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The mitigation of asymmetric information through the use of earnouts

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**THE MITIGATION OF ASYMMETRIC INFORMATION
THROUGH THE USE OF EARNOUTS**

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

Business Administration (Finance)

by

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DEDICATION

This dissertation is dedicated to my mother, father, and wife. Without their support, I could not have undertaken this journey. In addition, I also dedicate this document to Dr. William Lane and Dr. William Staats. Without their encouragement, dedication to their students, and unwavering support I would not have chosen this profession or attempted this course of study. They both are truly cherished by their students. I only hope that one day I can give to a student of mine the wisdom, selflessness, and compassion that these two exceptional individuals have given me.

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ABSTRACT

We examine the use of a contracting method in mergers and acquisitions known as an *earnout*. In this type of transaction, the bidder agrees to pay the target an initial amount for the acquisition plus future payments contingent on the achievement of performance milestones. Theory suggests that the contingent payment associated with earnouts should reduce adverse selection problems facing both parties in the merger. The purpose of this dissertation is to study the ability of earnouts to mitigate problems associated with asymmetric information and problem of agency. Specifically, we answer the following questions in analyzing these transactions. First, empirical evidence suggests that earnouts are used in response to differing problems associated with severe informational asymmetries. Given that there are existing technologies addressing these same problems, what is the role of the earnout? To shed light on this issue, we examine a sample consisting of earnout transactions. We also examine the method of payment in these deals and use of investment bank advisors in these transactions. These are two characteristics of acquisitions identified in the literature as mitigating problems associated with informational asymmetries and agency. Second, are earnouts value-increasing events, and if so, how are the gains split between the parties? To answer this question we recognize three sources of value in earnout transactions: (a) merger synergies (b) reduction of problems associated with asymmetry

of information and (c) incentive alignment. To isolate the information effects we compare our sample of earnout transactions involving publicly traded targets to a matched sample of traditional acquisitions of public targets, to separate the sources of value created in these transactions. By isolating these effects we are able to test hypotheses concerning the mitigation of problems associated with agency, inefficient risk sharing and informational asymmetries.

CHAPTER 1: INTRODUCTION

The study of control and ownership has been a prominent topic of interest among financial economists dating at least to the works of Berle and Means (1930). Mergers and acquisitions are a laboratory for the study of this separation of ownership and control and the problems that ensue. Numerous academic works look at the merger event and enumerate problems associated with asymmetries of information and agency, and the incentives of the parties involved. These studies also examine the value created or destroyed by this event, determine how this value is split between the parties involved, and infer as to why these events are undertaken. The literature has determined that, on average, mergers are not value decreasing events. When mergers are value enhancing, one possible explanation of the increased value is the change in control of the target's assets. When target management is not fully utilizing the assets at its disposal, whether due to an underinvestment problem or an information asymmetry problem, a change in control of the target firm can be value enhancing for the combined firm. When mergers are not value enhancing to the acquiring firm, the literature has pointed to issues of managerial entrenchment and hubris as the factors mitigating the value of the event.

The literature has also examined the method of payment used in merger transactions. According to these studies, stock is used as payment in a merger transaction to help mitigate bidder misvaluation due to asymmetry of information between the target

and acquirer. Stock is also used when the bidding firm has valuable investment opportunities, reflecting the increased discretion implicit in equity funding relative to debt. However, the discretionary nature of this equity payment becomes less attractive to the bidding firm's management if the firm has high managerial ownership (due to the alignment of interests between shareholders and management) or if this equity payment creates a new blockholder. Of course, internally generated funds have the greatest managerial discretion. Therefore, firms with large free cash flow should be less likely to use stock as payment in a merger transaction.

Research has also examined the use of investment bank advisors in merger transactions. Such advisors presumably possess superior ability to process information. Therefore, in deals where information asymmetry is high, when deals are complex, or when bidders have little experience in acquisitions, one would expect a greater proportion of these bidder firms to employ investment bank advisors. Also, since investment banks have valuable reputational capital at stake, they can credibly signal the quality of a target to an acquirer.

Numerous contracting technologies have evolved to reduce some of the problems inherent in merger transactions. For example, each party has incentives to propose a contract that overvalues itself and undervalues its opponent, thereby gaining a larger share of any benefits to the merger. Another possible problem is that informational asymmetries between the two parties may be such that a quality target may not be identified or if identified may not be able to credibly reveal its value to the bidding firm.

Among the contracting solutions to these conflicts are the joint venture, the partial acquisition, and the earnout.

The joint venture mitigates these informational issues by allowing all parties increased monitoring over the assets contained in the joint venture, allowing for a more informed determination of the assets value and quality. If expectations about the assets in question do not come to fruition, the venture can be terminated. In joint ventures, two or more entities form a corporate alliance involving the joining of assets to accomplish a specific, limited objective. The combined management controls the assets of the joint venture. Empirical evidence has noted that these transactions are for the most part, value increasing. The usual explanation is that joint ventures that combine specific operations of two firms should generate gains in productivity (synergy) and thus increase the combined market values of the participating firms. Joint ventures are an alternative to a merger or asset sale when a firm has a value-creating project but has limited free cash flow and adverse selection problems that restrict its access to the external capital markets. The joint venture creates a relationship that reduces asymmetries of information, and can facilitate the financing of projects or the sale of assets. Rather than engaging in a conventional asset sale, a firm can place an asset into a joint venture that is co-owned by a partner firm that is, in effect, a potential buyer. In turn, the potential buyer, while a partner in the ongoing joint venture, has an opportunity to participate in the management of the asset and to gather information about its value before deciding whether to purchase the remaining stake of its partner in a second stage transaction.

Partial acquisitions also mitigate informational problems by giving a buyer a major ownership interest in the target firm. The buyer increases monitoring, and can make a more informed decision concerning the value of the target in question. If the prior beliefs concerning the value of a combination of the two firms are not realized, the remaining shares of the target will not be purchased and the bidding firm can sell its equity claim on the target. In partial acquisitions, one entity obtains shares in a target firm such that their ownership stake in the corporation effectively gives them control. However, this equity purchase is not accompanied by an intent to acquire the remaining shares of the target firm's stock. Effective control of the firm is transferred to the majority shareholder from the target firm. The target firm is still a distinct legal entity, but is an affiliated subsidiary of the acquiring firm. Empirical evidence has shown that partial acquisitions are value enhancing for the target firms and at least a non-negative event for bidding firms. As in mergers and acquisitions, the change in control of the assets in question is value enhancing and the same explanations for the observed excess returns in mergers holds for partial acquisitions. These explanations, mentioned earlier, can be grouped as efficiency theories, information theories, and theories of agency.

Joint ventures and partial acquisitions attempt to circumvent the problems associated with asymmetry of information by providing an "engagement period" in which each party can monitor the other and gain improved information concerning the value of a combination. Each technique contains the likelihood that sometime in the future, a recontracting will occur resulting in a completed acquisition. These solutions, however,

add the risk of never being completed, in the sense that there is no explicit, final step merging one firm wholly into the other.

The third technique mentioned, an earnout, mitigates informational asymmetries by shifting some of the risk of misvaluation to the target firm. If a bidder misvalues a target, the contingent payment portion of this deal will be reduced, possibly to zero. The earnout contract also provides the target with the ability to signal its quality. Only high quality targets will agree to have a larger portion of the deal to be paid as a contingent claim based upon future milestones of the combined firm. An earnout is a relative newcomer to contracting technologies in mergers and acquisitions. Briefly, in an earnout, the bidder agrees to pay the target an initial amount for the acquisition plus predetermined future payments contingent on the target's achievement of performance milestones within a specified time period. In earnouts, the acquired assets can be those of either an entire firm or a subsidiary of a firm. The literature contends that the use of this technique in acquisitions leads to a mitigation of bidder misvaluation resulting from informational asymmetries between the parties and alleviates adverse selection problems associated with the significant informational asymmetries and agency problems in these transactions. Yet another reason for the use of this acquisition vehicle is that it facilitates retaining valuable human capital from the acquired firm. The contingent nature of this type of contracting method can be arranged such that owner/operator knowledge is retained, non-compete constraints are placed on these individuals, and the retained human capital has the incentive to put forth optimal effort in order to maximize the contingent payments associated with an earnout.

