction cash flows in forming expectations about future dividends to be paid by the bidder. Bidder firm earnings announcements made before the takeover is completed may be associated with reduced information content because the variance of future cash flows will change if the takeover is successful. Thus, the results of Cho and Jung have implications for detecting differential information content of earnings announced before the takeover is completed.

2.6 Other Influential Factors

Michel and Shaked [1988] compared the returns to targets in single and multiple bidder acquisitions. Their results showed that the initial reaction to the first of multiple bidders did not differ from the initial reaction to a single bidder; but by 151 days after the first announcement, multiple bidder targets significantly outperformed single bidder targets.

The authors attributed the increased return for multiple bidder targets to the ability of a subsequent bid to reduce the uncertainty about being acquired. Bradley, Desai, and Kim [1988] also examined the influence of multiple bidders on the return of both targets and bidders. They also found that target returns are significantly greater when multiple bidders exist. For bidders, only single bidders or a successful first bidder of a multiple bidder group experienced significant positive returns. Later bidders in a multiple bidder group experienced negative returns.

These results indicate that the presence of multiple bidders influences the gains at the announcement of the acquisition. The market perceived probability of success may also be influenced by the number of bidders. The importance of perceived probability of success to this study has already been discussed. It would therefore seem to be important to control for whether one or more bidders exist.

Bradley, Desai, and Kim [1988] also investigated the effect of changes in the environment (tender offer process) on the magnitude and distribution of the synergistic gains. They used time period as a proxy for different tender offer environments. Regardless of the time period examined, the total synergistic gain was found to be seven to eight percent. The division of this gain, however, has changed over time. Before the passage of the Williams Amendment[2], both the target and bidder

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[2] The Williams Amendment was passed in July 1968 and brought cash tender offers under the purview of the SEC. "Provisions of the Williams Amendment require bidding firms to provide detailed information about how the tender offer will be financed and what changes in the operations of the target will be made if the offer is successful. The regulations also specify a minimum number of days that a tender offer must remain open and a minimum number of days before the target shares can be purchased. Target stockholders who have tendered their shares to one bidding firm are allowed to withdraw their shares if a higher-valued offer is made by another firm before the required number of days for the initial offer has

had significant positive returns. After passage of the amendment, only target shareholders have experienced significant gains. In the most recent time period analyzed, 1981-1984, the bidding firm shareholders had a significant loss. Thus, the portion of the synergistic gain being captured by target shareholders has been increasing over time. This result seems to imply that it is important to examine a time period where the takeover environment is held relatively stable.

Asquith, Bruner, and Mullins [1983] established the importance of relative size of the target to the bidder in examining returns to the acquirer. They measured relative size as the ratio of market value of the target to market value of the bidder. When their sample was partitioned on the relative size measure, the return for the acquirer when the target was at least ten percent of the bidder was significantly greater than when the target was relatively smaller.

This result shows the sensitivity of bidding firm reaction to the relative size of the target firm. The relative size of the target would also seem to be important in the examination of differential earnings reactions. If the target is small relative to the bidder, combined firm earnings will not differ greatly from the stand-alone earnings of the bidder. Thus, the bidding firm shareholders may not find stand-alone earnings to have reduced information content with respect to forming expectations about the future combined firm cash flows. However, as the relative size of the target increases, the ability of bidder stand-alone earnings to provide a signal about combined firm earnings may decrease.

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elapsed. Furthermore, if an outstanding offer is revised upward, then all target stockholders, even those who tendered their shares at the previous terms, must receive the higher price" (Bradley, Desai, and Kim [1988] p. 14).

The relative size of the target should be controlled for when analyzing the information content of earnings during a takeover.

When information asymmetries exist, Miller and Rock [1985] have shown theoretically that investors can deduce earnings from the investment/financing/dividend decision of corporations. The sources/uses constraint faced by a firm is that earnings plus outside financing (debt and equity issues) must equal investment and dividends. When investment and dividends are held at a constant level, the announcement by a firm to issue new stock or bonds provides a signal to the market that management expects future earnings to be lower. Asquith and Mullins [1986] have provided empirical support for this theoretical model. They have documented a decline in share price in response to corporate equity issues. Their analysis confirmed that this decline was consistent with the signalling hypothesis, managers are issuing stock because they have reason to believe that the stock is currently overvalued.

The theoretical model and empirical results imply that the form of payment used to finance a takeover may provide a signal about the future earnings of the acquirer. Rational managers will attempt to obtain the target by the least expensive means available. If the current share price seems too high to bidder management, they might finance the acquisition with stock. This would send a signal to the market that the bidder's future earnings capacity is not adequate to support the current share price. If cash is selected as the means of payment, the signal sent to the market would be that future earnings are expected to be higher (current share price is undervalued). These signalling aspects may lead to a lower information content of earnings because the takeover announcement, by disclosing means of payment, may provide more information

about the acquirer's stand-alone earnings than would usually exist before the earnings announcement. Therefore, the form of payment will be controlled for in analyzing the information content of earnings announcements during a merger.

Travlos [1987] documented that the form of payment chosen by the bidder influences the takeover announcement reaction. He models the price reaction to the announcement as being a function of the future combined cash flows of the target and acquirer weighted by the probability of success of the takeover plus the information effect of the disclosure of the form of payment. The results showed that bidders using common stock experienced a significant negative return and those using cash experienced no abnormal returns. The type of transaction (tender offer or merger) did not influence the level of abnormal returns. Thus, the form of payment seems more important than the type of transaction in explaining the differential returns to bidders. This provides more evidence for the need to control for form of payment in the analysis in this paper.

Wansley, Lane, and Yang [1983] examined the returns to target firms while controlling for the type of payment (cash or stock) and the nature of the merger (conglomerate, vertical, or horizontal). They found that the nature of the merger did not influence the abnormal return. However, the return to targets receiving cash was significantly higher than the return to targets receiving stock.

Huang and Walkling [1987] also examined the issue of whether form of payment influences the return to target shareholders. They also examined the effect of type of transaction and managerial resistance. Cash offers may be associated with a higher return to compensate the target shareholders for the capital gains tax liability they will incur.

Resistance may increase the return by raising the bid or may decrease the return because it discourages a truly beneficial offer. The results showed that tender offers resulted in higher returns to target shareholders than mergers. Cash payment provided higher returns than stock offers. When type of transaction and form of payment were considered together, cash payment provided significantly higher returns than stock but no difference was detected between mergers and tender offers. No significant difference existed between the returns to target shareholders in friendly versus resisted takeovers.

These studies show the importance of controlling for the type of payment when takeover announcement reactions are considered. The importance of controlling for type of payment in this study will be examined more closely in the theory section of this paper. Since the payment medium may influence the usefulness of stand-alone earnings of either the target or the bidder in predicting the amount and timing of future cash flows, it will be controlled for in the tests used in this study.

There seems to be a lack of consensus on the effect of managerial resistance in the literature. Huang and Walkling [1987] found no difference in the target reaction to resisted and friendly takeovers. However, Mikkelson and Ruback [1985] found a significant negative reaction to an announcement of management resistance after a five percent ownership stake had been obtained. As discussed above, Pound [1988] detected a significant downward revision by analysts in future earnings when managers resist tender offers.

Baron [1983] developed a theoretically optimal resistance strategy. In his model, target management may resist a takeover attempt for three

reasons:

1. The offer is less than the true firm value;

2. The offer is rejected in the hopes that a higher offer will be made;

3. The offer is rejected because managers do not want to lose control.

Resistance for either of the first two reasons can lead to a higher offer by the same or a subsequent bidder. The third type of resistance, theoretically, results in lower bids or no successful bid at all.

The differing empirical results may be a function of the samples in the various studies containing differential proportions of the three types of resistance. The underlying reason for management resistance cannot be readily determined by the observer. A manager resisting because he/she does not want to lose control is just as likely to claim that the bid is not close enough to the firm's true value as a manager who is resisting for other reasons.

Managerial resistance, however, may be related to managerial earnings manipulation if managers perceive that reported earnings will influence the bidders' terms or decision. DeAngelo [1988] documented that incumbent managers exercise their accounting discretion to improve earnings during a proxy fight. This result indicates that managers believe that earnings manipulation may influence the outcome of the proxy contest. Therefore, managers that are resisting a takeover may believe that exercising accounting discretion may influence the outcome of a merger or tender offer as well.

Leveraged buyouts are generally organized by managers. Therefore, resistance to them by management is unlikely. However, DeAngelo [1986] argued that in a leveraged buyout situation management has an incentive

to exercise accounting discretion to reduce earnings and thereby reduce the buyout price. Lower reported earnings than expected would imply a lower firm value, reducing the total payment needed to be made in the leveraged buyout. She also explained the importance of earnings to the courts and investment bankers in determining the fairness of the price offered. The results of her tests did not show any manipulation of earnings during the leveraged buyout.

Earnings manipulation, if it exists in a takeover situation, may itself influence the reaction to earnings announcements. When earnings are distorted, they may be less informative because the distortions add noise, making earnings less useful in predicting future cash flows of the firm. Collins and DeAngelo [1990] examined whether earnings announcements released during a proxy contest had a differential market reaction or analyst revision. Reported earnings were shown to be manipulated, more income increasing discretionary accruals than usual were detected for the firms involved in proxy contests. A lower market reaction or analyst revision would imply that these earnings are noisy and less informative. Alternatively, a greater reaction or revision would imply that during a proxy contest earnings announcements are more useful than usual because they help reduce uncertainty. They found that the market reaction to earnings announcements during the contest was greater than the reaction to earnings announced before the proxy contest. Larger analyst forecast revisions were also detected during the proxy contest than before. Thus, earnings released during a proxy contest seem to be more informative than at other periods of time.

Collins and DeAngelo showed that during a proxy contest the uncertainty reducing aspects of an earnings announcement dominate the

garbling effects caused by earnings manipulations. This paper is examining whether earnings announcements released during other types of takeovers have differential amounts of information content to market participants. Since it is unclear whether the Collins and DeAngelo result would hold in other types of takeovers, the possible effect of earnings manipulations reducing the reactions to earnings because earnings are perceived to be garbled should be controlled for.

Hayn [1989] documented that the tax attributes of the target firm are significant in explaining the return to the announcement of the takeover and in explaining the form of the transaction chosen. The United States tax code is constantly changing. These changes may influence the reaction to takeover announcements, the preferred form of transaction, and the desirability of undertaking a takeover. Scholes and Wolfson [1990] examined whether the tax law changes in 1981, 1984, and 1986 had any influence on the amount of merger activity. They concluded that the tax act of 1981 increased the propensity of takeovers while the tax act of 1986 seemed to reduce the amount of takeover activity.

Because changes in the tax laws may influence the information content of earnings announcements during the takeover (as an example, by changing rules on when net operating losses can be used), it seems important to ensure that the results in this paper are not sensitive to the existing tax law. As an attempt to control for the effects of tax law changes, initial analysis will be made on each year separately. Thus, if the tax laws influence the differential reaction, the years when tax changes became effective (or anticipated) should differ from the other years in the analysis.

CHAPTER 3

TARGET FIRM THEORY AND HYPOTHESES

This chapter discusses why a differential market reaction to quarterly earnings announcements of the target firm during a takeover might occur. This analysis is used to develop formal hypotheses specifying the conditions under which differential reactions are expected to be observed. The theoretical development starts with a model that specifies how a share of stock is valued when the firm is expected to be a going concern on a stand-alone basis.

Basic finance theory holds that assets are valued at the present value of future cash flows received from the asset. Therefore, the value of the firm is equal to the discounted expected value of future cash flows. Likewise, investors value a share of stock at the present value of expected future dividends. Collins and Kothari [1989] provide a relationship between expected future dividends and current earnings:

$$E(D_{it+k}) = \theta_{it+k} I_{it} \qquad (1)$$

where

$E(D_{it+k})$ = expected dividends at time t to be received at period t+k;

I_{it} = reported accounting earnings per share in period t for firm i; and

θ_{it+k} = factor relating period t reported earnings to the expected dividend in period t+k.

Given this relationship, the value of a share of stock can be expressed as

$$P_{it} = [\sum_{k=1}^{\infty} \theta_{it+k} \prod_{j=1}^{k} \{1/[1+E(R_{it+j})]\}]I_{it} \qquad (2)$$

where

P_{it} = price of security i at time t; and

$E(R_{it+j})$ = expected rate of return on security i from the end of t+j-1 to the end of t+j.

These equations indicate that investors may use earnings announcements to reassess their expectations about dividends and, therefore, stock prices. Equation 2 shows that investors may use accounting earnings as a proxy for the future cash flows that they will receive from an ongoing firm.

When a firm becomes a target in a takeover attempt, the valuation model for the shares of stock may no longer be as stated in equation 2. The correct model depends upon the form of payment that target shareholders will be receiving and the stage of completion of the takeover.[3] The form of payment is relevant because it determines the source of future cash flows to investors in the target. The stage of completion influences the likelihood that the target will be taken over, and, therefore, determines the weights placed on cash flows from the target and bidding firms. While negotiations are occurring, the source of future cash flows to the investors is uncertain. Once the takeover is complete, the source of cash flows becomes certain. Thus, no one model

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[3] While target shareholders will receive either cash or shares of stock, they do not have to continue holding that position. Those who receive cash may buy shares of the combined firm and those receiving stock may sell those shares and hold cash. Thus, a shareholder can convert between one form of payment and another. The theory in this paper will only consider the type of payment specified in the takeover agreement as it represents the direct claim that a share of target stock is entitled to without further action by shareholders.

is appropriate for valuing stock in the target during a takeover. A group of models is used to consider the conditions that seem to be important in documenting a differential reaction to earnings during a takeover.

When the takeover is complete, investors in the target firm will receive cash flows from the bidding or combined firm. If the terms of the takeover call for the target shareholders to receive a cash payment, the future cash flow to these shareholders will be that payment. Therefore, a model for the price of stock in the target firm when the takeover is certain but before the cash payment is actually received (so that target shares are still trading) is as follows:

$$P_{it} = C_{t+k}/r_{it} \qquad (3)$$

where

C_{t+k} = cash payment made to target shareholders at time t; and

r_{it} = discount rate appropriate for the risk and timing of the cash flow stream.

Income of the target or bidding firm does not appear in this model directly.[4] The investor's only source of future cash flows is the cash payment for their shares. Therefore, in the case of a completed takeover where cash is the form of payment, a lower reaction to the announcement of target firm stand-alone earnings would be expected since these earnings no longer relate to the investor's future expected cash flows from owning the stock.

If, instead of receiving a cash payment, the target shareholders receive shares of stock in the bidding firm, the value of the target

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[4] As discussed earlier, the cash bid is a function of target firm earnings and other factors such as synergy.

shares while they are still trading separately may be expressed as follows:

$$P_{it} = G_i\left[\sum_{k=1}^{\infty} \theta_{ct+k} \prod_{j=1}^{k} \{1/[1 + E(R_{ct+j})]\}\right] E(I_{ct}) \qquad (4)$$

where

G_i = share conversion factor;

$E(I_{ct})$ = expected earnings per share of the combined firm at time t if they existed at time t and $I_{ct} = f(I_{it}, I_{nt}, S_{ct})$, where i indexes the target, n indexes the bidder, and c indexes the combined firm; and

S_{ct} = the period t expectation of the synergy effect (both operating and financial) on the combined firm earnings.

The earnings of the target firm still appear in this model as a component of expected combined firm earnings per share. Expectations of combined firm dividends depend upon target firm earnings, bidding firm earnings, and the synergy that exists when the firms combine. A price reaction may occur to a target stand-alone earnings announcement because of the effect that it would have on the current period expected earnings of the combined firm. However, the reaction may be reduced relative to the reaction that occurred before the firm was involved in a takeover because target firm earnings are no longer the only earnings component used in determining expectations of future dividends for current target firm shareholders.

Asquith, Bruner, and Mullins [1983] point out that target firms are usually much smaller in terms of total assets than the bidder. This would seem to indicate that target earnings may be small relative to the bidding firm earnings. Therefore, the extent of the reduction in the information content of target stand-alone earnings announcement may be a function of relative firm size of the target to the bidder. The presence of

synergistic effects reduces the informativeness of a target's stand alone earnings announcement to these target shareholders even more.[5]

When the takeover is not complete, there is uncertainty concerning whether the firm will be acquired or not. This uncertainty in the outcome of the takeover also creates uncertainty about the source of future cash flows, whether they will come from the target or bidding firm. The share price can then be modeled as a weighted average of the future dividends that would be paid by the target if it remains independent, the future dividends that would be paid by the combined firm if the takeover is completed and the payment is in the form of stock, and the payment to be received if the takeover is complete and the payment is in the form of cash, where the weights are the perceived probability of receiving each cash flow.

If the takeover terms have not been determined, the type of payment may not be certain yet either. Therefore, one possible model to value the target firm share price would be

$$P_{it} = p[C_{t+k}/r_{it}] + qG_i[\sum_{k=1}^{\infty} \theta_{ct+k} \prod_{j=1}^{k} \{1/[1+E(R_{ct+j})]\}] E(I_{ct}) + (1-p-q) [\sum_{k=1}^{\infty} \theta_{it+k} \prod_{j=1}^{k} \{1/1+E(R_{it+j})\}] I_{it} \quad (5)$$

where

p = probability of receiving a cash payment in the takeover and the takeover will be completed;

q = probability of receiving stock in the bidding firm as payment in the takeover and the takeover is completed.