On the other hand, earnouts impose the costs of inefficient risk sharing, increased contractual complexity, increased administrative costs, and litigation risk potentially offsetting any informational benefits. Nonetheless, the use of contingent payments in mergers and acquisitions is growing. The increased use of earnouts despite their costs and complexity implies that the benefits associated with this acquisition vehicle outweigh its costs. That is the gains an earnout creates or the problems it solves must be of some significance in order to outweigh the pitfalls that the use of this contracting technology entails. The relevance of this study stems from this idea.

Originally, earnouts were mostly a vehicle for acquiring private companies. A growing trend is their use when public targets are involved. As was noted earlier, the evidence points to earnouts as being value increasing. To answer the question whether any added value is associated with the contracting method as opposed to the acquisition itself, a sample of public bidders acquiring public targets using an earnout contract are contrasted to a sample of traditional mergers where both the target and bidder are public entities. This will allow for the observation of the value created in these transactions and how that value is split between the firms involved. Previous studies note that earnouts are more common if the target is in a hi-tech or service sector and if the target is private, and from those characteristics infer the motives behind the use of earnout contracting in acquisitions. In order to give a more direct test for the motives behind the use of an earnout, this dissertation examines the method of payment used to finance these transactions and the use of investment banks as advisors for the set of companies that have the same characteristics as the firms determined by the literature to have a increased

probability of using an earnout. The method of payment used in these transactions is relevant in that the literature on mergers argues that method of payment mitigates misvaluation and aligns incentives between the parties involved. The advisory role of investment banks used in these transactions is also examined since their use has been identified in the literature as being beneficial due to their superior information gathering ability and reputational capital that is at stake.

Since both method of payment and use of investment advisors are hypothesized in the merger literature to help alleviate the same problems that earnouts mitigate, the empirical question is whether these tools are used in earnouts to solve the same problems; or will it be the case that by delineating the sample into earnout vs. non-earnout transactions, one will observe that the tools in question are not really solving the same problem at all. Also, since there is a contingent claim issued, a distinction should be made concerning the publicly traded status of the target firms involved. This contingent claim is effectively a placement of equity. The market reacts much differently to equity that is placed privately compared to that of a public placement. Due to this, publicly traded firms are examined in this dissertation separately from other firms.

This dissertation is organized as follows. Chapter two will examine the relevant literature necessary to build the hypotheses of this dissertation. First, the merger and acquisition literature is examined. Next, I look at the literature on earnouts. Finally, the literature with respect to the method of payment used in acquisitions and the use of advisors in acquisitions is examined. Chapter three will examine the characteristics of the earnout sample as well as explore possible motives for their use. Chapter four will

examine the method of payment used in financing the acquisition of a private or subsidiary target when earnout contracting is employed. Also, the use of investment bank advisors will be examined in this chapter. Chapter five will look at the use of earnouts when a public firm acquires another public firm. Since both firms in the transaction are public, it is possible to determine the value created by these transactions, and how these gains are split between the two entities. Due to the cross sectional variation and the availability of information concerning the public firms involved in earnout, more exact inferences can be made concerning the motivations for the use of this contracting technology, as well as issues concerning synergy, managerial entrenchment and hubris. Chapter six will summarize the findings of this dissertation as well as contain concluding remarks.

CHAPTER 2: REVIEW OF LITERATURE

This section examines the literature that supports and frames the research in this dissertation. The first section looks at the literature with respect to mergers and acquisitions. The second section examines the literature related to the earnout contacting method that is the focus of this study. Finally, the third section reviews the literature dealing with the method of payment and the use of investment bank advising in acquisitions.

2.1 Merger Literature

A large body of literature examines the behaviors of the parties involved in a merger transaction. Many studies assess the magnitude of the value created by these events, and how this value is split between the target and bidding firms involved in these transactions. Other literature develops and tests models aimed at explaining the observed behavior in acquisitions. These models take differing approaches; some posit hypotheses of value creation based on synergy, while others deal with sets of hypotheses examining managerial hubris, managerial entrenchment, and managerial empire building. In other words, is it the synergy created by the merging of these two firms that creates value, or is

it that by a change in control ineffective management is replaced by a more efficient form?

Bradley, Desai, and Kim (1983) examine the stock returns of target firms and bidders of unsuccessful tender offers to investigate the rationale behind interfirm tender offers. In other words, the authors look at why the combined firm has a greater value than the sum of the parts. Looking at the returns of target firms from unsuccessful tender offers: (1) the results for the total sample suggest that it is the announcement of a tender offer that precipitates the revaluation of the target shares, not necessarily the transfer of control of the targets resources that accompanies the successful completion of a tender offer; (2) the abnormal returns to the 86 firms in the “subsequently taken over” sub sample show a further positive revaluation over the one year period following the announcement of an unsuccessful offer; and (3) the cumulative abnormal return to the 26 firms in the “not taken over” sub-sample is negative over the one year period following the announcement of an unsuccessful offer.

Looking at the returns to firms making unsuccessful tender offers, the positive revaluation quickly disappears if it becomes apparent that the bid will fail. The statistics indicate there is no change in the wealth of the shareholders of these firms. The results indicate that the negative returns realized by unsuccessful bidding firms are due solely to the change in control sub-sample.

Their conclusions are consistent with the synergy hypothesis. The permanent positive revaluation of the unsuccessful target shares is primarily due to the anticipation of another bid, which would be successful. Also, acquisitions via tender offers are

attempts by bidding firms to exploit potential synergies. The synergy hypothesis the authors propose in this article is further buttressed by their 1988 paper in which they find that excess returns for the bidder in a takeover fall from about 4 percent in the 1960's to 1.3 percent in the 1970's, to a -3 percent in the 1980's. Even with the fluctuations in excess gains/losses for bidders during this period, the combined gains for both target and bidder are statistically significantly positive.

Mulherin and Boone (2000) find significant industry clustering in both acquisitions and divestitures. The authors contend this is evidence in favor of the idea that economic change is the underlying source of the observed behavior. They find that the activities of divestitures and acquisitions create shareholder wealth, as measured by the combined stock price reaction at announcement, using a three-day window. For acquisitions, even though the returns to bidders are insignificantly negative, when combined with the average target return of 20.2 percent, this generates shareholder wealth. The authors find that these wealth effects are significantly related to the value of the target firm relative to the bidding firm's value. The authors contend that this is evidence in favor of a synergy hypothesis, and find the evidence inconsistent with hypotheses concerning entrenchment, hubris, or empire building.

In contrast to the findings of evidence supporting the synergy hypothesis, Kale, Kini and Ryan (2003) find that when the bidder is more diversified, the target wealth gain is higher and this wealth gain is primarily at the expense of the bidder. They argue this supports the managerial hubris hypothesis. When bidders acquire targets in related lines of business, the total value created by the takeover is greater and this increase appears to

accrue mainly to the bidder. When insider ownership in the bidding firm is high, the proportional wealth gain to the bidder is higher and the wealth gain to the target is lower. These results are consistent with the argument of Morck, Shleifer, and Vishny (1990) that managerial ownership may be the most effective mechanism for aligning the interests of managers and shareholders. Kale, Kini, and Ryan (2003) find a negative relation between insider ownership and the total wealth created by takeovers.

Examining the relative performance of targets and bidders in acquisitions, Lang, Stulz, and Walkling (1989) document that the abnormal returns in tender offers are related to the Tobin's Q ratios of the target relative to the bidder. They find the target returns, bidder returns, and total returns are higher when the takeover targets have low Q ratios and bidders have high Q ratios. Bidders with high Q ratios have significant positive returns while bidders with low Q ratios have significantly negative abnormal returns. The highest value creating mergers occur when the bidder has a high Q ratio and the target has a low Q ratio. The worst-case takeovers are those that involve a low Q ratio firm taking over a high Q ratio firm. When Tobin's Q is interpreted as a measure of managerial performance, the results show that the highest value creation comes from well performing firms taking over poorly performing firms. That is, when management of a target firm is underperforming, the gains created from the change in control of the assets of the target are greater for the combined firm.