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[5] If a combination of cash and stock is received as payment, the right hand sides of equations 3 and 4 may be added together. Receipt of debt is not explicitly modeled because of its infrequent use as a form of payment.

This model represents the case of one potential bidder. The presence of multiple bidders may increase the likelihood that the takeover will be successful, but the presence of multiple bidders would not seem to change the implications with respect to when target stand-alone earnings would be more or less useful to target shareholders in share price valuation.

The earnings of the target firm appear in the equation for valuing the target firm's stock, but not as directly as in equation 2. If the probability of a successful takeover is small, p and q are small so most of the weight in the model is still on target firm earnings. Thus, target stand-alone earnings may be as informative to investors as before the takeover was announced if they believe the takeover is not likely to be completed. Asquith [1983] showed that the market is able to perceive the probability of success; and that in completed mergers, the probability of success increases, becoming one only at the time of the actual completion. This finding implies that as the takeover moves nearer to completion, the weight on target firm earnings in this valuation model decreases, making stand-alone earnings less useful in determining share value.

Collins and DeAngelo [1990] found that earnings announcements during a proxy contest reduce uncertainty and are more informative than usual. When the takeovers studied here are at early stages of completion, it is possible that target stand-alone earnings may be more useful than prior to becoming involved in the takeover if the earnings announcement can reduce the uncertainty about completion. This may well be the case in leveraged buyouts where the funds for the buyout are to come from debt backed by target assets. Higher than expected earnings may make financing easier to obtain, and, therefore, the takeover more likely to be successful. It may also be the case for mergers and tender offers if

target earnings announcements provide information about the desirability of completing the takeover or about the acceptability of the terms of a takeover bid.[6]

From the above analysis, it seems that the stage of completion of the takeover may be the most important condition in documenting a differential reaction to earnings. Before a takeover announcement is made, target firm share price is a function of target firm earnings. When a takeover is announced, the relationship between share price and target firm earnings becomes less direct immediately. However, it would seem that a critical point in the takeover process is reached where the weight (probability of not being successful) on target firm earnings becomes small enough that the reaction to target firm quarterly earnings announcements will be lower than before the takeover announcement. Neither the models nor the literature provide a clear answer to the question concerning the point in the takeover process when this differential reaction should first be observed. The models imply that when the takeover is completed and target shares stop trading the reaction to target earnings should be lower, but this is an obvious result. The probability of success may reach the critical stage before actual completion. Thus, the stage at which a differential reaction is first observed is an empirical issue. However, at some stage between announcement and completion, a differential reaction to target earnings announcements should occur. In late stages of the takeover process, a reduced reaction to earnings is expected as the probability that future cash flows will be coming from the target firm becomes lower.

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[6] See Wilke and Smith [1991] as an example of how reported target earnings can influence the amount of the takeover bid.

H1: As the probability of success of the takeover increases, the market reaction to target stand-alone earnings will decrease.

The type of payment being received by the target shareholders was also shown to influence the valuation models and, therefore, may influence the market reaction to quarterly earnings announcements. When the takeover has progressed far enough that the terms of the transaction (type and amount of payment) are known, the source of future cash flows if the takeover is successful will be known. If the payment is to be in the form of cash, target earnings are only directly relevant to future cash flows of the investors if the takeover attempt fails. The weight on target earnings is higher if stock is to be used as the form of payment but is still reduced from what it was before the takeover began. Therefore, transactions involving cash payment may result in lower information content of target stand-alone earnings than transactions involving stock payment.

H2: The market reaction to target stand-alone earnings will be lower when payment is in the form of cash than when payment is in the form of stock.

When the target shareholders are to receive shares in the surviving firm as payment, their future cash flows will come from the combined firm. As mentioned above, target firm earnings will remain relevant, but the extent of the relevance of target earnings in assessing the cash flows of the combined firm will depend upon the relative size of the target to the bidder. Asquith, Bruner, and Mullins [1983] showed that the smaller the target relative to the bidder, the smaller the bidder reaction to takeover announcements. This reduced reaction occurs because the target's contribution to combined firm cash flows is smaller when the target is small relative to the bidder. Therefore, relative size may be an important factor in the differential reaction of target share price to

target earnings announcements. The reaction for relatively small targets may be lower than for targets that are larger relative to the bidder.

H3: When the form of payment is stock, the market reaction to target stand-alone earnings will be lower the smaller the target is relative to the bidder.

If reported earnings during a takeover do influence the size of the takeover bid, managers have an incentive to use discretionary accruals to manipulate earnings in an effort to influence the size of the bid. To the extent that earnings management occurs, reported earnings will be a noisy signal about future cash flows from the target firm. Thus, the reaction to these earnings announcements may be reduced because they are noisy. Three proxies are used to determine those situations where earnings management are more likely to occur.

Managers that are resisting the takeover are usually trying to influence the outcome or the bid. They may perceive earnings management as a means to accomplish this. Thus, resistance by target management may be used as a proxy for earnings management. Comparing the results between the takeovers that are resisted with those that are not will then provide evidence on whether resistance has a differential effect on the reaction to earnings announcements.

Using resistance as the only proxy would result in leveraged buyouts always being in the no resistance group. DeAngelo [1986] provided an argument for why manipulations should be expected in leveraged buyouts. Huang and Walkling [1987] also show that tender offers are more likely to be resisted than mergers. Because mergers involve direct negotiations between the boards of directors of the target and bidder and the bidder's auditors sometimes audit the target firm (Chow, Kramer, and Wallace [1988]), mergers seem unlikely candidates for manipulation. Friendly

tender offers also seem unlikely candidates for similar reasons. However, both hostile tender offers and leveraged buyouts have greater incentives for earnings manipulations to exist. Thus, partitioning the sample on form of transaction represents another proxy for earnings management.

A third proxy is managerial share ownership. As more of the manager's wealth is tied to the target firm, the greater is his/her incentive to take all steps possible to maximize the bid in mergers or tender offers. Therefore, larger percentage ownership by the top management of the target would provide a stronger incentive for earnings management. Thus, partitioning the sample based on management share ownership will provide an investigation of whether the reaction to earnings differs with management ownership.

Because of the noise resulting from earnings management, the reaction to earnings announcements for targets where a greater incentive for earnings management exists may be lower than for those firms where incentives are lower. Thus, lower market reactions may be detected in the case of takeovers with managerial resistance relative to those with no resistance, hostile tender offers and leveraged buyouts relative to friendly tender offers and mergers, and among firms where managers have a large ownership stake in the target relative to firms in which they do not.

H4: The market reaction to target stand-alone earnings will be lower when indicators of earnings management are present relative to when the indicators are absent.

CHAPTER 4

DATA

The sample of acquired and acquiring firms was obtained from Mergers and Acquisitions. This sample consists of all New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and Nasdaq (OTC) firms that were totally acquired in takeovers that were completed between 1982-1986. Only acquisitions of a complete firm were considered to avoid complications resulting from the presence of minority interests[7].

The Wall Street Journal Index (WSJI) was used to find the first announcement related to the completed takeover. To be included in the sample, the firm must have no other takeover related news for one year prior to the first takeover announcement. However, this first announcement may be a bid by a firm other than the one that eventually became the successful bidder. The quarterly earnings announcement date prior to the first takeover announcement and the quarterly earnings announcement date after the first takeover announcement were also obtained from the WSJI. If the takeover is completed before the target issues a stand-alone earnings announcement after the initial takeover announcement, the firm was not included in the study because it lacks an earnings announcement after the first takeover announcement. The WSJI was

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[7] The transactions included were those identified in Mergers and Acquisitions as merged, acquired, or acquired remaining interest where the initial interest is given as less than 20% so that the relationship between the target and bidder is minimal before the takeover announcement.

used to collect this data because of its wide coverage of news items for a large number of firms.

The Daily Stock Price Record was used to determine the market value of equity of the sample firms at December 31 of the year prior to the first takeover announcement. These size measures will be used in tests that examine the effect of relative size of the target to the bidder on the reaction to earnings announcements. Stock return information was obtained from the CRSP tape.

Information on percentage stock ownership by managers and directors was obtained from the proxy statement that preceded the first takeover announcement. The total percentage stock ownership for managers and directors as a group was used because both groups are involved in takeover negotiations and have incentives to obtain the best bid possible.

Two types of earnings expectations models were used in the directional tests proposed in the methodology chapter (section 5.2). Brown and Rozeff [1978] have shown that analyst earnings forecasts are superior to time series expectations models. One market expectations model used Value Line forecasts. Since a significant portion of the target firms are not followed by Value Line, a simple seasonal random walk without drift expectations model was also used. The earnings for the same quarter in the previous year was obtained from the WSJI. A seasonal random walk without drift was chosen for data collection purposes because a significant portion of the target firms did not have a series of earnings data available on a computer readable data base. Therefore, a simple time-series model was used so that a long series of earnings did not have to be hand collected.

CHAPTER 5

METHODOLOGY

This chapter describes the methodology used to test the hypotheses developed in chapter 3. This paper uses both nondirectional and directional approaches to test the information content of earnings announcements made during the takeover process relative to announcements made prior to the takeover announcement.

The market model parameters were estimated using days -220 to -121,[8] where day zero is defined as the day that the earnings announcement appeared in the WSJI. A separate market model was estimated for the earnings announcement before the first takeover announcement and the earnings announcement after the first takeover announcement. The model is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \qquad (6)$$

where

R_{it} = return for firm i on day t;

R_{mt} = return for the value weighted market portfolio on day t;

ϵ_{it} = error residual for firm i on day t;

α_i, β_i = market model parameters for firm i.

A time line to explain event time for this study is as follows:

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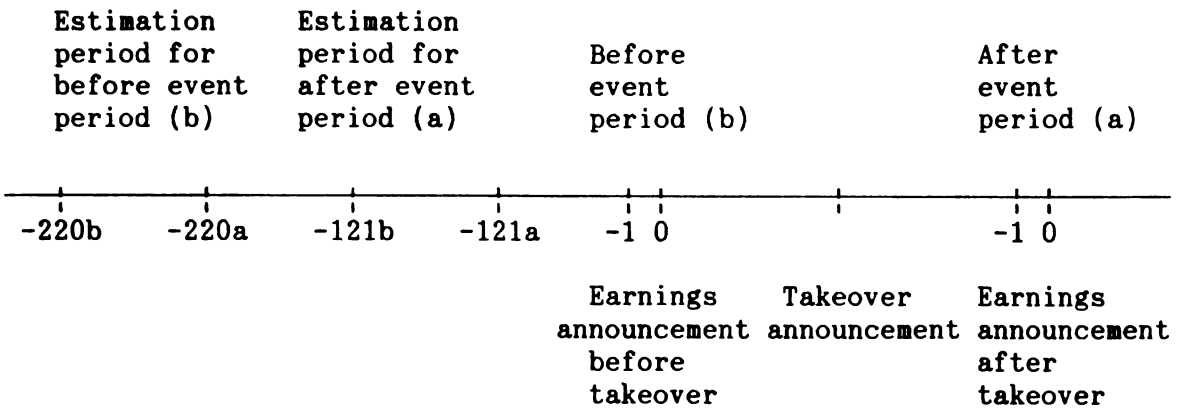
[8] At least 75 days of data were required in the estimation period.



where day zero represents the earnings announcement date for either the earnings announcement before the takeover announcement or the earnings announcement after the takeover announcement.

Abnormal returns were calculated for each firm during the event period as

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}. \qquad (7)$$

The abnormal returns are cumulated over the event period[9] as follows:

$$CAR_{i-1,0} = AR_{i-1} + AR_{i0}. \qquad (8)$$

5.1 Nondirectional Approach

The information content of the earnings announcements was tested using methodology developed by Beaver [1968] to compare the variance during the event period to the variance during the estimation period. As described in the literature review, when an announcement has information content, the variance during the event period will be higher than during the estimation period.

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[9] Morse [1981] examined the price reaction to earnings announced in the WSJ, finding significant price reactions on days -1 and 0 relative to the earnings announcement. Day -1 is significant because earnings announced before the close of trading on day -1 affect the day -1 return but appear in the next day's paper. His results also show that the market quickly incorporates the earnings information into stock price since later days were not associated with significant price reactions. Therefore, this study will use a two-day event period.

The variance during the event period was measured by the square of the CAR:

$$SAR_i = (CAR_{i-1,0})^2. \quad (9)$$

The U-statistic was computed as

$$U_i = SAR_i/SSE_i \quad (10)$$

where

SSE_i = two times the squared standard error of the market model regression over the estimation period for security i (the variance during the estimation period).

The U-statistic was used to measure the information content of the earnings announcements. The average value of the U-statistic is one. Therefore, a U-statistic of one implies that an announcement has average information content.

The purpose of this paper is to compare the information content of earnings announcements made during takeover negotiations to the information content of earnings announcements made when the firm is not involved in a takeover to determine if the information content differs systematically. Therefore, the statistical tests employed compared the U-statistic for the takeover firms' earnings announcements before the first takeover announcement (UTB) to the U-statistic for the takeover firms' earnings announcements after the first takeover announcement (UTA). A Wilcoxon signed rank test was used to compare UTB to UTA to determine if they come from the same distribution.

A nonparametric test was used instead of a parametric test like the difference of means because Patell [1976] has shown that theoretically the U-statistic has an F-distribution. Burgstahler and Noreen [1986] also have shown that the U-statistic is empirically close to its theoretical distribution. The difference of means test assumes a normal distribution.

In a large sample, the U-statistic may converge to a normal distribution, but the difference in means test also requires the variance of the two samples to be equal. Since this equality does not hold, a nonparametric test will be used. A binomial test was also used to determine if the number of U-statistics greater than one is significantly different between the earnings announcements before and after the first takeover announcement for the takeover firms.

The Wilcoxon signed rank test was used to first compare UTA and UTB for the takeover firms without partitioning the sample on any of the factors discussed in section 3. The test was then repeated to examine for differences in the information content of takeover firm earnings announcements made before and after the firm became involved in a takeover while partitioning on stage of completion. This variable is a proxy for the market's perception of the probability of success of the takeover. The following stages of completion were used to partition the sample:

Stage Code	Stage in the Process
0	Bidding with one potential bidder, but the terms of the transaction (amount and type of payment) are not settled.
1	Bidding with multiple potential bidders, but the terms of the transaction not settled.
2	Terms of the takeover have been established, but the board of directors has not approved the terms in a merger, no announcement of shares being tendered has been made in a tender offer, or financing has not been obtained in a leveraged buyout.
3	The board of directors has approved the terms in a merger, an announcement that shares are being tendered for a tender offer, or an announcement that financing has been obtained for a leveraged buyout.

4 Shareholders have voted to accept the merger, more than ninety percent of the outstanding shares have been tendered in a tender offer, or the leveraged buyout has been completed.

Because the market is able to form accurate expectations about the success or failure of a takeover bid (Asquith [1983]), these stages should represent an increasing probability of success of the takeover as events move from stage zero to stage four. This test should determine at what stage a differential earnings reaction occurs between the takeover firm earnings announcements, that is at what stage does the probability of success become large enough for investors to begin focusing less on stand-alone earnings of the takeover firm.

One of the research questions addressed by this study is to determine the conditions necessary for a differential reaction to earnings announcements to be documented. The exact stage of completion where this differential reaction will first be detected is not known. Hypothesis 1 will be supported if UTA is shown to be significantly lower than UTB in stages two, three, or four.

To determine if the differential reaction is influenced by the type of payment, stages two through four (where the type of payment is known) were subpartitioned on the type of payment being received by the target shareholders. The firms were partitioned into cash, stock, debt, and combinations. The difference between the UTA and UTB (UTA - UTB) was compared across each type of financing within each stage of completion using the Wilcoxon sum rank test. Because the level of U-statistics varies across firms of different sizes and industries (Atiase [1985] and Bhushan [1989]), some control is necessary for the usual level of the U-statistic for the firm. By using the difference between UTA and UTB, a firm acts as its own control, where UTB represents the expected level of

the U-statistic for that firm. Thus, the test compares the difference in the U-statistic between firms receiving different types of payment to determine if the level of differential reaction varies in relation to the type of payment received. If UTA - UTB is shown to be lower for firms receiving cash relative to those receiving stock, H2 will be supported.

H3 indicates that the reaction to stand-alone earnings when stock is used as the form of payment may differ depending upon the relative size of the target to the bidding firm. Thus, for those targets receiving stock as payment, the sample was partitioned on the relative size of the target to bidder where relative size will be measured as follows:

$$\frac{\text{Market value of common equity for target}}{\text{Market value of common equity for bidder}}$$

with market value being measured at December 31 of the year before the first takeover announcement for the target firm. The firms were put into two groups, within stage of completion, based upon whether the relative size measure is less than ten percent or ten percent and greater. This relative size partition is consistent with the results of Asquith, Bruner, and Mullins [1983]. Other partitions were also examined to investigate the sensitivity of the results to the relative size partition used. The Wilcoxon sum rank test was used to determine if UTA - UTB differs across the relative size partition. A finding that the firms in the relatively small portfolio have a smaller difference would support H3.