Franks, Harris and Titman (1991) further examine the share price performance following corporate takeovers. The authors use multifactor benchmarks from portfolio evaluation literature that overcome some of the mean-variance inefficiencies of more

traditional single factor benchmarks. The authors conclude that the previous findings of poor performance after takeovers (i.e. Jensen and Ruback (1983) on average -5.5 percent cumulative abnormal return during the year after the takeover) are likely due to benchmark errors rather than mispricing at the time of the takeover.

Previous literature (i.e. Dodd and Warner (1983), Jensen and Ruback (1983), and Langetieg (1978)) could not find consistent evidence that the acquiring shareholders benefit from merger transactions. Moreover, Amihud and Lev (1981) find that corporations with disperse ownership engage in conglomerate mergers more often than other firms. Lewellen, Loderer and Rosenfeld (1989) argue that this could be evidence that the managers of these firms are not as closely monitored. Therefore, managers can more easily implement risk-reduction strategies for their own personal gain. Specifically, Lewellen, Loderer and Rosenfeld (1989) examine whether managers make investment decisions that are aimed at reducing the risk of the firm at the detriment of shareholders. These decisions are undertaken in an attempt to control the manager's personal wealth risk. The authors find some evidence that that these risk-reduction outcomes occur, but are in the minority, and only weak evidence that these outcomes occur when executives have large holdings of their firm's common stock. Also, the authors find no evidence that when these risk-reduction outcomes occur, they are detrimental to shareholders returns.

Hansen and Lott (1996) examine the returns to bidders acquiring 252 private and public targets during the period of 1985-1991. Examining abnormal returns, the authors find that acquirers realize a 2 percent higher return when taking over a private target

compared to the acquisition of a public target. They also find that in 43 percent of the acquisitions the returns to bidders were negative, while in 65 percent of the cases when bidders acquired public targets their return was negative. The authors hypothesize in an acquisition of a public target the investors are indifferent as to how the gains from the acquisition are split since they hold a well-diversified portfolio. When a private target is acquired by a public entity, the investors do not hold a claim on the firm value of the target, and that part of the gains from the transaction (if value increasing) will be imputed in the bidders share price.

Bradley, Desai and Kim (1983) propose that part of the gains to targets in mergers is due to the fact that bidders signal the existence of valuable assets that the market had not discounted. However, it may be that the risk of misvaluation of the acquisition may be too severe due to the high asymmetry of information between the target and bidder. In this case, the deal would not be undertaken and the quality of the target's assets would not be signaled to the market. In this case, an earnout can effectively shift some of the risk of misvaluation to the target. In addition, the target can effectively signal its value to the bidder by the terms of the earnout agreement it accepts. By accepting a greater portion of the acquisition payment in the form of a contingent earnout payment, the target can signal its higher quality to the bidder.

2.2 Earnout literature

The literature concerning the use of earnouts is not as well developed as other areas of the acquisition literature. In the first study of earnouts, Kohers and Ang (2000)

examine a sample of 938 acquisitions involving earnouts. Of the 938 acquisitions, 620 involve the acquisition of a private entity, while the other 275 involve the acquisition of divested subsidiaries. The authors use a logistic regression to predict the use of earnout contracts in acquisitions. To examine the merger hypotheses mentioned earlier, the authors use proxies for asymmetric information and target human capital to discriminate between earnout and non-earnout mergers. Consistent with their predictions, acquiring firms that purchase targets in high-tech and service industries have a higher probability of using an earnout contract in the acquisition. The authors also find a higher probability of the use of earnouts in acquisitions that are diversifying versus intra-industry takeovers. In these cross-industry acquisitions, the target is more likely to be run as a separate subsidiary, further enhancing the measurability of the milestones to which the earnout contract is tied.

The authors also find a higher probability, of 72 percent, that the acquirer will use an earnout in the acquisition of a private entity when compared to the acquisition of a divested subsidiary. The problem of asymmetric information should be greater in the acquisition of a private target than a subsidiary due to the fact that information may be more accessible for subsidiary targets than for private entities. Consistent with the notion that small buyers may employ earnout contracts in order to shift some of the risk associated with misvaluation (i.e. due to their lack of bargaining power, and lack of information-gathering resources), the authors find a positive relation between the use of earnouts and the size of the private entity and subsidiary target relative to the bidder.

The results from the authors' Tobit regression analysis show that the same variables affecting the probability that an earnout is used also affect the size of the earnout proportion of the deal. As the target size relative to the bidder size increases, the earnout portion of the transaction increases. Also, the higher the transaction value, the higher the percentage of the deal funded by an earnout. These findings suggest that the smaller the bidder and the bigger the transaction, the greater are the adverse effects of misvaluation and the higher the earnout component of the deal tends to be. They also suggest that the higher the information asymmetry and value of target firm human capital, the larger the proportion of the transaction funded by the use of an earnout will be.

The authors then test the hypothesis that earnouts add value to the bidding firm by reducing the risk of misvaluation by bidders and by retaining valuable target human capital. They find that for the bidder that uses an earnout the average abnormal returns on announcement date are a significant 1.356 percent. Therefore, investors view the deal as a favorable outcome. The authors also find that the wealth gains are significantly higher for acquirers that use earnouts to take over high-tech and service industry firms than non-earnout transactions. The wealth gains are also higher when the bidder uses an earnout for diversifying acquisitions. However, these results do not hold when looking at similar samples involving subsidiary acquisitions. The rationale for this result may be that subsidiary targets are more transparent, due to the separate reporting of financial position from the parent firm, as well as the fact that talented subsidiary employees may be retained via the use of long-term employment contracts.

The long-term findings of the authors support their short-term results, in that the ex-ante benefits from earnouts is not reversed in the long run. However, the authors find no significant abnormal performance when looking at the post-merger period.

The study of earnouts by Datar, Frankel, and Wolfson (2001) confirms the implications drawn by Kohers and Ang (2000). They find that earnouts are used to mitigate problems associated with informational asymmetries and agency. However, the authors assert that significant costs associated with earnouts, including costs of inefficient risk sharing, increased contractual complexity, increased administrative costs, and litigation risk associated with the earnout, may likely offset the informational benefits associated with this form of contracting.

2.3 Method of Payment and Investment Bankers in Mergers Literature

Throughout the literature on mergers and acquisitions, researchers appeal to informational asymmetries to motivate hypotheses, explain empirical evidence, and determine the relevance of various characteristics of the deal. For example, one explanation for the choice of method of payment in merger transactions involves management's private information about the future prospects of the firm. Myers and Majluf (1984) argue that managers issue equity only if they believe it to be overvalued. In the merger and acquisition literature, therefore, the use of equity in an acquisition of a publicly traded firm is the equivalent of a public issuance of equity, and one should observe a negative stock price reaction to the announcement.

Previous research in this area finds a negative stock price reaction for bidding firms that pay for an acquisition of a public firm with stock. Travlos (1987), Wansley, Lane and Yang (1987), and Franks, Harris, and Mayer (1988) document significantly negative returns to bidders using stock to finance a merger transaction. Asquith, Bruner and Mullins (1987) and Servaes (1991) find a significantly higher return to bidders that use cash as a means of payment compared to stock transactions. Amihud, Lev and Travlos (1990) document a negative return for bidders with low managerial ownership that use stock as a means of payment. Also, Ghosh and Ruland (1998) examine how a manager's preference for influence in the combined firm will prefer to receive stock, rather than a cash offer. Their analysis shows that targets with managers that have large holdings of the firm's stock are more likely to receive stock as a form of payment in acquisitions. Also, top managers who have voting influence in the combined firm are more likely to retain their jobs.

When looking at stock as a method of payment in acquisitions, one must also consider the publicly traded status of the target involved in the transaction. This is of importance since the market views an issuance of equity differentially based on whether it is a public or private placement. With a public placement of equity, the implications of Meyers and Majluf (1984) are relevant and the market may view this behavior negatively. However, when the target is private and the acquisition is paid for by stock, this is effectively a private placement of equity. Chang (1998) studies the acquisition of 281 private targets made by a public entity during the period of 1981-1992 and compares this to 255 public targets acquired by public entities during the period between 1981-1988.

He finds that when a bidding firm uses cash for its acquisition of a private target there are no statistically significant abnormal returns generated for the bidder at announcement.