Three proxies were used to test H4. One of the proxies is form of transaction. The stage of completion test was subpartitioned on the form of transaction: merger and friendly tender offer or hostile tender offer and leveraged buyout. The UTA - UTB values were compared across each form of transaction within each stage of completion to determine if the differential reaction differs across the type of transaction. If hostile

tender offers and leveraged buyouts have lower differences, then H4 will be supported.

Management resistance was also used as a proxy for earnings management. Pound [1988] showed that analysts revise earnings forecasts when tender offers are resisted. This may suggest that the earnings reaction may differ between those transactions that are and are not resisted because the act of resistance may provide some type of information to the market about future earnings. Thus, the stage of completion test was subpartitioned on whether the takeover was resisted by target management. A takeover was classified as resisted if a news announcement in the WSJI describes management or the board of directors as rejecting or opposing a bid or recommending shareholders not tender shares and the announcement was not rescinded by a subsequent one where management supports the takeover. The difference in U-statistics (UTA - UTB) was compared across the groups receiving management resistance and not receiving resistance within each stage of completion. If the Wilcoxon sum rank test shows that the resistance group is lower, H4 will be supported with this proxy.

The third proxy used was the percentage of voting stock owned by all managers and directors. It was argued that large percentage ownership gives a greater incentive for managers to manipulate earnings. The sample of target firms was divided into two groups within each stage of completion based upon management ownership percentage. All those firms where managers and directors own twenty percent and over of the stock were considered high ownership. Firms with less than twenty percent of the stock held by managers and directors were in the low ownership group. (Other cutoffs were also examined to determine sensitivity of the results

to the percentage ownership value used). UTA - UTB was compared across the two groups within each stage of completion, using the Wilcoxon sum rank test. If the large ownership group has lower differences, H4 will be supported.

A combination of the resistance and management share ownership proxies was also considered. In the instance where management share ownership is high and the managers resist, the takeover seems an especially likely prospect for earnings management. Since the presence of earnings management is hypothesized as influencing the differential reaction, the sample was partitioned with one group consisting of those firms in both the management resistance and high percentage ownership categories and all other firms in the other group. The difference in U-statistics between these two groups was compared with the Wilcoxon sum rank test.

Managers may be able to manipulate interim earnings more easily than fourth quarter earnings because of the audit process. Therefore, the three earnings management proxy tests were repeated examining only those firms where the earnings announcement after the first takeover announcement is for an interim quarter.

The binomial test was performed on the sample as a whole and partitions based on stage of completion. The Wilcoxon tests described above along with the binomial test were performed for each year of the study separately to control for potential tax effects and for all years combined. All Wilcoxon tests were performed on the full sample of takeover firms and on the subsample of takeover firms that have no contemporaneous confounding events at either earnings announcement.[10]

UTB and UTA may differ in magnitude from one another for reasons other than the firm being involved in a takeover. To control for this possibility, regression analysis was used to determine if other news announced by the takeover firm influences the level of the difference in the U-statistic. All news announcements made by the takeover firm (other than takeover related news that did not involve regulatory agency actions and constant dividends) between the earnings announcement before the first takeover announcement and the earnings announcement after the first takeover announcement were classified into one of fifteen categories. The following equation was estimated to determine if any of these types of announcements significantly influence the change in the level of the U-statistic:

$$(UTA_i - UTB_i) = \beta_0 + \beta_1 DEBT_i + \beta_2 EQUITY_i + \beta_3 DIV_i + \beta_4 STDIV_i + \beta_5 ACQDIV_i + \beta_6 PROD_i + \beta_7 REG_i + \beta_8 SHRH_i + \beta_9 LIT_i + \beta_{10} LABOR_i + \beta_{11} EARN_i + \beta_{12} OFCDIR_i + \beta_{13} OPER_i + \beta_{14} RATE_i + \beta_{15} STMKT_i + \epsilon_i \quad (11)$$

where

DEBT = 1 if debt was issued or retired, 0 otherwise;

EQUITY = 1 if stock was issued or repurchased, 0 otherwise;

DIV = 1 if the dividend was changed, 0 otherwise;

STDIV = 1 if a stock split, stock dividend, or extra dividend was announced, 0 otherwise;

ACQDIV = 1 if the firm acquired or divested another firm or unit, 0 otherwise;

PROD = 1 if product related news was announced, 0 otherwise;

REG = 1 if justice department or other regulatory agency action is taken with respect to the takeover, 0 otherwise;

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[10] Contemporaneous confounding events are defined as any news items in the WSJI within three days of the earnings announcement.

SHRH = 1 if shareholders of either takeover firm file an action because of the takeover, 0 otherwise;

LIT = 1 if the firm is involved in any litigation not related to the takeover, 0 otherwise;

LABOR = 1 if labor related news is announced, 0 otherwise;

EARN = 1 if an earnings forecast or earnings revision is announced, 0 otherwise;

OFCDIR = 1 if a change in officers or directors is announced, 0 otherwise;

OPER = 1 if operations related news is announced, 0 otherwise;

RATE = 1 if bond rating agencies take action, 0 otherwise;

STMKT = 1 if changes in investment in the firm are announced, option trading news, or stock market exchange changes, 0 otherwise.

The tests described above were repeated eliminating those firms with any types of news announcement that were shown to significantly influence the difference in U-statistics. This allows for a determination of whether other events are responsible for any observed changes in the reaction to earnings announcements made during a takeover.

A difference in the level of unexpected earnings may influence the level of the U-statistic. Therefore, random walk unexpected earnings[11] were compared between the earnings announcement before relative to the earnings announcement after the first takeover announcement to determine if they are significantly different.

5.2 Directional Approach

The hypotheses were also tested using a directional model. For a differential reaction to earnings to be documented, the coefficient on

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[11] Unexpected earnings were computed as the earnings per share announced in the WSJI (at time t) less the earnings per share announced in the WSJI for the same quarter in the year before (at time t-4).

unexpected earnings in a regression of unexpected earnings on announcement period returns should differ between the unexpected earnings measure before and after the first takeover announcement. The model that was estimated to test for this differential reaction to earnings announced during a takeover is

$$CAR_{i-1,0} = \beta_0 + \beta_1 A_{it} + \beta_2 UE_{it}/P_i + \beta_3 A_{it} UE_{it}/P_i + \epsilon_{it} \qquad (12)$$

where

UE_{it} = the difference between actual and expected earnings for quarter t for firm i;

A_{it} = indicator dummy which equals zero if the earnings announcement occurred before the first takeover announcement and one if the earnings announcement occurs after the first takeover announcement;

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement.

Brown and Rozeff [1978] provide evidence that analysts' earnings forecasts are superior to time-series forecasts. Thus, using an unexpected earnings proxy based on analysts forecasts would be preferable. However, because target firms tend to be small, analyst forecasts for part of the takeover sample are not available. Therefore, both an analyst forecast and a time-series unexpected earnings model were used.

The analyst forecast model used Value Line earnings forecasts for that subset of the sample of takeover firms for which forecasts are available. With this model, unexpected earnings were calculated as follows:

$$UE_{it} = EPS_{it} - VLFC_{it} \qquad (13)$$

where

EPS_{it} = actual earnings per share for quarter t reported by Value Line for firm i; and

$VLFC_{it}$ = the most recent Value Line forecast for quarter t earnings available for firm i.

The time-series expectation model used was a seasonal random walk without drift. This model was used for all sample firms. Unexpected earnings were computed as follows:

$$UE_{it} = RE_{it} - RE_{it-4} \tag{14}$$

where

RE_{it} = the actual earnings per share for quarter t reported in the WSJI for firm i.

Equation 12 does not directly test any hypotheses. It was examined to determine if the reaction to earnings differs during a takeover regardless of the other factors considered in this paper. If β_3 is significant, then earnings announcements made during a takeover have different information content to investors relative to earnings announced at other times.

To test H1, additional dummy interaction terms were added to the model to allow the slope to vary over all stages of completion. The coefficients on these interaction terms then provide a measure of the difference in the reaction to earnings announced at each stage during the takeover relative to before the firm was involved in the takeover. The model tested was

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 S_{0i}*UE_{it}/P_i + \beta_3 S_{1i}*UE_{it}/P_i + \beta_4 S_{2i}*UE_{it}/P_i + \beta_5 S_{3i}*UE_{it}/P_i + \beta_6 S_{4i}*UE_{it}/P_i + \epsilon_{it} \tag{15}$$

where

S_{ji} = one if firm i is in stage of completion j at the earnings announcement after the takeover announcement.

H1 will be supported if β_4, β_5, or β_6 are significantly negative, indicating that those takeover firms in late stages of completion have a lower reaction to a given level of unexpected earnings than firms not involved in a takeover.

Because H2, H3, and H4 involve making comparisons in the reaction to earnings announcements after the first takeover announcement across takeover firms with different characteristics, the tests of these hypotheses used the unexpected earnings and CAR for only the earnings announcement after the takeover announcement. To examine for differences in the reaction to earnings announcements across types of payment (H2), the following model was tested:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 X_{ci} * UE_{it}/P_i + \beta_3 X_{mi} * UE_{it}/P_i + \epsilon_{it} \quad (16)$$

where

X_{ci} = dummy variable for form of payment which equals one if payment is cash; and

X_{mi} = dummy variable for form of payment which equals one if payment is not totally cash or stock (debt, cash and stock, cash and debt, or stock and debt).

This equation was estimated separately for each stage of completion during which the form of payment is known to investors (two, three, and four). β_1 represents the coefficient for payment in the form of stock. The coefficient for a payment in the form of cash is $\beta_1 + \beta_2$. For H2 to be supported β_2 must be significantly negative.

H3 was tested by estimating the following model for those target firms that received stock:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 RSIZE_i * UE_{it}/P_i + \epsilon_{it} \quad (17)$$

where

$RSIZE_i$ = the relative size of the target to bidder.

This model treats the relative size as a continuous variable. The model was estimated for each stage of completion (two through four) separately. H3 will be supported if β_2 is significantly positive. Because treating the relative size as a continuous variable may just introduce noise, a dummy variable specification was also tested where the dummy variable (Z) equals

one if the target firm is considered small relative to the bidder, where small is less than ten percent. Thus, the following model was also tested:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 Z_i * UE_{it}/P_i + \epsilon_{it}. \quad (18)$$

This model was also estimated for each stage of completion separately. If β_2 is significantly negative, the reaction to stand-alone earnings announced by target firms is lower when the target is small relative to the bidder.

H4 was tested with the following equation:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 M_i * UE_{it}/P_i + \epsilon_{it} \quad (19)$$

where

M_i = indicator variable which equals one for firm i when the proxy being used for earnings management indicates presence of a situation where earnings management is likely to occur.

Separate estimations were made for each stage of completion and for each proxy for earnings management. M_i would equal one if the takeover is in the form of a hostile tender offer or a leveraged buyout (form of transaction proxy), if target management resists the takeover (resistance proxy), or if the percentage ownership by management is considered large (percentage ownership proxy). H4 will be supported if β_2 is significantly negative, indicating that earnings management makes the earnings have lower information content. The models were reestimated using only those firms where the earnings announcement after the first takeover announcement is for an interim quarter.

These directional models were estimated using data pooled across the five years of the study. All takeover firms were included for one estimation with all models being reestimated using only those takeover firms without contemporaneous confounding events.

CHAPTER 6

THEORY AND TESTS OF OTHER POTENTIAL DIFFERENTIAL REACTIONS

To provide a more complete analysis of earnings reactions during a takeover, this chapter develops the theory and types of tests for other differential reactions to earnings that may occur during a takeover.

6.1 Bidder Reaction to Bidder Earnings

If a takeover is certain but not yet complete, the model for bidder share price is equation 4, with P_{nt} replacing P_{it} and G_i equal to 1. This equation shows that bidding firm earnings are used by investors in developing expectations about future cash flows and the value of the share of stock. Since the bidding firm tends to be larger than the target, bidding firm earnings will generally be the largest of the combined firm earnings components. This equation implies that bidding firm shareholders will continue to use bidder stand-alone earnings in predicting future cash flows and assessing firm value. The potential for synergistic effects may make the bidding firm earnings a less clear signal about future cash flows. These future cash flows also become a function of target firm earnings, further reducing the ability of bidding firm earnings to signal future cash flows to bidding firm shareholders. The information content of bidding firm earnings may be lower during a takeover than before.

If the takeover is incomplete, the following equation represents the bidding firm's share price:

$$P_{nt} = w\left[\sum_{k=1}^{\infty} \theta_{ct+k} \prod_{j=1}^{k} \{1/[1+E(R_{ct+j})]\}\right] E(I_{ct}) + (1-w)\left[\sum_{k=1}^{\infty} \theta_{nt+k} \prod_{j=1}^{k} \{1/[1+E(R_{nt+j})]\}\right] I_{nt} \quad (20)$$

where

w = probability that the takeover will be completed.

Since bidder earnings are probably the largest component of combined firm earnings, bidder earnings will play a substantial role in assessing future cash flows. Target earnings and synergistic effects are also involved in determining future cash flows, but to a lesser extent. At early stages in the process, bidding firm earnings announcements may provide a signal about the probability of the takeover's success (by indicating the bidder's ability or willingness to pay for the target), which could result in the earnings announcement having greater information content than before the takeover announcement.

The above discussion implies that any observed differential reaction may be dependent on the stage of completion. As with the target shareholders, bidding firm shareholders would continue to rely primarily on bidding firm earnings announcements to predict future cash flows until the probability of the takeover's success reaches some unknown level. Once this point is reached, shareholders would rely on the expected combined firm cash flows as a measure of future cash flows. When this occurs, the importance of bidder stand-alone earnings in the assessment of the amount and timing of future cash flows may be reduced. Thus, the information content of the bidder's first earnings announcement after the takeover announcement may be lower as the probability of success of the takeover increases.

H5: As the probability of success of the takeover increases, the market reaction to bidder stand-alone earnings will decrease.

Other factors may also influence the reaction to earnings. These factors may help explain whether any documented differential reaction is related to the firm being involved in a takeover or related to other factors such as providing a signal about future earnings through the selection of the forms of payment. An investigation of these other factors may also explain why H5 is not supported for the sample as a whole. The reduced earnings reaction may only be observed for some bidders when the transaction possesses certain characteristics. Thus, the effect of various characteristics on the reaction to bidder stand-alone earnings will be examined.

The type of payment may be important in documenting a differential reaction. Asquith and Mullins [1986] and Miller and Rock [1985] indicate that the issuance of equity signals to the market that current or future earnings will be lower than the market expects. Therefore, bidders that announce that they are going to use stock may provide a signal about the next earnings announcement. The information content of the earnings announcement after the takeover announcement may be reduced for bidders using stock or a combination of stock and cash relative to cash alone. A test for lower reaction for form of payment effects will investigate whether any observed reaction is related to the form of payment or being involved in a takeover.

The size of the target relative to the bidder may be an important factor in documenting a differential market reaction to bidder earnings announcements. For the bidder earnings announcement to have lower information content, the earnings must be providing a poorer signal of future cash flows. When the target is relatively small, combined firm

earnings will have bidder earnings as the primary component. In such a case, bidder earnings may not provide significantly less information about future cash flows than before the takeover. When the target is relatively large, bidder earnings may have lower information content because bidder earnings are not as dominant in the combined firm. Thus, H5 may only be supported for the subset of bidders where the target is relatively large.

Although earnings manipulation by the bidding firm management does not seem likely, the form of the transaction will be examined to determine whether the form influences the differential reaction to earnings in any manner. Since the bidding firm selects the form of transaction, the selected form may be providing a signal about the future of either the bidder alone or the combined firm. The forms available to publicly traded bidders are mergers or tender offers. Tax attributes of the target have been shown to influence the form of transaction decision (Hayn [1989]). Therefore, the form of the transaction may influence market reactions to earnings because of a signal about future tax effects.

Because tax attributes are an important consideration in the decision to acquire a target as well as influencing the form of the transaction, the motivation to acquire firms with positive versus negative earnings in the recent past may vary. The announcement of the decision to acquire firms with negative earnings may provide a signal about the future earnings ability of the bidder that is unknown to the market. Thus, earnings reactions may differ when the target has been reporting income versus losses.

The sample of bidders for the tests of relative information content of bidding firm earnings to bidder shareholders was the eventually successful bidder for the target firms included in the target reaction

analysis that are traded on the NYSE, AMEX, or OTC. The Wilcoxon signed rank, Wilcoxon sum rank, binomial, and directional tests, described in the methodology section, were used to test for differential information content in the earnings announcement after the takeover announcement. The Wilcoxon tests were performed for the sample as a whole, the sample partitioned on stage of completion, and the following subpartitions within stage of completion: type of payment, relative size, type of transaction, and sign of the target's most recent annual earnings before the takeover announcement. The binomial test was computed on the sample as a whole and broken down by stage of completion. The directional models tested were equations 12, 15, 16, 17, 18, and 19, using form of transaction only. The tests were estimated on the sample as a whole and repeated using only those firms without any contemporaneous confounding events.

Some bidders are involved in takeovers frequently. As a result, the share price for such firms may be equations 4 or 19 (price of a bidder during takeover negotiations) rather than equation 2 (price for a firm not involved in a takeover) at any point in time. This may be the case if shareholders expect the firm to be in the market for an acquisition even if none are currently being discussed. Therefore, the hypothesis of a change in reaction to earnings may not hold for firms that are frequent acquirers because the relationship between price and earnings may be virtually the same for the two earnings announcements being considered in this study. To examine whether the results are sensitive to the inclusion of frequent acquirers, the sample will be divided into bidders who had only one acquisition during the period of the study (infrequent acquirers) and those that had multiple acquisitions (frequent acquirers). All of the above tests will be repeated on the two sets of firms separately.

6.2 Bidder Reaction to Target Earnings

After the acquisition is complete, the target and bidding firms combine. The shareholders of the bidding firm then become residual claimants of the earnings of the combined firm. A model for the value of the shares of the bidding firm after the takeover is certain but before actual completion is given in equation 4 if P_{nt} is substituted for P_{it}. This equation shows that bidding firm investors may consider the earnings of the target in developing expectations about future cash flows. However, some price reaction to the announcement of earnings of other firms within the same industry or in related industries is not surprising. Foster [1981] and Clinch and Sinclair [1987] showed that a share price reaction occurs when another firm in the same industry reports earnings. Olsen and Dietrich [1985] found that suppliers stock price changes occur when retailers announce actual sales. Their study establishes that there may be inter-industry as well as intra-industry information transfers in earnings. Thus, the U-statistics for the earnings announcement before the takeover will be used as a control for the usual information content of the target earnings to the bidder firm shareholders.

After the takeover announcement, the bidder and target have a potential relationship beyond related lines of business. Target earnings announcements may have more information to bidding firm shareholders than before the takeover announcement. However, if the target firm is to be dismantled by the bidder, the target stand-alone earnings may not provide information about the contribution that the target would make to the combined firm earnings. In this case, the acquiring firm's share price reaction to the announcement of target firm earnings may not show a detectible increase.

If the takeover is not complete, the model for price of a share of stock in the bidding firm is given by equation 20. In this model, the target firm earnings are weighted by the probability of success of the takeover. While the probability is small, target firm earnings are probably not any more or less informative than usual to bidding firm shareholder. As the probability of success rises, the weight on target earnings increases. Thus, stage of completion, which proxies for probability of success, is an important factor in investigating whether a differential reaction to target earnings will be observed. An increase in information content of target earnings for bidder shareholders is expected as the probability of success of the takeover increases.

H6: As the probability of success of the takeover increases, target firm stand-alone earnings announcements will have increased information content to bidder firm shareholders.

As with the bidder reaction to bidder stand-alone earnings, various characteristics may influence the differential reaction. An investigation of these characteristics may provide a better understanding for why a differential reaction is observed or why no differential reaction is observed.

The type of payment does not influence the position of the bidding firm shareholders as residual claimants in the combined firm earnings once the merger is complete nor does it change the valuation equations referenced above. The type of payment may provide a signal to the market concerning how the target firm will be integrated with the acquirer (whether the target will be left whole or will be segmented). This signal may influence the reaction to target earnings.

As discussed in section 6.1, the importance of target earnings to the bidding firm shareholders may depend on the size of the target

relative to the bidder. Target firm earnings are more likely to have increased information content to the bidder when the target is relatively large. Therefore, relative size may be an important factor in examining for differential information content of target earnings to bidder shareholders. An increased reaction may only be observed in those instances where the target is relatively large.

The earnings announcement being considered is for the target firm after the takeover is announced. As discussed in chapter 3, this earnings number may be manipulated. It may, therefore, provide a noisy signal of what target firm earnings are likely to be in the future without manipulation. The potential for manipulation may reduce the information content of target earnings to bidding firm shareholders. Announced managerial resistance and percentage ownership by managers were described as proxies for potential earnings management.[12] As such, the existence of resistance or high percentage ownership may result in a reduced reaction to earnings. This may be observed as a decrease in information content because of the noise or no significant change in the information content resulting from a netting of the increased informativeness of the stronger relationship and the decreased informativeness of noisy earnings.

The sample in this part of the investigation was the successful bidding firms of targets that announce stand-alone earnings after the first takeover announcement. The CAR was for the bidder firm for the day before and day of the target firm earnings announcement. The tests used to detect differential information content were the nondirectional

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[12] The type of transaction was also described as a proxy for earnings management. It is not considered here because the proxy would be identical to the announced resistance proxy since leveraged buyouts are not present in this part of the analysis.

Wilcoxon signed rank, Wilcoxon sum rank, and binomial tests, as described in the methodology chapter. The directional methodology was not used in this analysis. The Wilcoxon tests were performed on the whole sample, for the sample partitioned by stage of completion, and for the following subpartitions within stage of completion: type of payment, relative size, target management resistance, and percentage ownership of managers and directors. These Wilcoxon tests were then repeated on the sample of firms where the target and bidder have the same two digit SIC code to examine whether similar industry membership influences the results. The binomial test was conducted on the whole sample.

6.3 Target Reaction to Bidder Earnings

The models for target share price valuation in chapter 3 show that, in some instances, the price of the target firm's stock is related to the earnings of the bidding firm. Therefore, if the announcement of earnings by the bidder provides information that changes the target firm investors expectations about the future cash flows to be received, a target firm price response may occur to the bidder's quarterly earnings announcement. However, as with the bidder reaction to target earnings, some price reaction may occur because of information transfers between firms in related industries (Foster [1981], Clinch and Sinclair [1987], and Olsen and Dietrich [1985]).

When the takeover's success is still uncertain, equation 5 represents the model for valuing the price of stock in the target firm. The bidding firm's earnings are one of the factors that are considered, but their weight is a function of the joint probability that the takeover will take place and the payment will include a security issued by the acquirer. If uncertainty concerning the completion of the takeover or

type of payment is high, this probability will be low; and, therefore, an earnings announcement by the bidder would have little information content to the target shareholders. As the takeover becomes more certain and if the form of payment is stock, the probability that future cash flows to target shareholders will be a function of bidder earnings increases. If the probability of success becomes one before the takeover is completed, the valuation formula becomes equation 4. In this equation, bidder firm earnings may be the largest component. Thus, bidding firm earnings should provide more information about future cash flows to target shareholders than before the takeover was announced.

H7: If the probability of success of the takeover is high and the payment is in the form of stock, bidder firm stand-alone earnings announcements will have increased information content to target firm shareholders.

If the takeover is certain but not complete and the payment to the target shareholders will be in the form of cash, equation 3 represents a model for valuing the target shares. In this case, share price becomes a function of the cash payment to be received, neither target nor bidder earnings are important for share price valuation. Thus, as the probability of success approaches one and the form of payment is cash, the information content of bidding firm earnings to target shareholders may be lower than before the takeover was announced. This result may occur because target shareholders are no longer interested in the information transfer that bidding firm earnings may provide about target earnings since their future cash flows from owning the stock are to come exclusively from the cash payment for those shares.

H8: If the probability of success of the takeover is high and the payment is in the form of cash, bidder firm stand-alone earnings announcements will have decreased information content to target firm shareholders.

The ability to detect changes in the information content of bidder earnings to target shareholders may be influenced by the relative size of the target compared to the bidder. When stock is used as the form of payment so that both target and bidder firm earnings are relevant to post transaction cash flow assessment, the larger the target in relation to the bidder the more useful is target earnings and less useful is bidder earnings in assessing post completion cash flows. However, bidding firm earnings still play a larger role in share valuation than before the takeover was announced. An increased reaction would still be expected, but it may be too small in magnitude to detect. When the target is relatively small, the increase in information of bidder earnings may be greater and more likely to be detected. Relative size may, therefore, influence the size of the increase in information content.

Resistance may influence the probability of success of the takeover. Therefore, resistance by target management will be controlled for to determine if resisted takeovers are associated with systematically lower information content of bidder earnings to target shareholders than takeovers that are not resisted. Percentage ownership by managers and directors may also influence the probability of success and will also be examined to determine if it has any effect on the target reaction to bidder stand-alone earnings.

The sample used in these tests was all target firms that have the successful bidder trading on the NYSE, AMEX, or OTC. The test of whether the information content of bidder earnings differs to target shareholders during the takeover compared to before relied on the nondirectional Wilcoxon and binomial tests, described in the methodology chapter. The Wilcoxon tests examined the entire sample, the sample partitioned on stage

of completion, and the following subpartitions within stage of completion: type of payment, relative size, management resistance, and percentage ownership by management. These tests were repeated using the sample of targets that are in the same industry as the bidder to determine if similar industry association influences the results. The binomial test was performed on the sample as a whole.

CHAPTER 7

ANALYSIS OF RESULTS

This chapter discusses the results of this study. The results for the target firm reaction to target earnings announcements are presented first followed by the bidder firm reaction to bidder firm earnings, bidder firm reaction to target firm earnings, and target firm reaction to bidder firm earnings. The main tests as well as sensitivity tests are discussed for each reaction. The results are generally consistent with H1, H2, H3, and H8. Only the announced resistance proxy results were consistent with H4. The directional methodology produced results consistent with H5, while the nondirectional methodology failed to produce consistent results. The results were generally inconsistent with H6 and H7. Thus, earnings announcements made during a takeover were shown to have differential information content in a number of instances to investors and those differences can generally be predicted by valuation theory.

The analysis was conducted for each year separately and for all years combined.[13] Because the results were generally stable across years, only the results combining all five years are reported. The tests were also repeated using the subsample of firms that did not have any contemporaneous confounding events at either earnings announcement. The

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[13] Scholes and Wolfson [1990] and Hayn [1989] document that tax laws play important roles in takeovers. Therefore, the analysis was performed on each year separately to control for any influences that differential tax laws may have on the results.

qualitative results were generally the same when controlling for confounding events. When the significance of the reaction did change while controlling for confounding events, the significance is reported in the analysis presented here or in a footnote. The results shown in the tables are for all firms that met the basic data requirements.

7.1 Target Firm Reaction to Target Earnings Announcements

Table 1 provides information on the sample size for the target firm tests by year and in total. Between 1982 and 1986, 945 publicly traded firms (476 NYSE/AMEX and 469 OTC) became targets in successful takeovers. The table explains how the sample was reduced to the 578 firms (350 NYSE/AMEX and 228 OTC) used in the basic tests.

The theoretical models in Chapter 3 imply that once a firm becomes a target in a takeover its stand-alone earnings may have reduced relevance to shareholders. This implication was tested using both a directional and nondirectional methodology. The results for the nondirectional methodology are presented first followed by the directional model results and a section comparing the results obtained with the two methodologies. The hypotheses were generally supported by the nondirectional tests. The directional tests only support some hypotheses.

7.1.1 Results of Nondirectional Tests

To examine whether a reduced reaction to target earnings announced during a takeover is observed regardless of stage of completion or other factors, the U-statistics for the earnings announcement before and after the first takeover announcement were compared, using the Wilcoxon sign rank test. For all 578 firms, UTA was significantly lower than UTB (p-value = 0.0000). Thus, regardless of other factors, the market reaction to the earnings announcement after the

TABLE 1
TARGET FIRM REACTION TO TARGET FIRM EARNINGS SAMPLE SIZE

	1982	1983	1984	1985	1986	TOTAL
Experienced a takeover involving an unrelated acquiring firm	146	146	207	199	247	945
Earnings dates not available	(47)	(52)	(67)	(63)	(79)	(308)
Involved in takeover activity for more than two years	(3)	(2)	(6)	(5)	(3)	(19)
Missing CRSP data	(8)	(3)	(8)	(10)	(11)	(40)
Firms included in basic nondirectional tests	88	89	126	121	154	578

first takeover announcement was significantly lower than the reaction to the previous quarterly earnings.

The binomial test supports the Wilcoxon result. In the whole sample, 245 firms (42 percent) had U-statistics greater than one for the earnings announcement before the first takeover announcement. Only 129 firms had U-statistics greater than one for the earnings announcement after the first takeover announcement, which is significantly fewer than 42% ($z = -9.5450$). These results are consistent with earnings announcements made while the issuing firm is a target in a takeover having less information content than when the firm is not involved in a takeover.

To examine whether the probability of success influences the differential reaction to earnings announced after the firm becomes a target, the Wilcoxon signed rank test was used to compare the U-statistics for the two earnings announcements while controlling for the stage of completion (as described in Chapter 5). Table 2 presents the results of this test. It was argued in Chapter 3 that later stages should experience a reduced reaction to earnings announced after relative to before the takeover was announced.

The results in Table 2 are generally consistent with H1. Stages one, two, and three are all associated with a reduced market reaction (p-values < 0.012) to the earnings announcement after the takeover announcement. The stage four firms experienced an insignificant difference in the market reaction (p-value = 0.4463) between the two earnings announcements. While this stage represents takeovers that are complete, the small sample size (five observations) makes it difficult to draw conclusions about the relevance of earnings announced by the target after the takeover is completed. Stage zero does not show a significant

TABLE 2
COMPARISON OF U-STATISTICS BEFORE AND AFTER TAKEOVER
BY STAGE OF COMPLETION
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Stage[a]	Class[b]	N	Median U-statistic	Mean Rank UTA < UTB (N)	Mean Rank UTA > UTB (N)	p-value[c]
0	Before	186	0.4442	98.21	88.25	
	After	186	0.3875	(98)	(88)	0.1031
1	Before	77	0.5212	38.94	39.11	
	After	77	0.3516	(50)	(27)	0.0119
2	Before	169	0.4968	87.88	79.33	
	After	169	0.0968	(112)	(57)	0.0000
3	Before	141	0.9082	79.21	50.27	
	After	141	0.0846	(101)	(40)	0.0000
4	Before	5	0.2659	2.67	3.50	
	After	5	0.5536	(3)	(2)	0.4463

Notes:

a. The stage of completion is a proxy for market assessed probability of success. It ranges 0, where one bidder exists and the terms of the transaction are unsettled, to stage 4, where shareholders have voted to accept a merger or ninety percent of the stock has been tendered in a tender offer. See chapter 5 for a complete definition of each stage.

b. Before represents the earnings announcement before the first takeover announcement. After represents the earnings announcement after the first takeover announcement.

c. One-tailed significance levels from the Wilcoxon Signed Rank test.

difference at conventional significance levels (p-value = 0.1031). At this stage, the probability of success does not seem high enough for shareholders to reduce the degree of importance they place on target stand-alone earnings.[14] While stage one is associated with uncertainty about the successful bidder, the reduced market reaction seems to indicate that the market perceives that the target firm will generally not remain independent. Target stand-alone earnings are associated with reduced informativeness to investors when multiple bidders exist. Some uncertainty still exists in stages two and three, but the terms of the transaction and successful bidder are known. Knowledge of these factors seems to reduce the importance of target stand-alone earnings for valuation purposes, which is consistent with the theoretical models. The median level of the U-statistic for the earnings announcement after the first takeover announcement is 0.0968 for stage two and 0.0846 for stage three. These median values imply that the variance of returns at the time of the earnings announcement were not even ten percent of the variance in the returns during the estimation period. This indicates that, on average, earnings had minimal information content to target shareholders at these stages of completion. Those firms where the probability of

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[14] When confounding events are controlled for, the 78 firms in stage zero experience a significant decrease (p-value 0.0325) in the U-statistic for the earnings announcement after the first takeover announcement relative to before. The qualitative results for all other stages remain the same as reported. Stage zero may become significant when controlling for confounding events because those firms without confounding events (mean market value of equity $153,097,800) are significantly smaller (p-value 0.0001) than the firms with confounding events (mean market value of equity $503,248,650). It can be argued that smaller firms are less able to fight a takeover; and, therefore, smaller firms may be associated with a higher probability of success at each stage of completion. This firm size difference may partially explain the difference in results when controlling for confounding events.

success of the takeover is high experienced a reduced reaction to target stand-alone earnings, supporting H1.

The binomial test by stage of completion showed that for the earnings announcement after the first takeover announcement stages zero ($z = -2.6697$), one ($z = -2.9647$), two ($z = -5.9972$), and three ($z = -7.2892$) all had significantly fewer U-statistics greater than one than in the underlying distribution (42 percent). Stage four ($z = 1.0115$) had an insignificantly different number of U-statistics greater than one. This result provides further evidence that target firm earnings announced during a takeover have reduced information content to shareholders. These results are also consistent with H1.

The form of payment that the target shareholders are to receive was described as one of the characteristics important in explaining a differential reaction to earnings announced during a takeover. Specifically, H2 proposed that the reaction would be lower when target shareholders receive cash relative to when they receive stock. Panel A of Table 3 reports the results for the Wilcoxon sum rank test that compared the difference in U-statistics between firms where the shareholders receive cash as payment for their shares and where the shareholders receive shares of common stock in the combined firm as payment. These results show no significant differences between the reaction to earnings for payments of stock or cash. However, when confounding events are controlled for, the firms in stage two experienced a marginally significant (p-value = 0.0827) decrease for cash payments relative to stock payments. If the difference in U-statistics is compared between cash and common without controlling for stage of completion, cash is associated with a marginally lower difference in U-statistics (p-value

TABLE 3
COMPARISON OF DIFFERENCE IN U-STATISTICS
BY STAGE OF COMPLETION AND FORM OF PAYMENT
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Panel A: All Targets Receiving Cash and Common Stock

Stage[a]	Payment	N[b]	Median UTA - UTB	Mean Score	p-Value[c]
2	Common	45	-0.0513	69.60	
	Cash	85	-0.4407	63.33	0.1840
3	Common	42	-0.6531	58.21	
	Cash	67	-0.6641	52.99	0.2012

Panel B: Relatively Large Targets Receiving Cash and Common Stock[d]

Stage[a]	Payment	N[b]	Median UTA - UTB	Mean Score	p-Value[c]
2	Common	29	-0.0004	33.36	
	Cash	45	-0.3532	43.63	0.0197
3	Common	30	-0.1387	23.19	
	Cash	21	-0.0471	27.97	0.1315

Notes:

a. The stage of completion is a proxy for market assessed probability of success. In this table, the measure ranges from stage 2, where the successful bidderis known and the terms of the transaction are settled, to stage 4, where the target shareholders have voted in favor of a merger or ninety percent of the target shares have been tendered in a tender offer. See chapter 5 for a complete description of these stages.

b. The sample size differs in this table from table 2 at each stage because of forms of payment other than cash and stock.

c. One-tailed significance levels from the Wilcoxon Sum Rank test.

d. Relatively large is defined here as 10 percent.

e. Stage 4 had only two firms in each category. The results are not reported because of the low sample size.