However, when the bidding firm announces the use of stock as its method of payment for the acquisition of the private target, a statistically significant 2.64 percent abnormal return is observed for the bidder, using a two-day window. The author reasons that a possible explanation for this observed abnormal return is that when a bidder acquires a private target using stock, a large blockholder is created and positive information is conveyed to the market about the future of the bidding firm and the merger transaction. This blockholder potentially has the ability and incentive to better monitor the actions of the bidding firm's management, thereby increasing the performance of the combined firm. When a blockholder is created due to the acquisition, Chang observes a statistically significant abnormal return of 4.96 percent, compared to a significant 1.77 percent return when no blockholder is created. The difference between these returns is also statistically significant.

Investment advisors also can reduce informational asymmetries in mergers and acquisitions. Hunter and Walker (1990) find that merger gains are positively related to the use and effort of investment bankers in these transactions. Bowers and Miller (1990) look at the use of top-tier advisors in merger transactions and report that wealth gains to the parties involved are significantly higher when either the target or the bidder utilizes an investment banker. Servaes and Zenner (1996) find support for three reasons for the utilization of investment bankers in merger transactions. First, investment bankers have a comparative cost advantage in analyzing transactions. Second, the investment banker

reduces informational asymmetries. Third, the certification of the acquisition by the investment banker reduces agency costs.

McLaughlin (1992) investigates tender offers and the role the fee contract plays in mitigating the agency problems faced by bankers and firms in acquisitions. The author finds no evidence that corporations make systematic errors when choosing contracting type. He examines types of investment bank fee contracts used by firms in tender offers from NYSE listed firms in the period of 1978-1986 to test hypotheses in three categories. The first deals with contract selection and the fact that the banker's reputation, the value of the initial offer, the level of managerial resistance to the deal, and the value management places on incumbency should all affect the contract selected by the investment bank and the firm. The second deals with the relation between the fees generated by the deal and the reputation of the investment bank. High quality advisors should realize higher fees that will compensate them for their superior ability and knowledge. The third category deals with the outcome of the offer. Similar to the type of contract, the outcome of the offer, whether completing the deal or obtaining a higher price, should be affected by the signaling content/incentive content of the type of contract used as well as the reputation of the advisor involved.

The author finds that fee contracts are used to mitigate the agency problems associated with firms and their bankers in tender offers. He finds that managers use contract incentives as a tool to achieve their objectives and that these incentives guide investment banker behavior. However, while some of the tests and evidence observed show associations between contract incentives and firm objectives, others do not. The

same is true for the associations between incentives and the outcome of the offer. The author finds some evidence that the selection of a particular contract is associated with the quality of the investment banker. However, there is no evidence of this resulting in a higher payoff for bankers maximizing their return on their superior ability and information. The author concludes that although contracting between firms and investment bankers may mitigate the problems associated with agency, it will not completely alleviate them.

In further investigation of this topic, Rau (2000) examines the determinants of market share for investment bankers advising bidders in acquisitions. The author also looks at the relation of this market share to the fee structure paid to advisors and the post-merger performance of acquirers. In doing so, the author examines two hypotheses related to the determinants of market share for advising investment banks. The deal completion hypothesis argues that due to the incentive structure of fees paid to advisors, their role is to simply complete the deal. The value added or destroyed by the deal is of secondary importance. In this case, market share will be determined by the deals successfully completed by the investment bank. Therefore the market share of the advisor should not be related to the excess returns generated by the deal. The superior deal hypothesis posits that the performance of the acquirer should be a major determinant of market share for the investment banks used for advisement in the transaction. The implication of this hypothesis is that acquirers advised by high market share investment banks should realize superior excess returns compared to acquirers advised by lower tier investment banks.

The author finds that bulge bracket banks charge a significantly higher proportion of their fees as contingent fees, which is consistent with hypotheses proposed by the author. In both mergers and tender offers, the author finds that the percentage of successful deals in which the bank advised an acquirer is significantly positively related to the market share of the advisor in subsequent years. The author also finds that there is no relation between the post-acquisition performance of the firm and the market share of the bank used for advisement in the acquisition. This evidence is consistent with the deal completion hypothesis and inconsistent with the superior deal hypothesis.

When Rau's evidence is considered in total, it is in favor of the deal completion hypothesis while the superior deal hypothesis is inconsistent with what the author observes. This suggests that contingent fees are used by acquirers to "get the deal done" whether it creates value or not. This contradicts the notion that an investment bank uses the contingent fee structure to signal its quality and ability to complete a superior deal. Also, these findings show that this contradiction is not mitigated by the advisor's concern over the destruction of reputational capital by completing a value destroying deal. However, the paper by Kale, Kini and Ryan (2003) is the first study to document the benefits of employing prestigious financial advisors. Looking at the role of bidder advisor reputation relative to the reputation of the target's advisor, the authors find that the total as well as proportional wealth gains to the bidder or the target increase as the reputation of their advisor increases relative to that of the opponent. Also, the authors find that higher reputational advisors are associated with greater wealth creation.

The literature reviewed in this chapter is relevant to constructing the hypotheses tested in this dissertation. Specifically, we want to examine the notion that empirical evidence suggests that earnouts are used in response to differing problems associated with severe informational asymmetries. Given that there are existing technologies addressing these same problems, what is the role of the earnout? We also examine the method of payment in these deals and use of investment bank advisors in these transactions. These are two characteristics of acquisitions identified in the literature as mitigating problems associated with informational asymmetries and agency. Second, are earnouts value-increasing events, and if so, how are the gains split between the parties? To answer this question we recognize three sources of value in earnout transactions: (a) merger synergies (b) reduction of problems associated with asymmetry of information and (c) incentive alignment. To isolate the information effects we compare our sample of earnout transactions involving publicly traded targets to a matched sample of traditional acquisitions of public targets, to separate the sources of value created in these transactions. By isolating these effects we are able to test hypotheses concerning the mitigation of problems associated with agency, inefficient risk sharing and informational asymmetries.

CHAPTER 3: MOTIVATIONS FOR THE USE OF EARNOUTS

3.1 Introduction

Before we examine the method of payment and investment bank utilization in earnouts, we need to examine the motives underlying earnouts in general. While the motives behind the method of payment in acquisitions and the use of investment bank advisors have been widely examined in the literature, the fostering the use of an earnout agreement have not. In this chapter we analyze the determinants for the use of an earnout. In addition, we look at the proportion of the contingent payments associated with the earnout contract, relative to the total value of the deal. Finally, post-merger retention of management and post-merger contingent payments are examined.

The literature has identified various motives for the use of earnout contracting in the acquisition of target firms. In particular, Kohers and Ang (2000) and Datar, Frankel, and Wolfson (2001) contend that earnouts are relegated to mergers where problems of informational asymmetry and agency are so detrimental that this costly type of contacting must be employed to protect the interest of bidder shareholders and target firms.

In this chapter, we examine the use of earnouts through an empirical comparison of a sample of acquisitions involving earnouts to a control sample of traditional acquisitions. Within each sample, we also examine differences that exist when the target is a private firm compared to a subsidiary of another firm. Using logistic regression, we

employ a logistic regression to determine the variables that contribute to the choice of an earnout in an acquisition. Next, within the earnout sample, a tobit regression analysis is used in order to examine the determinants of the proportion of the contingent payments relative to the total size of the acquisition. Finally, we report a descriptive analysis of the post-merger payouts and the post-merger retention of the target firms' management

In order to accomplish this analysis, a sample of transactions involving earnouts is compiled. The earnout sample is contrasted to a sample of traditional merger transactions. In doing so, we are able to separate the effects of earnout contracting in the acquisition. This allows us to test hypotheses with respect to the earnout and be certain that these effects are due to this type of contracting tool and are not a consequence of the merger sample.

3.2 Earnouts in Merger Transactions

3.2.1 Bidder and Target Motivations for Using Earnouts

Bidders propose earnout contracts for a variety of reasons, ranging from reduction of the problems associated with asymmetry of information, to reduction of problems associated with agency. It is well known that successful bidders in competitive auctions, including mergers, are likely to overbid, whether due to overoptimism and hubris (Roll, 1986) or as a form of winner's curse resulting from incomplete or uncertain information (Eckbo, et al., 1990). The latter is especially likely when the target is a private firm, a firm with few assets in place, or when the value of the target is dependant upon the knowledge of the managers or clientele relationships that can easily "pocketed" and taken

to another firm. In the absence of competition (explicit or implicit) for the target firm, however, the bidder is likely to protect itself against overbidding resulting from incomplete information about the target and offer a lower price. In cases when the target firm is informationally opaque, managers of the target firm are unable to credibly convey their favorable private information to the bidder.

The earnout mitigates this problem through the contingent payments associated with the contract. The bidder will be able to adhere to its valuation of the target by structuring the upfront payment and the contingent payments in such a way that its valuation is verified if the target performs as the bidder predicts. The bidder and the target agree on contingent payments tied to various milestones concerning future performance and structured to reflect the payoffs each believes appropriate to compensate the target. If the future milestones are met and exceeded, the target owners will receive higher payouts, which will compensate them in such a way that is more in line with their own valuation.

The target can also use the earnout agreement as an opportunity to signal their quality to the bidding firm. For a signal to be credible, it must be costly to replicate. The proportion of the transaction value that the target is willing to take contingent on future performance serves this purpose. In effect, the situation is the same as the model presented by Leland and Pyle (1977). In their model, an entrepreneur signals the quality of his future opportunities by the amount of ownership he retains in his firm. By a target accepting a deal that has a greater proportion of the transaction value contingent on future performance, the target is signaling a high quality of future prospects to the bidding firm.

This signal is costly to replicate for low quality firms due to the fact that these firms will not be able to achieve the future performance milestones required for the contingent payments to be made. Knowing this, the low quality firms would want to receive the highest upfront payout possible.

The earnout, as mentioned earlier, also helps to mitigate problems associated with agency. If a target firm is in a service or hi-tech industry, for example, proprietary knowledge and the existing human capital are necessary to the continued success of the firm. Existing clientele relationships are extremely portable, and these relationships are also necessary to the firm's success. Thus, the retention of key personal is essential to preserving the value of the target. The earnout helps to alleviate some of these concerns by requiring key personnel to remain with the firm after the acquisition takes place. The earnout also helps to align the incentives of these key personnel with those of the shareholders in the combined firm. The contingent payments are, in effect, an equity claim on the post-merger performance of the target (the earnout is not necessarily an equity claim on the combined firm, however. The contingent payoffs should be based on the post-merger performance of the target only (Slovin, Shuska, Polonchek, 2003)).

The earnout can also facilitate financing the acquisition. If a high growth firm is acquiring another high growth firm, the bidder can use an earnout agreement in order to postpone some of payment necessary to secure the deal. This type of agreement is superior to an issuance of stock to finance the deal, due to the fact that the target will not be able to share in the future prospects that the bidding firm already has in place prior to the acquisition. With the earnout, the only future prospects that the target will share in

are those that come about from their operations. So by using an earnout, a bidder with valuable future opportunities can make the acquisition while keeping his financing for the future prospects of the firm and prevent the target from sharing in these gains that were in place prior to the acquisition.

3.2.2 Hypotheses Regarding the Use of Earnouts

Testable hypotheses concerning the use of earnout contracting in mergers and acquisitions fall into the same three categories: those concerned with problems associated with asymmetry of information, those that relate to problems associated with agency, and those that relate to the financing nature of the earnout agreement. It should be noted that the objectives are not mutually exclusive. In some cases, we observe firms that are attempting to reduce problems that relate to all three. Further, the implementation of earnout contracts is difficult and costly (due to monitoring, etc.). Therefore, firms will not engage in this type of agreement unless the benefits are clear and outweigh the costs associated with them.

The first set of hypotheses relates to the merging firms employing an earnout contract in an acquisition to reduce the problems associated with informational asymmetries. Based on the logic presented earlier, we expect that earnout contracts will be used in deals that involve targets that operate in multiple industries, have few assets in place, have low information disclosure, high growth opportunities, and valuable human capital relative to firm assets. These firms are difficult to value. By using an earnout, some of the risk associated with misvaluation is shifted from the bidder to the target.

These types of target firms tend to be found in the hi-tech and service industries. Also, bidders acquiring private and subsidiary targets, which have little or no publicly disclosed information, will also benefit from employing an earnout agreement in the transaction. As was mentioned earlier, an earnout enables the managers of these types of targets (hi-tech, service, private, subsidiary, and multi-line) to credibly signal their quality to the bidding firm.

We also expect that bidder experience in merger transactions will be a factor that influences the use of an earnout. Specifically, if a bidder has had prior experience in acquisitions, we expect that these firms would have greater expertise in target valuation. Also, if a target were within the same industry classification as the bidding firm, the acquirer would also have greater accuracy in the valuation of the target firm. Therefore, as the expertise of the bidding firm's management increases, as measured by the number of prior acquisitions and inter-industry mergers, we expect to observe a decrease in the use of earnout contracting.

The second set of hypotheses deal with issues related to the mitigation of problems associated with agency. In some industries it is necessary to retain the target's key employees in order for the organization to remain successful after the acquisition. It is also necessary to align the incentives of these key personnel with the incentives of the newly combined firm. For this reason, we expect to observe that the acquisitions of hi-tech and service firms will have a greater propensity to utilize an earnout contract, all else equal. In addition, private firms are generally owner operated and it may be the case that these individuals have proprietary knowledge that must be utilized or not allowed to

compete in order for the organization to remain successful. Therefore, we expect to observe an increased probability that the acquisition will utilize an earnout contract when the target firm is private.

The third set of hypotheses is related to the use of an earnout as a vehicle for financing the acquisition. When a bidding firm has valuable growth opportunities it would like to maintain its flexibility to fund these future investments. Also, it will not want the target firm to be able to share in the gains from opportunities that were already in place prior to the acquisition, to the detriment of existing shareholders. An earnout agreement can accomplish the objectives and is superior to a stock payment in these situations. Therefore, we expect to observe an increased probability of the use of an earnout contract the higher the bidding firm's market to book ratio and growth in sales. However, it may be the case that a bidding firm has the ability to fund the acquisition with cash and in these cases the acquirer may want to pay for the target outright, rather than creating a claim to the future cash flows of the firm. For this reason, we expect to observe a decreased probability that an earnout will be utilized the higher are the bidding firms cash flow and near cash holdings relative to the value of the transaction. In addition, if a bidding firm is using an earnout contract as a financing vehicle, we expect the earnout payment relative to the value of the deal to be higher.

Finally, it should be noted that the implementation of these contracts is costly. A firm would not engage in this type of contract unless the benefits are meaningful, clear, and outweigh these costs. Therefore, when an acquisition is not as "material" to the future health of the bidding firm, this type of contracting method would not be employed.

We expect that when the target firm is large relative to the bidder, we should observe an increased probability that an earnout contract will be used. The analysis that follows examines not only the firm's choice to utilize an earnout contract in the acquisition, but in addition, the amount of the contingent payment relative to the total value of the deal is explored. We believe that the same proxies and hypotheses developed earlier not only hold for the choice of whether to use an earnout contract, but also hold for the proportion of the contingent payments relative to the total value of the deal.

3.2.3 Variables Used in the Analysis of Earnouts

Essentially there are three groups of hypotheses that we will examine in this chapter. The first set of hypotheses relates to the mitigation of the problems associated with informational asymmetries. The second set of hypotheses deal with problems associated with agency. The third set of hypotheses examines the use of an earnout as a tool to finance the acquisition. In order to test these hypotheses, a logit and tobit analysis will be used. We have identified the following independent variables to be used in order to analyze the hypotheses developed earlier in this section.