= 0.0825). These results imply that investors find target stand-alone earnings to have slightly more information content when they are to receive stock in the combined firm rather than a cash payment.

Target shareholders may only find target stand-alone earnings to be more useful for valuation purposes when receiving stock when the target firm is large relative to the bidder. When the target is small relative to the bidder, target stand-alone earnings may have the same information content to target shareholders regardless of form of payment because combined firm earnings will be dominated by bidder earnings. Panel B of Table 3 shows the results of comparing the difference in the U-statistics between cash and stock payment for targets that are large relative to the bidder. These results show significant differences for stage two firms (p-value = 0.0197) with the reaction for cash payment being more reduced than for stock payment. This result for relatively large targets and the result for firms combined across stage of completion are both consistent with H2. Therefore, target shareholders find target stand-alone earnings to have greater information content when they are receiving stock as the form of payment relative to receiving cash.

When the target shareholders are receiving stock as the form of payment, target shareholders may find target stand-alone earnings relatively more important in valuation if the target is large relative to the bidder. Table 4 presents the results of the Wilcoxon sum rank test comparing the difference in U-statistics between those targets that are large relative to the bidder and those that are small relative to the bidder. The results are shown only for those target firms that are purchased for stock. Panel A categorized firms as large if the market value of equity of the target was at least 10 percent of the market value

TABLE 4
COMPARISON OF DIFFERENCE IN U-STATISTICS
BY STAGE AND RELATIVE SIZE FOR STOCK PAYMENTS
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Panel A: 10% Relative Size

Stage[a]	Size[b]	N[c]	Median UTA - UTB	Mean Score	p-Value[d]
2	Small	12	-1.4412	15.25	
	Large	29	-0.0004	23.38	0.0249
3	Small	9	-0.9195	17.44	
	Large	30	-0.1387	20.77	0.2267

Panel B: 25% Relative Size

Stage[a]	Size[b]	N[c]	Median UTA - UTB	Mean Score	p-Value[d]
2	Small	23	-0.9430	16.74	
	Large	18	0.6247	26.44	0.0052
3	Small	20	-0.3892	21.85	
	Large	19	-0.7158	18.05	0.1536

Panel C: 50% Relative Size

Stage[a]	Size[b]	N[c]	Median UTA - UTB	Mean Score	p-Value[d]
3	Small	28	-0.7042	19.57	
	Large	11	-0.0895	21.09	0.3599

Notes:

a. The stage of completion is a proxy for the market assessed probability of success. Stage 2 represents the situation where the successful bidder is known and the terms of the transaction are settled. Stage 3 represents the situation where the successful bidder is known and the board of directors of the target have approved the terms in a merger, shares are being tendered in a tender offer, or financing has been obtained in a leveraged buyout. See chapter 5 for a complete list of definitions.

b. Relative market value of equity of the target to the bidder at December 31 of the year prior to the first takeover announcement. Small refers to firms where the relative size of the target to the bidder is less than the percentage given in the panel. Large refers to firms where the relative size of the target to the bidder is the percentage given in the panel or larger.

c. Only firms receiving stock as the form of payment in the takeover are included. Some targets did not trade at December 31 of the year prior to the first takeover or had nonpublicly traded acquirers. Since a relative market value could not be computed, these firms are not included in this test.

d. One-tailed significance levels from Wilcoxon Sum Rank tests.

of equity of the bidder at December 31 of the year preceding the first takeover announcement. Panel B used a 25 percent cutoff, and panel C used a 50 percent cutoff for partitioning between small and large. The qualitative results were consistent across all three panels. There was a significantly greater (less reduced) market reaction in stage two for relatively large targets for the earnings announcement after the first takeover announcement than for relatively small targets (p-value = 0.0249 for 10 percent and p-value = 0.0052 for 25 percent). However, no significant difference in the change in the market reaction between the two earnings announcements exists for firms in stage three between relatively small and relatively large targets.[15] The results for stage two are consistent with H3, but those for stage three do not. Pooling across stage of completion results in a significant difference between the reaction for relatively small and large targets with the relatively small targets having a greater reduction in reaction (p-value 0.0238 for the ten percent partition). These combined results provide further support for H3.

The possibility of earnings management is another factor that may explain differential market reactions to earnings announced during a takeover. Because manipulation results in earnings being a noisy signal for future cash flows, H4 predicted that the market reaction to earnings announced during a takeover would be lower when the incentives for

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[15] Controlling for confounding events changes the results when the ten percent partition is used. The significant difference in stage two is lost (p-value 0.1274), but stage three experiences a significantly larger, less reduced, difference in the earnings reaction (p-value 0.0340) for relatively large targets. The results for the 25 and 50 percent partitions are not qualitively different from those reported in table 4 when controlling for confounding events.

earnings management are present. Table 5 presents the results of the Wilcoxon sum rank test that compares the difference in the U-statistics between firms that have indications of earnings management, as defined by the proxies, and those that do not. Panel A presents the results using the type of transaction as a proxy for manipulation, panel B uses announced resistance to the takeover, panel C uses manager and director share ownership, and panel D combines announced resistance and share ownership. The results are not consistent across these panels.

When type of transaction is used as the proxy (panel A) for management earnings manipulation, hostile tender offers (tender offers with announced resistance to the offer) and leveraged buyouts are considered to be situations where manipulation is more likely to occur. Friendly tender offers and mergers are considered less likely candidates. The results show that in stage one a significantly lower difference in the market reaction occurs for firms more likely to have manipulation (p-value = 0.0126). At all other stages, though, the difference in U-statistics is insignificantly different across the firms more and less likely to manipulate earnings. When confounding events are controlled for, stage one is no longer significantly different (p-value = 0.5000).

Panel B considers announced resistance. When management that announces resistance to a takeover, they would most likely exercise all steps, including manipulating earnings, to ensure that the takeover is unsuccessful. Because this is the only proxy that relies on an action by target management to place the firm in the likely to manipulate category, it may be the best indicator of manipulation. With this proxy, stage zero (p-value = 0.0378) and stage one (p-value = 0.0335) are both associated with significantly lower differences in the U-statistic when the target

TABLE 5
COMPARISON OF DIFFERENCE IN U-STATISTICS
BY STAGE AND INDICATORS OF EARNINGS MANAGEMENT
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Panel A: Form of Transaction Proxy

Stage[a]	Indicator[c]	N	Median UTA - UTB	Mean Score	p-Value[b]
0	HTO/LBO	78	-0.0424	90.31	
	FTO/M	108	-0.0197	96.64	0.2438
1	HTO/LBO	24	-0.7312	30.50	
	FTO/M	53	-0.1108	42.85	0.0126
2	HTO/LBO	33	-0.2983	88.21	
	FTO/M	136	-0.3490	84.22	0.3379
3	HTO/LBO	24	-0.9912	67.71	
	FTO/M	117	-0.5856	71.68	0.3334

Panel B: Announced Resistance Proxy

Stage[a]	Indicator[d]	N	Median UTA - UTB	Mean Score	p-Value[b]
0	Announced	39	-0.2968	79.92	
	None	147	0.0143	97.71	0.0378
1	Announced	24	-0.5681	32.04	
	None	53	-0.1519	42.15	0.0335
2	Announced	6	-0.0318	100.00	
	None	163	-0.3448	89.45	0.2235

Panel C: Percentage Ownership Proxy

Stage[a]	Indicator[e]	N	Median UTA - UTB	Mean Score	p-Value[b]
0	High	53	-0.0545	95.70	
	Low	133	-0.0177	89.70	0.2701
1	High	15	-0.1519	39.87	
	Low	62	-0.5691	38.79	0.4362
2	High	61	-0.7353	77.20	
	Low	108	-0.1901	89.41	0.0598
3	High	47	-0.7353	62.40	
	Low	94	-0.1053	75.30	0.0388

TABLE 5 (cont'd)

Panel D: Announced Resistance and Percentage Ownership Proxy

Stage[a]	Indicator[f]	N	Median UTA - UTB	Mean Score	p-Value[b]
0	High	33	-0.2967	80.39	
	Low	153	0.0054	96.33	0.0618
1	High	20	-0.3678	34.00	
	Low	57	-0.1897	40.75	0.1239
2	High	6	-0.0318	100.00	
	Low	163	-0.3448	84.45	0.4826

Notes:

a. Stage of completion is a proxy for the market assessed probability of success. It ranges from stage 0, where there is one potential bidder but the terms of the transaction are unsettled, to stage 4, where the target shareholders have boted to accept the merger or ninety percent of the shares have been tendered in a tender offer. See Chapter 5 for a more complete description of stage of completion.

b. One-tailed significance levels from Wilcoxon Sum Rank tests.

c. When the form of transaction is used as a proxy, hostile tender offers and leveraged buyouts (HTO/LBO) are considered indicators of an incentive to manipulate earnings. Friendly tender offers and mergers (FTO/M) are forms of transaction with lower incentives.

d. Firms where the management announced resistance to the transaction or recommended not tendering shares represent a situation where an incentive to manipulate is higher (announced group). No announced resistance represents a lower incentive (none group).

e. Percentage ownership of common by managers and/or directors of 20% or more (high) is considered an incentive for manipulation. Ownershiip of less than 20% of target common stock (low) is considered a lower incentive.

f. High represents both a 20% ownership of target common by managers and/or directors and announced resistance by management (high incentive). Low represents any ownership percentage and no announced resistance (low incentive).

g. When fewer than five observations occurred in a category the results were omitted because of the small sample size.

management announces resistance to the takeover than when it does not. Stage two, however, is insignificantly different. This result can be explained within the incentives to manipulate. Resistance and manipulation are likely to be most successful, and therefore most prevalent, in early stages of the takeover process. Once the terms have been settled (stage two) manipulation cannot be used to change them. Management may still try manipulation in later stages, but the incentive would seem to be reduced relative to the incentive that exists in earlier stages where manipulation can still influence both the bid and the probable success of the takeover. Thus, the results using this proxy are consistent with H4.

Management and director ownership of target firm shares was also described as an incentive for managers to manipulate reported earnings. Panel C presents results where managers and directors own at least 20 percent of the target firm's common stock. Stage three firms had a significantly lower reaction (p-value = 0.0388) when share ownership is 20 percent or greater relative to less than 20 percent. Stage two firms were associated with a marginally lower reaction (p-value = 0.0598). However, this marginal significance disappears when controlling for confounding events (p-value = 0.3942). These results seem to be inconsistent with the incentives to manipulate earnings to influence the outcome of the takeover bid. Therefore, they do not support H4.

Although not reported, this test was repeated using an ownership percentage of 50 percent instead of 20 percent. This was done because the ownership level where a manipulation effect will become noticeable is not known. The larger percentage was used as a sensitivity test to determine whether the results are sensitive to the different percentage used. With

this proxy, stage zero firms had a significantly lower market reaction for the earnings after the takeover (p-value = 0.0249) and stage three firms had a marginally lower reaction (p-value = 0.0661). Stages one and two were insignificantly different (p-values = 0.1149 and 0.1555, respectively). The results using this proxy are generally inconsistent with the other proxies, which find significant differences only at lower stages.

Announced resistance and ownership percentage were combined to identify those firms with the greatest incentive to manipulate earnings. The results in panel D show that stage zero was associated with a marginally significant decrease in the reaction to earnings after the takeover (p-value = 0.0618) for firms with an incentive to manipulate relative to those without a strong incentive. All other stages were associated with an insignificant difference in reaction across incentive categories. Only the stage zero results are consistent with H4.

Managers may want to manipulate accruals to influence the outcome or bid in a takeover; but if the statements are audited, the auditors may not allow accrual manipulations. Since interim quarterly reports are not generally audited, the tests reported in Table 5 were repeated using only interim quarters. The results were similar to those reported in Table 5 except that in panel A stage one was no longer significant (p-value = 0.2438) and in panel C stage two loses its marginal significance (p-value = 0.1739) and stage one becomes marginally significant but with a stronger reaction for high ownership firms (p-value = 0.0919).

Since the proxies were shown to be inconsistent, the effects of earnings management on the market reaction to earnings during a takeover need to be examined further. However, this study provides some indication

that firms with an incentive for such manipulation are associated with lower market reactions primarily in early stages.

Because some evidence was found in support of earnings management reducing the reaction to earnings reported during a takeover, the test for H1 was repeated using only those target firms that did not have incentives for manipulation to ensure that the results reported in Table 2 were not driven by those firms with incentives to manipulate earnings. Regardless of the proxy considered, the results for H1 remain qualitatively the same as those reported in Table 2. Thus, the reduced reaction to earnings announced during a takeover is not driven by earnings manipulation.

To control for the possibility that UTA and UTB may differ in magnitude for reasons other than the firm being involved in a takeover, a regression of indicator variables of other news announced in the WSJI on UTA-UTB was estimated to determine if a significant relationship exists between the difference in U-statistics and any reported news events. This regression was described in Chapter 5. All news announcements between the earnings announcement before the first takeover announcement and the earnings announcement after the first takeover announcement (other than takeover related news that did not involve regulatory actions and constant dividends) were put in one of the following 15 categories: debt issues or retirements, equity issues or repurchases, dividend changes, stock dividends or splits, acquisitions or divestitures, product news, regulatory action, shareholder suits, other litigation, labor related, earnings forecasts or revisions, officer and/or director changes, operations related, bond rating news, or stock market related. Officer and/or director changes (t-statistic 1.897) was the only variable significant at or below the ten percent level. All tests were repeated

deleting firms with officer and/or director changes. The qualitative results were not changed.

A difference in the level of unexpected earnings between the earnings before and the earnings after the first takeover announcement could also lead to a different magnitude of reaction for UTA and UTB regardless of the firm being involved in a takeover. To ensure that a difference in unexpected earnings is not responsible for the results documented, both random walk and Value Line unexpected earnings were estimated for the two earnings announcements considered. The unexpected earnings at each date were compared using the Wilcoxon Signed Rank test. Neither model resulted in a significant difference between unexpected earnings (random walk p-value = 0.2528 and Value Line p-value = 0.3007). Thus, the reduced reaction to quarterly earnings announcements for firms involved in a takeover documented in this study cannot be attributed to other news or differences in unexpected earnings.

7.1.2 Results of Directional Tests The directional tests utilized two unexpected earnings proxies: random walk without drift (RW) and Value Line (VL). Results are shown here for all models discussed in Chapter 5 that have a sample size of thirty firms or more. In many instances, VL coverage did not provide a large enough sample size to draw meaningful results from the equation estimation. The sample size for the random walk models are lower than in the nondirectional tests because some firms did not provide earnings per share in the earnings announcement appearing in the WSJI. The maximum number of firms in the random walk models is 431. For Value Line, the maximum sample size is 228.

Equation 12 was estimated to determine whether a differential reaction is detected for the target earnings announcement after the first

takeover announcement regardless of stage of completion or other factors. The results for this estimation are shown in Table 6. Both earnings expectation models are associated with a significant decrease in the information content of the earnings announcement after the first takeover announcement relative to the earnings announcement before the first takeover announcement (p-value of after the takeover announcement coefficient 0.0001 for RW and 0.0010 for VL). The after the takeover announcement intercept dummy was insignificant. This implies that the intercept does not depend on whether the earnings announcement is before or after the takeover announcement; and therefore, it was not included in subsequent models.

To determine whether this decreased reaction is observed at only some stages of completion, stage unexpected earnings interactions were added for each stage of completion. These results are reported in Table 7. Both models indicate that unexpected earnings before the first takeover announcement had a significant, positive relationship with cumulative abnormal returns. With the RW model, stages zero, two, and three are all associated with significant negative coefficients (p-values of 0.0028, 0.0001, and 0.0449, respectively), implying that the information content of earnings is lower for earnings announcements while the firm is a target in a takeover. The VL model indicated that stages zero, one, and four were associated with lower information content than earnings announced before the firm became involved in the takeover (p-value 0.0006, 0.0024, and 0.0207). The results of these models are consistent with H1, the information content of earnings announced during a takeover is reduced relative to before the firm became involved in a takeover. The reduction, however, appears to occur at all stages of

TABLE 6
REGRESSION OF UNEXPECTED EARNINGS ON CAR
BEFORE AND AFTER TAKEOVER ANNOUNCEMENT
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Intercept	0.0031	0.1971	0.0029	0.3737
Dummy	0.0006	0.8503	0.0015	0.7626
Unexpected Earnings:				
Before (β_1)	0.3725	0.0001	0.5184	0.0001
After (β_2)	-0.3467	0.0001	-0.4171	0.0010
F-Statistic	7.875	0.0001	8.259	0.0001
R^2	0.0268		0.0519	
Adjusted R^2	0.0234		0.0456	
N	431		228	

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 A_{it} + \beta_2 UE_{it}/P_i + \beta_3 A_{it} UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0;

UE_{it} = the difference betweem actual and expected earnings for quarter t for firm i;

A_{it} = indicator dummy which equals zero if the earnings announcement occurred before the first takeover announcement and one if the earnings announcement occurs after the first takeover announcement;

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement.

p-Values are one-tailed for coefficients

TABLE 7
REGRESSION OF UNEXPECTED EARNINGS ON CAR
STAGES OF COMPLETION
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Intercept	0.0033	0.0497	0.0036	0.1419
Unexpected Earnings:				
Before (β_1)	0.3721	0.0001	0.5234	0.0001
After:				
Stage 0 (β_2)	-0.2780	0.0038	-0.4534	0.0006
Stage 1 (β_3)	0.1718	0.3204	-0.3792	0.0024
Stage 2 (β_4)	-0.3561	0.0001	-0.5461	0.1261
Stage 3 (β_5)	-0.4102	0.0449	-0.7405	0.2219
Stage 4 (β_6)	-0.0703	0.4631	-0.6321	0.0207
F-Statistic	4.532	0.0002	4.315	0.0003
R^2	0.0308		0.0544	
Adjusted R^2	0.0240		0.0418	
N	431		228	

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 S_{0i}*UE_{it}/P_i + \beta_3 S_{1i}*UE_{it}/P_i + \beta_4 S_{2i}*UE_{it}/P_i + \beta_5 S_{3i}*UE_{it}/P_i + \beta_6 S_{4i}*UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

S_{ji} = one if firm i is in stage of completion j at the earnings announcement after the first takeover announcement

p-Values are one-tailed for coefficients

completion rather than being confined to later stages. When confounding events were controlled for, stage one of the RW model was also significantly negative (p-value = 0.0164), stage one of the VL model was insignificant (p-value = 0.2547), and stage three of the VL model was significantly negative (p-value = 0.0503).

H2 suggests that the form of payment should influence the information content of earnings announcements during a takeover. Table 8 provides results of the models that tested for differential information content in the earnings announcement after the first takeover announcement across stock, cash, and all other forms of payment. No significant difference was detected for stage two, but stage three results are consistent with H2. The relationship between unexpected earnings and cumulative abnormal returns is significantly positive for those firms receiving stock as the form of payment. Those firms receiving cash are associated with a significantly lower coefficient (p-value = 0.0155) at stage three. Firms receiving other forms of payment are also associated with a significantly lower coefficient.

A Spearman rank correlation test (similar to that used by Brown and Kim [1991]) was used to further investigate the relationship between CAR and unexpected earnings across form of payment. Table 9 provides the results of this test. The Spearman rank correlation was computed between CAR and unexpected earnings, deflated by price, for target firms receiving stock and cash for each year separately. The Wilcoxon signed rank test was then used to determine if the relationship between CAR and unexpected earnings was greater for those firms receiving stock than those firms receiving cash. Target firms with a stock payment showed a significantly greater correlation (p-value = 0.0398) than for those firms receiving

TABLE 8
REGRESSION OF UNEXPECTED EARNINGS ON CAR
TYPE OF PAYMENT
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 2				
Intercept	0.0108	0.0386	0.0179	0.1713
Unexpected Earnings:				
Stock (β_1)	0.0228	0.2065	0.1533	0.4605
Cash (β_2)	-0.1347	0.2008	-0.4971	0.3977
Other (β_3)	-0.0520	0.4438	0.6672	0.3710
F-Statistic	0.392	0.7624	0.166	0.9185
R^2	0.0089		0.0126	
Adjusted R^2	-0.0138		-0.0633	
N	135		43	
Stage 3				
Intercept	0.0015	0.5755		
Unexpected Earnings:				
Stock (β_1)	0.6125	0.0353		
Cash (β_2)	-0.8372	0.0155		
Other (β_3)	-0.3718	0.0505		
F-Statistic	1.631	0.1852		
R^2	0.0449			
Adjusted R^2	0.0174			
N	108			

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 X_{ci} * UE_{it}/P_i + \beta_3 X_{mi} * UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

X_{ci} = dummy variable for form of payment which equals one if payment is cash

X_{mi} = dummy variable for form of payment which equals one if payment is not totally cash or stock

p-Values are one-tailed for coefficients

TABLE 9
SPEARMAN RANK CORRELATIONS BETWEEN CUMULATIVE ABNORMAL RETURNS
AND RANDOM WALK EARNINGS UNEXPECTED EARNINGS
FOR CASH AND STOCK PAYMENT

Year	Cash	N	Stock	N	Difference
1982	-0.25195	21	0.05455	11	0.30650
1983	0.06328	16	0.55245	12	0.48917
1984	0.08831	31	0.60140	12	0.51309
1985	0.45113	20	0.25588	16	-0.19525
1986	-0.15727	36	0.09391	18	0.25118
Mean	0.03870		0.31164		0.27294

Wilcoxon signed rank test for difference in correlation between cash and stock payment, one-tailed p-value	0.0398

cash. This result is also consistent with H2. Thus, target firm shareholders find target stand-alone earnings to be more informative when they are receiving stock as the form of payment rather than cash.

To examine the importance of the relative size of the target to the bidder in influencing the information content of target earnings announcements, both a continuous size unexpected earnings interaction and a dummy size unexpected earnings interaction were used. The results, presented in Table 10, show no significant relationships between any variable in the model and CAR. The continuous size model is shown in panel A and the dummy size model is shown in panel B. The dummy results shown are for a ten percent relative size partition. The qualitative results were the same using a 25 or 50 percent cutoff as well. Only stage two has a large enough sample size to estimate without overfitting. These results are inconsistent with H3. They indicate that the information content of the earnings announcement after the first takeover announcement is not influenced by the relative size of the target to the bidder.

The results for the analysis of the influence of situations where earnings management is likely to occur on the information content of target earnings announcements made during a takeover is presented in Table 11. Panel A presents the results using type of transaction as the proxy for earnings management. Generally, the results show no significant difference in the coefficient for the firms in the likely to manipulate category relative to the unlikely to manipulate firms. The exceptions are the stage two VL model where firms that are likely to manipulate were associated with a significant increase in the coefficient on unexpected earnings (p-value = 0.0435) and the stage three RW model where likely to manipulate firms were associated with a significant decrease in the

TABLE 10
REGRESSION OF UNEXPECTED EARNINGS ON CAR
RELATIVE SIZE OF TARGET TO BIDDER
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Panel A: Continuous Size

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 2				
Intercept	0.0132	0.2231		
Unexpected Earnings (β_1)	0.0397	0.3314		
RELSIZE * UE (β_2)	-0.4144	0.4289		
F-Statistic	0.556	0.5790		
R^2	0.0336			
Adjusted R^2	-0.0268			
N	35			

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 RSIZE_i * UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal returns over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

$RSIZE_i$ = the relative size of the target to the bidder

p-Values are one-tailed for coefficients

Panel B: Dummy Size

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 2				
Intercept	0.0132	0.1234		
Unexpected Earnings:				
Large (β_1)	-0.0916	0.4492		
Small (β_2)	0.1157	0.4360		
F-Statistic	0.553	0.5808		
R^2	0.0334			
Adjusted R^2	-0.0270			
N	35			

TABLE 10 (cont'd)

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 Z_i * UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

Z_i = dummy variable equal to one if the target firm is considered small relative to the bidder (10% in this table)

p-Values are one-tailed for coefficients

TABLE 11
REGRESSION OF UNEXPECTED EARNINGS ON CAR
INDICATORS OF EARNINGS MANAGEMENT
FOR TARGET FIRM REACTION TO TARGET FIRM EARNINGS

Panel A: Form of Transaction Proxy

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 0				
Intercept	-0.0006	0.8770	0.0025	0.6308
Unexpected Earnings:				
FTO & M (β_1)	0.1718	0.0778	0.0992	0.2290
HTO & LBO (β_2)	-0.1008	0.2389	-0.0369	0.4061
F-Statistic	1.463	0.2353	0.570	0.5677
R^2	0.0211		0.0131	
Adjusted R^2	0.0067		-0.0099	
N	139		89	
Stage 1				
Intercept	0.0019	0.7497	-0.0025	0.7926
Unexpected Earnings:				
FTO & M (β_1)	0.7121	0.0396	0.1283	0.0503
HTO & LBO (β_2)	-0.5090	0.2354	0.9728	0.2561
F-Statistic	1.663	0.0612	1.624	0.2111
R^2	0.0612		0.0828	
Adjusted R^2	0.0244		0.0318	
N	54		39	
Stage 2				
Intercept	0.0101	0.0491	0.0184	0.1392
Unexpected Earnings:				
FTO & M (β_1)	0.0171	0.2658	-0.4362	0.2938
HTO & LBO (β_2)	0.2539	0.2633	3.1652	0.0435
F-Statistic	0.429	0.6521	1.562	0.2223
R^2	0.0065		0.0724	
Adjusted R^2	-0.0086		0.0260	
N	135		43	
Stage 3				
Intercept	0.0018	0.4948		
Unexpected Earnings:				
FTO & M (β_1)	0.2039	0.0797		
HTO & LBO (β_2)	-1.0749	0.0003		
F-Statistic	6.380	0.0024		
R^2	0.1084			
Adjusted R^2	0.0914			
N	108			

TABLE 11 (cont'd)

Panel B: Announced Resistance

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 0				
Intercept	0.0004	0.9354	0.0060	0.3247
Unexpected Earnings:				
None (β_1)	0.1488	0.0980	0.0864	0.2580
Announced (β_2)	-0.0681	0.3118	-0.0072	0.4817
F-Statistic	0.970	0.4102	0.776	0.5135
R^2	0.0211		0.0267	
Adjusted R^2	-0.0006		-0.0077	
N	139		89	
Stage 1				
Intercept	0.0067	0.3784	-0.0046	0.6869
Unexpected Earnings:				
None (β_1)	0.6801	0.0439	0.1239	0.0611
Announced (β_2)	-0.3892	0.2954	1.0980	0.2434
F-Statistic	1.448	0.2400	1.079	0.3705
R^2	0.0799		0.0847	
Adjusted R^2	0.0247		0.0062	
N	54		39	
Stage 2				
Intercept	0.0123	0.0187	0.0214	0.0946
Unexpected Earnings:				
None (β_1)	0.0179	0.2534	-0.2476	0.3721
Announced (β_2)	1.8276	0.1140	3.7597	0.1819
F-Statistic	1.732	0.1619	1.376	0.2643
R^2	0.0381		0.0957	
Adjusted R^2	0.0161		0.0262	
N	135		43	

TABLE 11 (cont'd)

Panel C: Percentage Ownership Proxy

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Stage 0				
Intercept	-0.0008	0.8538	0.0025	0.6311
Unexpected Earnings:				
Low (β_1)	-0.1776	0.4027	-0.3153	0.3347
High (β_2)	0.2792	0.3499	0.3910	0.2992
F-Statistic	1.281	0.2811	0.683	0.5079
R^2	0.0185		0.0156	
Adjusted R^2	0.0041		-0.0073	
N	139		89	
Stage 1				
Intercept	0.0033	0.5883	-0.0045	0.6287
Unexpected Earnings:				
Low (β_1)	-0.0481	0.4605	-0.0444	0.4396
High (β_2)	1.0793	0.0520	0.1829	0.2713
F-Statistic	2.830	0.0683	1.592	0.2175
R^2	0.0999		0.0813	
Adjusted R^2	0.0646		0.0302	
N	54		39	
Stage 2				
Intercept	0.0107	0.0396	0.0195	0.1334
Unexpected Earnings:				
Low (β_1)	-0.0814	0.3207	-21.2857	0.1538
High (β_2)	0.1024	0.2817	21.4982	0.1520
F-Statistic	0.395	0.6745	0.563	0.5742
R^2	0.0059		0.0274	
Adjusted R^2	-0.0091		-0.0213	
N	135		43	
Stage 3				
Intercept	0.0016	0.5593		
Unexpected Earnings:				
Low (β_1)	-0.3505	0.0806		
High (β_2)	0.4344	0.0710		
F-Statistic	1.140	0.3239		
R^2	0.0212			
Adjusted R_2	0.0026			
N	108			

TABLE 11 (cont'd)

Panel D: Announced Resistance and Percentage Ownership Proxy

Variable	Random Walk Coefficient	Random Walk p-Value	Value Line Coefficient	Value Line p-Value
Stage 0				
Intercept	-0.0006	0.8830	0.0025	0.6220
Unexpected Earnings:				
Low and None (β_1)	0.1416	0.1077	0.1314	0.2838
High and Announced (β_2)	-0.0618	0.3266	-0.0046	0.4882
F-Statistic	1.308	0.2737	0.542	0.5838
R^2	0.0189		0.0124	
Adjusted R^2	0.0044		-0.0105	
N	139		89	
Stage 1				
Intercept	0.0017	0.7773	-0.0024	0.7969
Unexpected Earnings:				
Low and None (β_1)	0.5976	0.0534	0.1284	0.0500
High and Announced (β_2)	-0.2705	0.3758	1.0555	0.2501
F-Statistic	1.438	0.2469	1.638	0.2085
R^2	0.0534		0.0834	
Adjusted R^2	0.0163		0.0325	
N	54		39	
Stage 2				
Intercept	0.0114	0.0264	0.0207	0.0976
Unexpected Earnings:				
Low and None (β_1)	0.0176	0.2567	-0.2548	0.3670
High and Announced (β_2)	2.5502	0.0263	4.9280	0.0255
F-Statistic	2.145	0.1211	2.045	0.1428
R^2	0.0315		0.0927	
Adjusted R^2	0.0168		0.0474	
N	135		43	
Stage 3				
Intercept	0.0017	0.5413		
Unexpected Earnings:				
Low and None (β_1)	-0.0381	0.3892		
High and Announced (β_2)	-0.1752	0.4465		
F-Statistic	0.053	0.9480		
R^2	0.0010			
Adjusted R^2	-0.0180			
N	108			

TABLE 11 (cont'd)

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 M_i * UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

M_i = indicator variable which equals one for firm i when the proxy being used for earnings management indicates presence of a situation where earnings management is likely to occur

p-Values are one-tailed for coefficients

coefficient (p-value = 0.0003). This significant decrease, however, disappeared when only earnings announcements after the first takeover announcement that were interim quarters were used in the estimation. Therefore, the only significant difference in information content detected was of the wrong direction. The results for this proxy are not consistent with H4.

Panel B reports the results using announced resistance as the proxy. These results show no significant differences in the information content of the earnings announcement after the first takeover announcement between firms that announce resistance and those firms that do not announce resistance. When confounding events are controlled for, the stage two RW model has a marginally significant positive coefficient of 0.0163 on the no resistance firms (p-value = 0.0602) and a significant positive coefficient of 4.9898 (p-value = 0.0053) on those observations with announced resistance. The only significant relationship was again in the wrong direction, which is inconsistent with H4.

The percentage ownership proxy results are shown in panel C of Table 11. The only significant differences with this proxy are also in the wrong direction. They occur with the RW model at stage one and three. When confounding events are controlled for stage two of the RW model shows a significant increase for firms with high ownership and stage three becomes insignificant. Again, the proxy does not support H4.

Panel D provides the results for the combined percentage ownership announced resistance proxy. The only significant differences are for stage two in both models. However, the significance is in the wrong direction. The RW result became insignificant when only interim quarters are considered. When confounding events are controlled for, the stage

zero VL model has a significant positive coefficient on unexpected earnings for firms that have low ownership and no resistance of 2.0788 (p-value = 0.0004) and a significant negative coefficient of -2.0143 (p-value = 0.0005) for those firms with high ownership and announced resistance. This is the only result that is consistent with H4.

In general, the earnings management results are consistent across proxies. Any significant results are of the wrong sign. The directional tests results are inconsistent with H4.

7.1.3 Comparison of Results of Directional and Nondirectional Tests Both tests show a significant decrease in the information content of target stand-alone earnings announced during a takeover. The stage of completion analysis was highly similar, although stage zero was consistently negative in the directional tests and not in the nondirectional tests. Both tests also provide at least some support for earnings being more useful to target shareholders when they are receiving stock as the form of payment. Any results consistent with H3 and H4 were limited to the nondirectional model. No significant differences across relative size were shown in the directional test while the nondirectional tests showed highly significant differences for stage two. The nondirectional test results for earnings management were mixed, but the announced resistance proxy performed well. The directional tests showed virtually no results consistent with the hypothesis.

The differences in results may relate to the properties of the two methodologies. The directional methodology relies on a measure of unexpected earnings. If the proxy used to measure unexpected earnings is not consistent with the market, the unexpected earnings measure may be noisy. Value Line has been shown to be a good measure of the market's

earnings expectation (Brown and Rozeff [1978]). However, for the results presented in this section, there were many instances where the VL sample size was too small to estimate the model. For this reason, it would seem that the nondirectional test may be a better test for the target firms. This would seem to especially be the case where VL models could not be estimated, such as in the models testing for relative firm size differences.