Based on the hypotheses presented earlier, we expect that earnout contracts will be used in deals that involve targets that operate in multiple industries, have few assets in place, have low information disclosure, high growth opportunities, and valuable human capital relative to firm assets. Therefore, we use two dummy variables that take the value of one if the firm is in a hi-tech or service industry. These types of firms will have few assets in place, high growth opportunities and valuable human capital. Targets that

operate in multiple industries will be more difficult to value by the bidder. Therefore we use the number of target SIC codes in order to measure this dimension of the deal. Targets that have a low amount of information disclosure will also be more difficult for the bidder to value. A dummy variable that takes the value of one will be used to measure whether or not the firm is a privately held entity, since these firms have low amounts of information disclosure. If the firms are in the same industry the bidding firm will have less difficulty in valuing the target. To capture this, we use a dummy variable that takes the value of one if the target and bidding firm have the same first two digits of their SIC code. When a bidding firm has more experience in merger transactions they should be more competent in information gathering and valuation with respect to a target firm. To measure this, we use the number of prior acquisitions in the ten-year period preceding the announcement of the merger. The variable that measures the value of the earnout relative to the value of the deal is used to test our hypothesis that relates to the target firm signaling its quality to the bidder.

In some industries it is necessary to retain the target's key employees in order for the organization to remain successful after the acquisition. It is also necessary to align the incentives of these key personnel with the incentives of the newly combined firm. For this set of hypotheses related to agency, we use two dummy variables that take the value of one if the target is in a service or hi-tech industry. These are the types of industries where human capital must be retained. It is also necessary to align the interests of the human capital to the shareholders of the combined firm.

When a bidding firm has valuable growth opportunities it would like to maintain its flexibility to fund these future investments. Also, it will not want the target firm to be able to share in the gains from opportunities that were already in place prior to the acquisition, to the detriment of existing shareholders. We use variables of the bidding firm's market-to-book ratio and 3-year prior growth rate in sales to measure the bidding firm's future investment opportunities. In order to determine if the earnout agreement is being used as a vehicle to finance the transaction, the bidding firm's cash holdings plus marketable securities relative to the value of the deal, the bidding firm's free cash flow (as measured in Lehn and Poulsen (1989)) relative to the value of the deal, and the bidding firm's debt-to-capital ratio relative to the industry average are used in our analysis of earnouts.

3.3 Earnout Data and Sample Analysis

The sample of merger transactions involving earnouts consists of 533 acquisitions of private and subsidiary targets by public firms completed through the period of January 1, 1990-May 31, 2001. These observations were identified from Thompson Financial Securities Data Mergers and Acquisitions files (SDC). The data were collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor's Compustat files on Academic Universe, news releases found in Lexis/Nexis and Valueline Investment Surveys. Observations involving the acquisition of public targets, acquisitions involving foreign entities, and acquisitions

involving financial firms or holding companies were excluded, as were acquisitions for less than \$1.0 million dollars.

The term “earnout” is commonly applied to the entire transaction when referring to the contracting form. The earnout itself, however, is only the contingent payout portion. In this chapter, we define “earnout value” to be the value of the future contingent payments, and “transaction value” to be the sum of the initial (upfront) payment and the earnout value.

The comparison sample of traditional mergers consists of 8603 transactions that were completed during the period of January 1, 1990 to May 31, 2001. These mergers were identified using the Thompson Financial Securities Data Mergers and Acquisitions files (SDC). The data for the dependant and independent variables, discussed in the previous section, were collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor’s Compustat files on Academic Universe, news releases found in Lexis/Nexis and Valueline Investment Surveys. Observations involving the acquisition of public targets, acquisitions involving foreign entities, and acquisitions involving financial firms or holding companies were excluded. Acquisitions for less than \$1.0 million dollars are dropped from the sample. The traditional sample is split into private and subsidiary categories, as we did with the earnout sample. This gives us a sample that involves 3484 subsidiary targets and 5119 private targets. Again, if information was not available for the variables considered in the tobit and logit regressions, the merger was dropped from

the sample. This leaves 6574 transactions where 3819 involved private firms and 2755 involved subsidiary firms.

Table one presents the summary statistics for merger transactions using an earnout that involve subsidiary and private targets acquired by a public entity. For the period in question, 392 of the 533 observations are private targets. The remaining 141 observations are subsidiary targets. The mean transaction value for private targets (\$54.12 million) is substantially lower than that for subsidiary targets (\$119.91 million). Private targets are more likely to be in earlier stages of development than are subsidiary targets. Also, in general, subsidiary targets are able to obtain funding for growth and future opportunities from their parent firm.

The value of the earnout is also presented in table one. The value of the earnout is computed by taking the sum of the total value of the future contingent payments. The mean earnout value for the subsidiary firms in the sample is greater than those of their private counterparts. However, the discrepancy between the two is not as large as it was for the total value of the transaction. The mean earnout value for subsidiary firms is \$21.53 million, compared to the mean value for private targets of \$16.10 million. Table one also includes the total value of the earnout relative to the total transaction value. The value of the contingent payment as a proportion of total deal value is larger for private targets than for subsidiary targets. On average, private targets are paid 36.96 percent of the total transaction value as a contingent payment, compared to 28.05 percent of the total transaction value for subsidiary targets.

The number of hi-tech targets, service targets, and cross industry acquisitions are

Table 1. Summary statistics for the sample of acquisitions of private and subsidiary firms involving an earnout.

Comparative summary statistics are presented for merger transactions involving the acquisition of private and subsidiary targets by a public entity using an earnout. The transaction size is the sum of the up front payment and the estimated value of the earnout in millions of U.S. dollars. The value of the earnout is the sum of the estimated value of the contingent payments in millions of U.S. dollars. Earnout to deal value is the value of the earnout divided by the transaction value.

	Subsidiary Targets			Private Targets			All Targets		
Panel A. Earnout Mean and Median Values									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
Value of Transaction	141	119.9083	25.0000	392	54.1172	13.9000	533	71.5216	15.5000
Value of the Earnout	141	21.5319	5.0000	392	16.0959	4.0000	533	17.5340	4.5000
Earnout to Deal Value	141	0.2805	0.2358	392	0.3696	0.3475	533	0.3460	0.3000
Panel B. Earnout Maximum and Minimum Values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
Value of Transaction	141	1.000	2050.00	392	1.000	3250.00	533	1.0000	3250.00
Value of the Earnout	141	0.100	270.00	392	0.100	822.80	533	0.1000	822.80
Earnout to Deal Value	141	0.031	1.00	392	0.020	1.00	533	0.0196	1.00
Panel C. Earnout Transactions by Type									
	Number	% of Total	Number	% of Total	Number	% of Total			
Number of Service Targets	52	36.88	194	49.49	246	46.15			
Number of Hi-Tech Targets	55	39.01	164	41.84	219	41.09			
Number of Cross Industry Transactions	78	55.48	179	45.66	257	48.22			
Panel D. Traditional Transactions by Type									
	Number	% of Total	Number	% of Total	Number	% of Total			
Number of Service Targets	1332	38.23	2617	51.12	3949	45.90			
Number of Hi-Tech Targets	975	27.99	2124	41.49	3099	36.02			
Number of Cross Industry Transactions	1371	39.35	2195	42.88	3566	41.45			

also examined in table one. Private firms are more likely to be involved in service related industries than their subsidiary counterparts. Of the private targets, 49.49 percent were in service related industries, compared to 36.88 percent of subsidiary firms. Many of the deals involved private medical practices and similar entities. Similarly, 41.84 percent of the transactions involving private firms were the acquisition of a hi-tech entity, while 39.01 percent of subsidiary firms that were acquired engaged in a hi-tech business. Cross industry acquisitions accounted for 55.32 percent, compared to 45.66 percent of the acquisitions of private targets.

The results from table one can be couched in this chapter's earlier discussion of the motives for the use of earnout contracts. One would expect that there are more earnout acquisitions that involve a private target than earnouts involving subsidiary targets. Private targets are harder to value due to the asymmetry of information between the parties. Also, it makes sense that the contingent payment portion of the deal should be greater for private targets than for subsidiary targets. As was mentioned earlier in this chapter, private firms can use the earnout contract to signal their quality to the bidding firm. Due to the larger asymmetry of information innate to the acquisition of a private target, this signal is more valuable to the target when it is private. Again, for a signal to be credible, it must be costly to replicate. Lower quality firms will want to get the largest proportion of the deal value up front, if they would even enter into this type of contract at all. Therefore, the target can credibly signal its value to the bidding firm by taking a larger proportion of the deal value as a contingent payment.

With respect to industry type, hi-tech and service firms traditionally have fewer assets in place, thereby exacerbating the problem of valuation of private firms. In addition, private targets have a greater propensity to be operated by their owner. In the case of hi-tech and service firms, the retention of the owner/operator may be necessary for a variety of reasons. It may be that management needs to be retained due to relationships established with the clientele of the firm. It may be that management needs to be retained due to their proprietary knowledge that is needed for the success of the venture. Alternatively, it may be that management needs to be retained so that this proprietary knowledge or client base is not lost to a competitor or a future firm that the operator initiates. Not only does the earnout contract facilitate the retention of important players in the target firm, it also gives these individuals incentive to operate in such a way as to maximize the value of the target firm's operations after the acquisition. For these reasons, it is a logical result that the acquisition of private firms via the use of an earnout would have a larger proportion of the deal paid as a contingent payment.

Table two examines the independent variables that will be used in the cross-sectional analysis of this chapter. Since a logistic regression determining the factors that affect the choice to use an earnout as acquisition vehicle is examined later in this chapter, characteristics of a sample of traditional acquisitions involving public firms acquiring private and subsidiary firms are also presented. Differences in means are tested for significance using pairwise univariate tests and the level of significance is reported as stars appearing to the right of the mean values. The data was checked for heteroskedasticity and colinearity and no problems were found. The first analysis is the

comparison of acquisitions using an earnout involving private firms to those involving subsidiary firms. Significant differences in means between private and subsidiary firms are designated by stars appearing to the right of the subsidiary mean for earnout transactions.

Within the sample of earnout transactions, statistically significant differences are associated with variables measuring informational asymmetry and thus suggest that private firms are more informationally opaque than subsidiary targets. A significantly greater proportion of private targets are in service related industries than are subsidiary targets. Similarly, a significantly greater proportion of private targets are in hi-tech industries. Private targets are also more likely to share the same two-digit SIC code with the bidder than are subsidiary targets in an earnout, while the majority of subsidiary targets are outside the bidder's SIC. While the mean transaction value is significantly larger when a subsidiary is the target, the proportion of value represented by the contingent payment is significantly larger for private targets. The finding of a higher mean earnout to deal value of the private firms is also consistent with a greater need to retain managerial talent in private targets than in subsidiary targets. Bidders are significantly more experienced acquirers when the target firm is a subsidiary. Bidders in earnouts are on average numerically larger when the target is a subsidiary, but the difference is not statistically significant.

Within the sample of traditional acquisitions, acquisitions involving private firms are similarly compared to acquisitions involving subsidiary firms across the same

Table 2. Descriptive statistics of the determinants of the earnout choice in merger transactions.

Means are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Cash holdings and marketable securities are for the bidding firm and are measured for the year prior to the transaction. Cash flow is for the bidding firm and is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is for the bidding firm and is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition. Prior acquisitions are measured for the ten-year period prior to the transaction. Earnout to deal is measured as the estimated earnout payment divided by the value of the transaction. Significant differences in means are identified by t-tests performed on pairwise comparisons of means between private vs. subsidiary in each subcategory, private earnouts vs. private traditionals, and subsidiary earnouts vs. subsidiary traditionals

	Earnout Transactions		Traditional Acquisitions	
	Private Firms	Subsidiaries	Private Firms	Subsidiaries
	Mean	Mean	Mean	Mean
Target is Service	0.49	0.37***	0.51	0.38***
Target is Hi-Tech	0.42	0.39*	0.42	0.28***/**
Same SIC	0.55	0.45**	0.57	0.61***/**
Bidder Value	2476.1	3186.5	5747.3	4461.3*
Transaction Value	54.12	119.91***	67.25***	150.13***
Target Value Relative to the Bidder Value plus Amount Paid	0.13	0.15*	0.09***	0.13***
Prior Acquisitions	1.35	1.91***	2.18***	2.17
Target # of SIC	1.75	1.88	1.63**	1.69**/*
Market-to-Book ratio	4.07	6.27	6.97	6.23
Growth in Sales	56.77	84.87	74.88	41.96***/**
Cash Holdings plus Marketable Securities Relative to Deal Value	9.82	6.89	13.05	14.22
Cash Flow Relative to Deal Value	0.34	-0.29	1.37	0.92
Debt to Capital Ratio Relative to the Industry Average	30.42	31.81	32.10	48.46***/**
Earnout to Deal	0.37	0.28***	-----	-----
Number of Observations	291	104	3819	2755

***Significantly different at the 1% level **Significantly different at the 5% level *Significantly different at the 10% level
⁰No Significance

dimensions. Significant differences in means between private and subsidiary firms are designated by the first set of stars appearing to the right of the subsidiary means. As was found within the sample of earnout transactions, a greater proportion of private targets are in service and hi-tech industries than is observed among the subsidiary targets. The mean transaction value remains significantly larger when a subsidiary is the target. However, unlike the earnout sample, private targets in traditional acquisitions have a significant greater growth in sales than do subsidiary targets. (Among the earnout transactions, those involving private targets had a numerically but not statistically smaller growth rate in sales.) Also unlike the earnout transactions, bidders acquiring private firms in traditional acquisitions are significantly larger than those acquiring subsidiaries. In another dissimilarity with the earnout sample, the sample of traditional acquisitions shows a significantly greater tendency for subsidiary targets to share the same SIC as the bidder than do private targets; moreover, also unlike the findings for the earnout sample, the proportion in each sample sharing the bidder's SIC is above 0.50. Informational asymmetry is likely to be smaller when the bidder and the target are in the same industry.

The third set of differences to be examined involves the comparison of the means for private firms acquired using an earnout transaction to means for private firms acquired using traditional methods. Stars appearing to the right of the means for the traditional private target designate the level of significance of the differences in means. For the samples involving private targets, acquisitions involving earnouts have a smaller mean transaction value, a greater target value relative to the combined firm value, smaller

number of prior acquisitions by the bidder, and a larger number of SIC codes for the target than those means for traditional acquisitions. No significant differences are observed between the two samples in the proportions of targets that are in service or hi-tech industries, or in the proportion of targets that are in the same SIC as the bidder, or in the mean bidder value (although the mean bidder value is numerically larger for the traditional acquisitions sample).

The findings of a greater mean number of SIC codes for the target and a lower transaction value for earnouts than for traditional acquisitions of private firms are consistent with the increased informational asymmetries of these deals. Also, the larger mean value of the target value relative to the combined firm value for earnout acquisitions points to the greater consequences resulting from misvaluation for the deals that employ earnouts. In addition, this evidence can also be used to further the notion that earnout contracts are also used as a financing vehicle for merger transactions. This will be explored later in the cross-sectional examination of the sample. The mean for prior acquisitions by the bidder is significantly greater for traditional transactions than for those that involve an earnout. Therefore, bidders with more experience have more expertise in the valuation of targets, lowering the risk associated with misvaluation.

The final set of univariate tests examines the differences in means for the sample of subsidiaries acquired via an earnout to those subsidiary targets acquired using traditional methods. Significantly different means are designated by the second set of stars appearing to the right of the means for traditionally acquired subsidiary targets.

A significantly greater number of subsidiary targets that operate in hi-tech industries were acquired via the use of an earnout compared to those that were traditionally acquired. Hi-tech targets have fewer assets in place and are therefore more difficult to value. Also, the human capital of these firms is necessary to the future success of these firms. It is much more important to retain the managers and give them incentives in a merger that maximizes the quality of their output. It is for these reasons that we see a greater proportion of hi-tech subsidiaries acquired by the use of an earnout. No significant difference is observed in the proportion of targets in the service industries, however.

Cross-industry acquisitions of subsidiary targets are more frequent in the sample of earnout transactions, consistent with managers of the bidding firm having a much more difficult time valuing the operations of a firm that is outside their area of expertise. The earnout sample of subsidiary acquisitions exhibits a higher mean number of target SIC codes than the set of traditional subsidiary acquisitions. Multiple lines of business also exacerbate the difficulty of valuation of the targets. Again, the earnout would shift some of the risks of misvaluation from the bidder to the target.