Bearing in mind the possible problems with the directional tests, the results presented here seem to be consistent with H1, H2, and H3 and generally not consistent with H4. Thus, target firm stand-alone earnings announced during a takeover have reduced information content, with the reduction being most prominent in later stages of the takeover process. Target stand-alone earnings also seem to be less relevant to target shareholders when they are receiving cash as the form of payment, when the target is small relative to the bidder and stock is the form of payment, and when target management is announcing resistance to the takeover.

7.2 Bidder Firm Reaction to Bidder Firm Earnings Announcements

Table 12 presents information on the sample of firms used in the bidder reaction to bidder earnings announcement tests. Of the 945 target firms used in the target analysis, 623 were acquired by publicly traded bidders. These 623 (439 NYSE/AMEX and 184 OTC) firms constitute the bidder sample. This sample was reduced by 78 for firms with missing earnings announcement dates and by 20 for firms with missing return data. The basic tests use the 525 (401 NYSE/AMEX and 124 OTC) remaining observations.

The theoretical discussion in Chapter 6 implied that a reduced reaction to earnings announced by the bidder firm during a takeover should

TABLE 12
BIDDER FIRM REACTION TO BIDDER FIRM EARNINGS SAMPLE SIZE

	1982	1983	1984	1985	1986	TOTAL
Publicly Traded Acquirers	102	110	119	133	159	623
Earnings Dates not Available	(11)	(19)	(13)	(16)	(19)	(78)
Missing CRSP Data	(2)	(3)	(6)	(2)	(7)	(20)
Firms Included in Basic Tests	89	88	100	115	133	525

be detected. This results from future cash flows to investors coming from combined firm earnings rather than the bidder firm alone. To test this hypothesis, both directional and nondirectional tests were used. The directional results are consistent with the hypothesis, but the nondirectional results are inconsistent with the hypothesis.

7.2.1 Results of Nondirectional Tests The U-statistic for the earnings announcement before the first takeover announcement and the earnings announcement after the first takeover announcement were compared using the Wilcoxon signed rank test. Using all 525 firms, the U-statistic for the earnings announcement after the first takeover announcement was significantly greater (p-value = 0.0346) than the U-statistic for the earnings announcement before the first takeover announcement. However, the only year that showed a significant difference in this direction was 1985. Also, when confounding events were controlled for, the remaining 193 firms did not show any significant difference in the level of the U-statistics (p-value = 0.9492). The significant difference detected for the sample as a whole appears to be related to some event other than the firms being involved in a takeover since those firms with no contemporaneous confounding events do not exhibit a significant difference.

The binomial test is consistent with the Wilcoxon results. In the sample as a whole, 168 (32 percent) of the firms have a U-statistic greater than one for the earnings announcement before the first takeover announcement. For the earnings announcement after the first takeover announcement, 208 firms had a U-statistic greater than one. This represents a significant increase (z = 3.7424) in the number of U-

statistics greater than one. Only years 1982 (z = 2.0455) and 1985 (z = 5.0000) were significant on their own.

When the binomial test is broken down by stage of completion, stages two (z = 4.3422) and three (z = 3.0707) are associated with a significant increase in the number of U-statistics that are greater than one for the earnings announcement after the first takeover announcement relative to before the first takeover announcement. Stages zero (z = -0.1364), one (z = -0.5164), and four (z = 0.4520) showed no significant difference. These results are inconsistent with H5, which hypothesized a decrease rather than an increase in the information content of bidder stand-alone earnings announced during a takeover.

Table 13 shows the results by stage using the Wilcoxon signed rank test. Stage two is associated with a significant increase (p-value = 0.0322) in the information content of earnings announced after the firm becomes involved in a takeover relative to before. All other stages show no significant change in the information content of earnings. This result seems to be driven by 1985, which is the only year with differences significant at or below the five percent level. When confounding events are controlled for, no significant differences in information content of the two earnings announcements remain, implying that the significant increase is related to some other information disclosure rather than the earnings being announced during a takeover. These results, showing no significant change in the information content of earnings announced by the bidder firm during a takeover, do not support H5.

The change in the U-statistic between the two earnings announcements were compared across type of payment (cash versus common stock), relative size of the target to the bidder partitions, type of transaction (merger

TABLE 13
COMPARISON OF U-STATISTICS BEFORE AND AFTER TAKEOVER
BY STAGE OF COMPLETION
FOR BIDDER FIRM REACTION TO BIDDER FIRM EARNINGS

Stage[a]	Class[b]	N	Median U-statistic	Mean Rank UTA < UTB (N)	Mean Rank UTA > UTB (N)	p-value
0	Before	72	0.6028	40.47	32.53	
	After	72	0.2947	(36)	(36)	0.2112
1	Before	24	0.2549	12.09	12.85	
	After	24	0.2912	(11)	(13)	0.3136
2	Before	215	0.4708	101.29	112.85	
	After	215	0.8162	(97)	(117)	0.0322
3	Before	149	0.4140	74.47	75.42	
	After	149	0.5347	(66)	(83)	0.1013
4	Before	65	0.4092	32.71	33.22	
	After	65	0.5656	(28)	(37)	0.1532

Notes:

a. The stage of completion is a proxy for market assessed probability of success. It ranges 0, where one bidder exists and the terms of the transaction are unsettled, to stage 4, where shareholders have voted to accept a merger or ninety percent of the stock has been tendered in a tender offer. See chapter 5 for a complete definition of each stage.

b. Before represents the earnings announcement before the first takeover announcement. After represents the earnings announcement after the first takeover announcement.

c. One-tailed significance levels from the Wilcoxon Signed Rank test.

versus tender offer), and sign of target firm earnings using the Wilcoxon sum rank test to determine if any of these factors influenced the relative information content of bidder stand-alone earnings. The only significant result was between mergers and tender offers at stage two with tender offers showing less of a decrease in reaction than mergers (p-value = 0.0216). However, even this result became insignificant when concurrent confounding events were controlled for. Thus, none of the factors considered influenced the importance of bidder stand-alone earnings announced during a takeover to bidder firm investors.

All tests were repeated using only the 292 bidders that made only one acquisition during the study period. This analysis was conducted to determine whether the lack of results was related to investors viewing all earnings announcements for those firms that are frequent acquirers as earnings announced during a takeover. The theory implies that for these firms no decrease may be detected because both reactions considered in this study are reduced from what the reaction would be if the firm were not always involved in acquisitions. Examining those firms that are not frequent acquirers would make UTB more representative of a reaction to earnings announced by a firm not involved in a takeover. The results were generally consistent with those presented for the sample as a whole. The significant increase in information content for the earnings announcement after the first takeover announcement over the announcement before the first takeover announcement for stage two firms became only marginal (p-value 0.0904). Thus, examining only firms that acquired one target during the study does not provide results consistent with H5.

The regression of indicator variables for news announcements made between earnings announcements on UTA-UTB described in Chapter 5 was

estimated. The only types of news with coefficients significant at or below the ten percent level were equity issues or repurchases (t-statistic = -1.962), product related news (t-statistic = 1.780), and operations related news (t-statistic = -2.590). All firms with any of these types of announcements were deleted and all test were repeated. The qualitative results remained identical to those for the sample as a whole.

Unexpected earnings for the earnings announcements before and after the first takeover announcement were compared. No significant difference in the level of unexpected earnings between the two earnings announcement was detected using either random walk (p-value = 0.6832) or Value Line (p-value = 0.6773) unexpected earnings measures. Thus, the increased reaction documented for the sample as a whole is not related to different levels of unexpected earnings.

7.2.2 Results of Directional Tests There were 451 firms with RW unexpected earnings and 395 firms with VL unexpected earnings measures. Table 14 provides results of the regression equations comparing the relationship between unexpected earnings and CAR between the two earnings announcements. The results reported in this table are consistent with H5.

Panel A examines the information content of the earnings announcements before and after the first takeover announcement without considering stage of completion. For both unexpected earnings proxies, there is a significant positive relationship between CAR and the unexpected earnings for the earnings announcement before the first takeover announcement. The reaction to the earnings announcement after the first takeover announcement is significantly lower in both models (p-values of 0.0350 for RW and 0.0705 for VL model). However, when confounding events are controlled for, no coefficients are significant.

TABLE 14
REGRESSION OF UNEXPECTED EARNINGS ON CAR
BEFORE AND AFTER TAKEOVER ANNOUNCEMENT
FOR BIDDER FIRM REACTION TO BIDDER FIRM EARNINGS

Panel A: Without Stages of Completion

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Intercept	-0.0008	0.6068	-0.0011	0.5144
Dummy	-0.0003	0.8881	0.0006	0.7929
Unexpected Earnings:				
Before (β_1)	0.0774	0.0772	0.2077	0.0110
After (β_2)	-0.1393	0.0350	-0.1885	0.0705
F-Statistic	1.125	0.3381	1.814	0.1413
R^2	0.0037		0.0069	
Adjusted R^2	0.0004		0.0031	
N	451		395	

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 A_{it} + \beta_2 UE_{it}/P_i + \beta_3 A_{it} UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0;

UE_{it} = the difference betweem actual and expected earnings for quarter t for firm i;

A_{it} = indicator dummy which equals zero if the earnings announcement occurred before the first takeover announcement and one if the earnings announcement occurs after the first takeover announcement;

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement.

p-Values are one-tailed for coefficients

TABLE 14 (cont'd)

Panel B: With Stage of Completion

	Random Walk		Value Line	
Variable	Coefficient	p-Value	Coefficient	p-Value
Intercept	-0.0011	0.3145	-0.0008	0.4827
Unexpected Earnings:				
Before (β_1)	0.0778	0.0754	0.2085	0.0106
After 0 (β_2)	0.1867	0.2243	0.8243	0.0828
After 1 (β_3)	0.2614	0.2143	0.0587	0.4083
After 2 (β_4)	-0.2625	0.0020	-0.3154	0.0476
After 3 (β_5)	-0.0017	0.4938	-0.2929	0.0384
After 4 (β_6)	-0.2311	0.1898	-0.0114	0.4840
F-Statistic	1.968	0.0676	1.842	0.0882
R^2	0.0130		0.0139	
Adjusted R^2	0.0064		0.0064	
N	451		395	

Model:

$$CAR_{i-1,0} = \beta_0 + \beta_1 UE_{it}/P_i + \beta_2 S_{0i}*UE_{it}/P_i + \beta_3 S_{1i}*UE_{it}/P_i + \beta_4 S_{2i}*UE_{it}/P_i + \beta_5 S_{3i}*UE_{it}/P_i + \beta_6 S_{4i}*UE_{it}/P_i + \epsilon_{it}$$

where

$CAR_{i-1,0}$ = cumulative abnormal return over days -1 and 0

UE_{it} = the difference between actual and expected earnings for quarter t for firm i

P_i = price of firm i's stock at December 31 of the year before the first takeover announcement

S_{ji} = one if firm i is in stage of completion j at the earnings announcement after the first takeover announcement

p-Values are one-tailed for coefficients

Panel B provides the results of the models that consider the influence of stage of completion. For both unexpected earnings measures, the relationship between CAR and the unexpected earnings for the earnings announcement before the first takeover announcement is significantly positive. For the RW model, the earnings announcement after the first takeover announcement has significantly lower information content when the bidder firm is at stage two (p-value = 0.0020). Earnings announcements during a takeover by both stage two and stage three bidders were shown to have significantly lower information content in the VL model. This model also indicates that stage zero firms are associated with a marginally significant increase in the information content of earnings announced during a takeover (p-value = 0.0828). When contemporaneous confounding events were controlled for, stage three in the VL model lost significance. All other results remained qualitatively the same as reported in panel B of Table 14. These results are generally consistent with H5. The information content of the earnings announcement of the bidder firm made during a takeover was associated with decreased information content relative to earnings announcements made when the firm is not involved in a takeover. The decrease in information content is limited to those bidders where the terms of the transaction are known, which is consistent with the hypothesis.

The equations described in Chapter 5 to examine the relative information content of earnings between cash and stock payment, large and small relative size, mergers and tender offers, and positive and negative target earnings were estimated for the bidder firms. Tabular results will not be provided because of the general lack of significance of any coefficients.

In the regression comparing cash and stock payment, the only significant result was for RW model at stage three when confounding events were controlled for. In this model, the coefficient for stock payment was 3.6646 (p-value = 0.0085). Cash payment had a coefficient of 0.1742, which is significantly lower than stock payment (p-value = 0.0147). All other forms of payment were associated with a coefficient of -1.8101, which is significantly lower than stock payment (p-value = 0.0204). All other payment related models did not have any significant coefficients. Therefore, the form of payment does not seem to influence the information content of stand-alone earnings announced by the bidder.

Only the continuous size RW model for stage three firms showed any significant difference in the information content of bidder firm earnings announced during a takeover as relative size of the target to the bidder was varied. The coefficient on unexpected earnings was 0.2453 (p-value = 0.0507). The coefficient on the relative size unexpected earnings interaction term was -0.2453 (p-value = 0.0421). Thus, for this model, the information content of bidder firm earnings is significantly lower when the target is large relative to the bidder. All other continuous size and dummy size models showed no significant differences. Thus, relative size is generally not important in influencing the information content of stand-alone earnings announced by the bidder.

There were no significant differences in the information content of bidder earnings announced during a takeover across type of transaction or sign of target earnings. In general, the information content of bidder firm earnings was not sensitive to any of the factors considered other than stage of completion. Controlling for multiple acquirers did not change any of the qualitative results.

7.2.3 Comparison of Results of Directional and Nondirectional Tests The nondirectional results failed to support H5 while the directional results were generally consistent with the hypothesis. When good measures of unexpected earnings are available, the directional approach has greater power because it can consider both the direction and magnitude of the reaction. The nondirectional approach only considers magnitude. Because the bidder firms tend to be large, analysts follow these firms. VL forecasts were readily available. The mean forecast error using VL forecasts was -0.01 for the earnings announcement before the first takeover announcement and -0.05 for the earnings announcement after the first takeover announcement. Given the presence of quality earnings forecasts, the directional models would be better at detecting small differences in information content. Therefore, the results reported here are consistent with bidder firm earnings announced during a takeover having reduced information content to shareholders when the terms of the transaction are known.

7.3 Bidder Firm Reaction to Target Firm Earnings Announcements

To examine whether the bidder firm reaction to target firm earnings announcements differs when the firms are involved in a takeover, the earnings dates for the target and the first takeover announcement for the bidder must line up in time such that the target firm earnings announcement before the target's first takeover announcement must occur before the bidder's first takeover announcement and the target firm earnings announcement after the target's first takeover announcement must occur after the bidder's first takeover announcement. Table 15 explains how the 623 publicly traded acquirers was reduced to the 295 firms used in the tests. The target firm earnings date and bidder firm first

TABLE 15
BIDDER FIRM REACTION TO TARGET FIRM EARNINGS SAMPLE SIZE

	TOTAL
Publicly Traded Acquirers	623
Cross Earnings Dates not Available or not Defined	(315)
Missing CRSP Data	(13)
Included in Basic Tests	295

takeover date did not align in time properly or the target had missing earnings announcement dates for 315 of the firms. Adequate CRSP returns were not available for 13 other firms. The remaining 295 observations are used in the tests.

The theory discussed in Chapter 6 indicated that target firm earnings announced during a takeover should be more informative to bidder firm shareholders than earnings announced before the takeover. Comparing the U-statistics for the bidder to the target earnings announcements using the Wilcoxon signed rank test showed no significant difference in reaction between the two announcements (p-value = 0.2660) without considering stages of completion. However, the binomial test did show a significant increase in the number of firms with U-statistics greater than one after the takeover announcement relative to before. There were 71 firms with U-statistics greater than one before the first takeover announcement. For the earnings announcement after the first takeover announcement, there were 85 firms with U-statistics greater than one. This represents a significant increase ($z = 1.84$).

When stage of completion is considered, a significant increase is detected at one stage. Table 16 provides the results of the Wilcoxon signed rank test when stage of completion is considered. These results indicate that for firms in stage two a significant increase in the information content of target earnings announced during the takeover is detected (p-value 0.0261). No significant change in information content is detected at any other stage. The results of this test are generally inconsistent with H6.

The form of payment, relative size of the target to the bidder, and indicators of earnings management were all examined to determine if such

TABLE 16
COMPARISON OF U-STATISTICS BEFORE AND AFTER
BY STAGE OF COMPLETION
FOR BIDDER FIRM REACTION TO TARGET FIRM EARNINGS

Stage[a]	Class[b]	N	Median U-statistic	Mean Rank UTA < UTB (N)	Mean Rank UTA > UTB (N)	p-value[c]
0	Before	47	0.2840	22.32	25.48	
	After	47	0.4782	(22)	(25)	0.2199
1	Before	18	0.1768	8.40	10.88	
	After	18	0.1874	(10)	(8)	0.4740
2	Before	136	0.3357	68.44	68.54	
	After	136	0.4710	(55)	(81)	0.0261
3	Before	89	0.4777	44.73	45.37	
	After	89	0.3278	(51)	(38)	0.1273
4	Before	5	0.4026	4.50	2.00	
	After	5	0.5784	(2)	(3)	0.3429

Notes:

a. The stage of completion is a proxy for market assessed probability of success. It ranges 0, where one bidder exists and the terms of the transaction are unsettled, to stage 4, where shareholders have voted to accept a merger or ninety percent of the stock has been tendered in a tender offer. See chapter 5 for a complete definition of each stage.

b. Before represents the earnings announcement before the first takeover announcement. After represents the earnings announcement after the first takeover announcement.

c. One-tailed significance levels from the Wilcoxon Signed Rank test.

factors influenced the importance of target earnings announced during the takeover to bidder firm shareholders. The results showed no significant differences for any of these factors.

To investigate the importance of relatedness of the firms in the transaction in influencing the importance of target earnings, the tests were repeated partitioning the sample into those firms where the target and bidder had the same two-digit SIC code and those where the code differed. No significant differences were detected in any tests for the portion of the sample with the same SIC code. Therefore, target earnings do not have increased information content to bidder shareholders when the firms are in the same industry. However, at all stages except stage one, more firms had larger U-statistics for the earnings announcement after the first takeover announcement than for the earnings announcement before the first takeover announcement, but the increases were not significant. This may result from information transfers taking place before the firms became involved in takeover negotiations. Any increased informativeness of the earnings during the takeover as evidenced by increased U-statistics, cannot be statistically detected.

For the portion of the sample where the SIC codes are not the same, the information content of target earnings to bidders is marginally greater during the takeover relative to before (p-value = 0.0958) before considering stage of completion. When stage of completion is considered, stage two firms are associated with a significant increase (p-value = 0.0188) in the information content of target earnings after the takeover announcement. Thus, the significant result reported for the sample as a whole is attributable mainly to those firms where the target and bidder have different SIC codes. Increased informativeness may be easier to

detect statistically for these firms because the information transfers discussed in Foster [1981] and Clinch and Sinclair [1987] are probably of a lower magnitude for these firms. Thus, the same level of informativeness of during takeover negotiation announced earnings for firms without prenegotiation transfer effects would be associated with a larger increase than if transfers are occurring. This may explain why only those firms with different SIC codes for the target and bidder are associated with significant increases in informativeness.

The results in this section show that target earnings are more informative to bidder shareholders in stage two, but the increase in informativeness may be limited to those firms where the target and bidder are not in the same industry. These results are generally inconsistent with H6.

7.4 Target Firm Reaction to Bidder Firm Earnings

The timing of the bidder earnings announcements and target first takeover date are important for this test. To measure the impact of the takeover on information content, it must be the case that the bidder earnings announcement after the bidder's first takeover announcement must fall in calendar time after the target's first takeover announcement. Also, the date of the bidder's quarterly earnings announcement before the bidder's first takeover announcement must be before the date of the target's first takeover announcement. This makes the first earnings occur before the firms were involved in a takeover and the second earnings in calendar time an earnings announcement by the bidder during takeover negotiations. In a number of cases, the bidder earnings announcement before the bidder's first takeover announcement occurred after the

target's first takeover announcement. This was often the case when there was a first bidder other than the ultimately successful bidder.

Table 17 explains how the sample size for these tests was determined. For the 945 publicly traded targets, the earnings dates of the bidder either did not line up properly in calendar time with the target's first takeover announcement or were not available for 480 firms. Target firm return data was missing around the time of the bidder earnings announcement for another 110 firms. This left a sample of 355 firms.

As discussion in Chapter 6, an increase in the information content of bidder firm earnings announced during a takeover to target shareholders is expected if stock is received as the form of payment, and a decrease in the information content of bidder earnings announced during a takeover to target shareholders is expected when cash is received as the form of payment. Therefore, to test the hypotheses, the analysis must consider both stage of completion and type of payment. However, a comparison of the U-statistics for the two earnings announcements before considering these factors shows a significant decrease (p-value = 0.0000) in information content of the earnings announcement made during the takeover using the Wilcoxon signed rank test. This significant decrease regardless of type of payment exists at all stages other than stage one.

The binomial test is consistent with the Wilcoxon result. For the earnings announcement before the first takeover announcement, there were 125 firms with U-statistics greater than one (35 percent). Only 66 firms had U-statistics greater than one for the earnings announcement after the first takeover announcement, which represents a significant decrease (z = -6.5006). Thus, overall the information content of bidder firm earnings to target shareholders is reduced.

TABLE 17
TARGET FIRM REACTION TO BIDDER FIRM EARNINGS SAMPLE SIZE

	TOTAL
Publicly Traded Target	945
Cross Earnings Dates not Available or not Defined	(480)
Missing CRSP Data	(110)
Included in Basic Tests	355

A comparison of the difference in the U-statistics across type of payment using the Wilcoxon sum rank test does show a significant difference with stock payment showing a less reduced reaction than cash (p-values of 0.0484 for stage two and 0.0574 for stage three). This difference is as expected and provides support for the need to consider the results for the two forms of payment separately. Table 18 provides the results of comparing the level of the U-statistic to each earnings announcement within stage of completion and type of payment.

Panel A shows the results when payment to target shareholders is in the form of common stock in the combined firm. No significant changes in the information content of the earnings announcement made during the takeover relative to the earnings announcement made before the takeover is detected. Pooling across the stages of completion also does not provide a significant result (p-value 0.1418). These results do not support H7.

Panel B of Table 18 provides the results when cash is received by target shareholders as the form of payment. All stages of completion are associated with a significant decrease in information content of bidder firm earnings announced during a takeover to target shareholders. These results indicate that target shareholders are behaving consistently with theory. These shareholders will not be holding stock in the future related to their current investment. They are no longer interested in the information transfers that provide signals about earnings and cash flow for the firm in which they own shares. The results are highly consistent with H8.

Tests comparing the difference in U-statistics across relative size and incentive to manage earnings showed no significant differences. All

TABLE 18
COMPARISON OF U-STATISTICS BEFORE AND AFTER
BY STAGE OF COMPLETION AND FORM OF PAYMENT
FOR TARGET FIRM REACTION TO BIDDER FIRM EARNINGS

Panel A: Target Firms Receiving Common Stock Payment

Stage[a]	Class[b]	N	Median U-statistic	Mean Rank UTA < UTB (N)	Mean Rank UTA > UTB (N)	p-value[c]
2	Before	49	0.2366	26.28	23.67	
	After	49	0.1451	(25)	(24)	0.3290
3	Before	50	0.4129	34.32	18.57	
	After	50	0.3710	(22)	(28)	0.1284

Panel B: Target Firms Receiving Cash Payment

Stage[a]	Class[b]	N	Median U-statistic	Mean Rank UTA < UTB (N)	Mean Rank UTA > UTB (N)	p-value[c]
2	Before	74	0.2262	41.84	28.46	
	After	74	0.0265	(50)	(24)	0.0001
3	Before	33	0.4427	18.59	9.83	
	After	33	0.0236	(27)	(6)	0.0001
4	Before	6	6.4340	4.00	1.00	
	After	6	0.1264	(5)	(1)	0.0232

Notes:

a. The stage of completion is a proxy for market assessed probability of success. It ranges 0, where one bidder exists and the terms of the transaction are unsettled, to stage 4, where shareholders have voted to accept a merger or ninety percent of the stock has been tendered in a tender offer. See chapter 5 for a complete definition of each stage.

b. Before represents the earnings announcement before the first takeover announcement. After represents the earnings announcement after the first takeover announcement.

c. One-tailed significance levels from the Wilcoxon Signed Rank test.

tests were repeated on the subset of firms where the target and bidder had the same two-digit SIC code and those firms where the SIC code was not the same. The results of these tests were qualitatively the same as those reported for the sample as a whole.

The results in this section showed that the information content of bidder earnings announced during a takeover to target shareholders changes when cash is received as the form of payment. When stock is used as the payment, no change in information content is detected, which is inconsistent with H7. When cash is used as the payment, information content decreases, as predicted by H8.

CHAPTER 8

SUMMARY, CONCLUSIONS, LIMITATIONS, CONTRIBUTIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the study, to draw conclusions from the results, to discuss the limitations and contributions of the study, and to make some recommendations for future research in the area.

8.1 Summary and Conclusions

The purpose of this study was to analyze the information content of quarterly earnings announcements disclosed during a takeover to determine if they have more, less, or an equal amount of information content relative to earnings announced when a firm is not involved in a takeover. The analysis considered the target firm market reaction to target firm earnings, the bidder firm market reaction to bidder firm earnings, the bidder firm market reaction to target firm earnings, and the target firm market reaction to bidder firm earnings. A differential information content is expected because the future cash flows will not come from the bidder or target firm alone.

Valuation theory was used to develop models that relate share price to announced earnings during a takeover. The hypotheses tested were derived from the implications of the valuation theory models. A reduced information content of own firm earnings announcement as the probability of success increases was hypothesized. For the target firm, receiving cash instead of stock and being small relative to the bidder when stock

is received as the form of payment were hypothesized as being situations that are associated with reduced information content of target firm earnings. It was also hypothesized that earnings management would reduce information content. Target firm earnings was hypothesized to have greater information content to bidder firm shareholders. Bidder firm earnings were hypothesized to have greater information content to target shareholders if the form of payment was stock and lesser information content if the payment was cash.

The sample consisted of all publicly traded target firms that were completely taken over between 1982 and 1986 and the publicly traded successful acquirers. The sample was obtained from Merger and Acquisition.

Both a directional and nondirectional approach was used to test the hypotheses related to the reaction to own firm earnings announcements. Only the nondirectional approach was used to test for differential information content of the target earnings to bidder shareholders or bidder earnings to target shareholders.

The nondirectional approach utilized the U-statistic as developed by Beaver [1968]. The hypotheses were tested by using the Wilcoxon signed rank test to compare the earnings announced before and after the firm became involved in a takeover. The Wilcoxon sum rank test was used to compare differences in the U-statistics for the two earnings announcements across type of payment, relative size, and earnings management partitions.

The directional approach relied on regression analysis with dummy unexpected earnings interaction terms to test for differences in market reactions. Unexpected earnings was computed using both Value Line forecasts and a random walk without drift model.

The results showed that target firm earnings announcements made during a takeover are associated with reduced information content for firms in stages of completion one, two, and three. Target shareholders receiving cash payment for their shares found target earnings to have lower information content than those receiving stock in the combined firm. The nondirectional methodology also found that for target shareholders that receive stock payment that earnings are less informative to shareholders when the target is small relative to the bidder and that for all targets announced resistance by the target firm management makes earnings less informative to target firm shareholders. All other earnings management proxies failed to show significant differences in information content. The directional methodology failed to detect any difference in the information content of the two earnings announcements for firms of different relative size or for any of the earnings management proxies.

For the bidder firm reaction to bidder firm earnings, the nondirectional tests did not detect any differential reaction to earnings announced during a takeover relative to before the takeover. However, the directional test did find that the information content of earnings announced during the takeover was lower at later stages of completion.

Target firm earnings were found to have increased information content to bidder firm shareholders only for stage two firms. This result only held for those firms where the bidder and target have different SIC codes. Therefore, very little evidence was found that target firm earnings have differential information content to bidder firm shareholders. Bidder firm earnings were not shown to have differential information content to target shareholders during a takeover for target shareholders receiving stock in the combined firm as payment. However,

when cash was received as the form of payment, target firm shareholders found bidder firm earnings to be less informative during the takeover relative to before becoming involved in takeover negotiations.

The results show that takeovers are a situation where earnings are associated with a differential market reaction. Shareholders in the firm announcing earnings find those earnings less informative during a takeover relative to before becoming involved in the takeover. This finding extends the differential reactions literature to the takeover environment.

The tests in this study were testing implications of valuation theory as extended to takeovers. The results were consistent with a number of the hypotheses, which in turn indicates that the implications of valuation theory were supported. Thus, valuation theory was shown to be robust. The theory can be extended to a complex situation such as takeovers and still provide fairly accurate predictions about how investors will utilize earnings information in share valuation. The results also were consistent with shareholders using earnings to form estimates about future cash flows. No evidence was found to support shareholders using earnings as a signal for the possible terms or likelihood of success of the takeover. The study provides support for using valuation theory as a predictor for shareholder behavior during a takeover.

8.2 Limitations and Contributions

This section discusses the limitations and contributions of this study. One limitation relates to the way that the sample firm was used as its own control. If confounding events occurred between the earnings announcement before the first takeover announcement and the earnings announcement after the first takeover announcement that may cause the

reaction to earnings to differ for reasons other than the takeover announcement, then the conclusion that being involved in a takeover explains the difference rather than some other factor may be incorrect. One way to mitigate this problem would have been to use a matching control firm approach. However, this approach would have reduced the sample size because of inability to find good matches. Interpreting results in such a framework is also dependent on the matched firms being matched on those factors that are expected to influence the reaction to earnings (Harrison, Tomassini, and Dietrich [1983]). Since all of these factors are not known, the inferences would have been sensitive to the control group used.

This study generally examines second order effects or differences in a measure. As such, these differences may be small and, therefore, hard to detect using common statistical tests. This may have been the case in the bidder reaction to target earnings test with the same target and bidder two-digit SIC code situation. The test design was thus biased against finding a differential reaction. The tests used may not have had adequate power to ensure that all differential reactions that do exist were documented.

The sample used contains a self-selection bias in that only those firms that made or received a successful merger, tender offer, or leveraged buyout bid were included. If factors that make this group of firms different from those in the general population of firms influence the market reaction to earnings, the conclusions of this study may not be valid. The use of only successful takeover firms also created a sample bias. Unsuccessful takeover candidates may not exhibit the same characteristics and, therefore, may not have the same types of

differential reactions. The results, therefore, may not be generalizable to unsuccessful takeover firms.

As discussed in the literature review, the market for takeovers has been changing. This study examined takeovers completed during the 1980s. The results may not generalize to other time periods, tender offers for less than all of the stock, or to acquisitions of only part of a company.

One contribution that this study made is to increase the understanding of the importance of earnings during takeover negotiations. This study determined empirically whether the announcement of earnings during a takeover provides information that is useful to investors in valuing shares. The study determined the conditions under which earnings announcements provide more or less information than when the firm is not involved in a takeover. The results provided may be of interest to financial analysts to improve the timeliness of research reports on the involved companies as well as informing them as to the most interested user groups.

This study provided empirical evidence that firms involved in a takeover have an unusual response to earnings announcements. Other empirical researchers can benefit from this finding. The results provide a clearer understanding of when and why a firm involved in a takeover should be eliminated from a study that is looking at earnings reactions to other events.

By examining the information content of earnings during a takeover, this paper provided information on the usefulness of financial information during a transaction for corporate control as called for by Lev [1989]. The paper documented situations where the information content of earnings will differ from the information content that would exist in the absence

of a takeover. By documenting that takeovers are a situation where differential reactions are detected, the paper makes a contribution to other researchers who are interested in developing models to explain why earnings do not always have similar information content.

The paper applied valuation theory to the takeover market. The theory was extended to takeovers and then the implications of that extension were tested. The results indicate that valuation theory can be extended to complex situations like takeovers and that the model can still provide accurate predictions of shareholder behavior. Thus, the paper makes a contribution by extending the theory to a new situation and showing that the theory is robust in its predictions.

8.3 Recommendations for Future Research

This section will discuss some research studies that will address unusual results in or limitations of this study and some areas of related research. One such study would be to more fully examine the potential influence of earnings management on the information content of earnings. In this study, proxies were used to identify situations where earnings management may be likely to occur. The results were not consistent across these proxies. This seems to indicate that the proxies were not all identifying firms that are associated with earnings management. To really answer this question, it would be necessary to use a direct measure of earnings management. Once firms are identified as exhibiting earnings management or not, the information content of earnings can be compared across the two sets of firms to determine if earnings management does reduce the information content of earnings announced during a takeover beyond the reduction that occurs because the firm is involved in a takeover. A study that directly measures earnings management could also

determine how frequently it occurs and at what stage in the takeover process it occurs. Information on the prevalence of earnings management during takeovers would be interesting in its own right. Thus, a study directly examining earnings management during takeovers would make a contribution to the literature.

A limitation of this study is its lack of generalizability to situations where the attempted takeover was not successful or not of a complete firm. A similar approach to that used in this study could be used to examine whether these results extend to those situations. Examining unsuccessful takeover attempts would make a contribution to the literature on two fronts. It could extend our understanding of how earnings are used during a takeover as well as potentially provide additional information on how well shareholders assess the probability of success of the takeover. Such a study would be a logical extension of the current study.

Another extension of this study would be to examine the information content of earnings during other types of major changes in the corporation. Some examples of situations where earnings may have differential information content are bankruptcies and reorganizations. Such a study would contribute to the literature by further extending the differential reactions literature to other firm situations.

This study documented that earnings per share has lower information content to shareholders when the firm they own stock in is involved in a takeover. This may also be the case when firms have discontinued operations, extraordinary items, or changes in accounting principles as a part of net income. In these cases, shareholders may find income from continuing operations to be the most useful since it would represent the

income generated by assets that will be used by the company in the future. When companies acquire divisions of other companies, income form continuing operations may be less informative. Empirical tests to examine these issues would provide information about what market participants think permanent income is best measured by and whether traditional financial statements provide that number. The current study by examining takeovers, could be viewed as a study of discontinued operations and division acquisition on a large scale. If the results of this study were to extend to discontinued operations, they would provide evidence that the practice of separating discontinued operation results from income of the rest of the company provides shareholders with a more useful income number.

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