Subsidiaries that were acquired by earnout have a significantly greater growth in sales than traditional acquisition of subsidiaries. The question of whether a target could maintain a high sales growth would add uncertainty to its valuation, favoring use of an earnout. Subsidiaries that were acquired by earnout also have a significantly smaller relative debt to capital ratio. Debt financing, particularly when provided by private

lenders, produces a method for managers to signal positive inside information (Fama, 1985; James 1987).

3.4 Cross-sectional Analysis of the use of Earnouts

In this section, cross-sectional analysis of the sample of earnout transactions and traditional acquisitions is performed. A logit model using the variables identified in the previous section is employed to determine the choice between an earnout vs. a non-earnout transaction. The results are reported in table three. A tobit analysis is also used to examine the proportion of the transaction that is paid contingently when an earnout is used. The results for this analysis are reported in table four.

3.4.1 Logistic Analysis of the Use of Earnouts

As mentioned earlier, using an earnout contract in an acquisition serves many purposes. First, earnouts are hypothesized to lower the problems associated with asymmetry of information between targets and bidders. The earnout accomplishes this by allowing for differential valuations of the target by its own management and the management of the bidder. It also allows the target to signal its quality to the bidder by the proportion of total deal value that is paid contingently. It thereby shifts some of the risk of misvaluation from the target to the bidder. Second, an earnout helps solve some of the problems associated with agency. It does this through its forced retention of target management while providing these managers with the incentive to maximize their efforts

to achieve a higher payout. Third, it can be used as a financing vehicle for the acquisition by deferring some of the payment needed to acquire the target.

The logit regressions model the choice of using or not using an earnout as a mode of contracting in the acquisition. The dependant variable takes the value of one if an earnout is the choice and zero if a traditional mode of acquisition is used. The sample consists of the two sub-samples of earnout and traditional acquisitions discussed in detail in the last section. The independent variables that are used test hypotheses concerning agency, asymmetry of information, and financing of the transaction, as outlined in the introduction. The results for the logistic model of choice are reported in table three. A logit model is used rather than a probit model because the errors are not normally distributed. There are 8037 observations in models one and two and 6969 observations in models three and four. The difference in the number of observations is due to the fact that certain independent variables were not available for all of the observations. If data was not present for all of the independent variables in the analysis, the observation was dropped. There are 466 earnout transactions in models one and two and 395 earnout transactions in models three and four. The control sample of traditional acquisitions consists of 7571 observations in the first two models and 6574 in the last two models.

Model one and model three differ from models two and four in that model one and three use the natural log of bidder value and transaction value while the other two use target value relative to the combined value of the firm. The significant correlation among these variables precludes their being included in the same model. Model three and four include proxies to test the hypotheses associated with the financing of the deal along with

Table 3. Predicted sign and logistic results of the determinants of the use of an earnout in the acquisition of private and subsidiary firms.

Predicted signs and logistic regression results are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition. Prior acquisitions were measured for the acquiring firm for the ten-year period prior to the transaction.

Variable	Predicted Sign	Model 1	Model 2	Model 3	Model 4
Service Target	+	0.4682**	0.3820**	0.1091	0.2472
Hi-Tech Target	+	0.2497***	0.1683**	0.1813*	0.1379*
Same SIC	-	-0.2238**	-0.2084**	-0.1758*	-0.1720*
Private	+	0.6582***	0.6980***	0.5937***	0.6194***
LN(Bidder Value)	-	-0.2095***	----	-0.1989***	----
LN(Trans Value)	+	0.1253***	----	0.1316***	----
Tgt Value Relative to the Bidder Value plus Amount Paid	+	----	1.1587***	----	0.9971***
Prior Acquisitions	-	----	----	-0.0167*	-0.0347**
Trgt # of SIC	+/-	----	----	0.0751	0.0665
Mkt-to-Book	+	----	----	-0.00010	-0.00010
Sales Growth	+/-	----	----	-0.00008	-0.00012
Cash+Mktable Securities to Deal Value	-	----	----	-0.0274*	-0.0702**
Cash Flow/Deal Value	-	----	----	0.0037	0.0031
Debt to Capital Relative to Industry	+/-	----	----	-0.0047***	-0.0045***
Obs.		8037	8037	6969	6969
Pseudo R ²		0.027	0.018	0.030	0.024
Lklihd Ratio		97.2623***	62.5613***	88.3870***	70.4803***
Wald Statistic		91.0584***	59.4713***	80.2349***	62.0616***

***Significantly different than zero at 1% **Significantly different than zero at 5% *Significantly different than zero at 10%

two additional proxies used to test asymmetry of information between the target and bidder. In each model, the likelihood ratio statistic and Wald statistic are significant at the one percent level, indicating that the explanatory variables have more power in determining the choice to use an earnout than the intercept alone. A pseudo R^2 is calculated using two alternative definitions of McFadden's formulation of pseudo R^2 as a measure of the explanatory power of the model.

Looking at models one and two, we observe that the proposed independent variables are all significant and the signs of their coefficients are all in the direction hypothesized earlier. When a target operates in a service related industry there is a greater probability that these acquisitions will involve earnouts. This points to the notion that with service related industries, it is key to retain managers and their client relationships. The earnout effectively forces the manager to stay and provides incentives such that he will maximize his return on his client base. Also, since these targets generally have fewer assets in place, they are more difficult to value. The coefficient for hi-tech is evidence that when a target is involved in a high-tech industry there is a greater likelihood that an earnout will be used in the acquisition. Since hi-tech targets are difficult to value, due to the uncertainty of their future opportunities and little amount of assets in place, this is exactly what was expected and hypothesized earlier.

Upon further examination of models one and two, we observe that mergers where the target and bidder share the same first two digits of their SIC code are associated with a decreased likelihood that the deal will employ an earnout contract. In these

transactions, the bidder is better positioned to analyze the value of the target firm. Therefore, the risk of misvaluation is not as high as those transactions involving cross-industry acquisitions. The coefficient on the dummy variable for a private target is significant and in the direction hypothesized. This is evidence supporting the notion that since private targets involve a higher degree of asymmetry of information an earnout is chosen to help shift some of the risk of misvaluation from the bidder to the target. Also, private targets are more likely to be operated by their owner. The earnout will help in retaining this valuable human capital and help align the interest of target managers and the acquiring firm.

In model one, the coefficient for the independent variable associated with bidder value is significant and in the direction hypothesized. This is evidence that when a bidder is of large enough size, the problems associated with the risk of misvaluation are not as devastating to the bidder's financial position and therefore as bidder size increases we observe a decreased likelihood that the transaction will involve an earnout. The same is true for the coefficient for target value relative to the firms combined value in model two and the natural log of transaction value in model one. As the value of the target rises, especially with respect to the value of the combined entity, there are greater consequences associated with the risk of misvaluation. As the consequences for taking on this risk rise, we see a greater tendency of the use of an earnout contract.

Models three and four add to the analysis by bringing proxies associated with the financing hypotheses outlined in the introduction. The independent variables used in models one and two are still significant and in the hypothesized direction in models three

and four, except for the coefficient on the dummy variable for targets in service related industries. All of the implications made earlier in this section are still the case for models three and four. Looking at the coefficient on the independent variable for the number of prior acquisitions in the previous ten years, we observe that it is significant and in the hypothesized direction in both models. This is evidence in support of the notion that as bidding firm have more experience in acquisitions, their expertise helps them to better value the target firm. Therefore, as bidder merger experience increases, we observe a decreased probability that an earnout contract will be utilized.

Examining models three and four, we also find support for the financing hypotheses outlined earlier in this chapter. As the bidders proportion of cash and marketable securities relative to the value of the deal increase, we observe a decreased probability that an earnout will be employed in the transaction. Since these firms will have the financing necessary to do the deal, their need to rely on the future contingent payments (thereby reducing their up front expense) will be lowered. We also observe that the coefficient on the independent variable of the bidder's debt to capital ratio relative to the industry average is negative and significant. It may be that the bidder is able to call upon its lenders for advice in the valuation, reducing the need for an earnout. Alternatively, it could be that the lenders are less willing to allow a bidder to proceed when there is clear uncertainty about the future prospects of the target, as would be the case for an earnout. The remaining variables do not appear to contribute to the decision to use an earnout.

3.4.2 Tobit Analysis of the Contingent Payment Proportion Associated with Earnouts

A tobit regression analysis is used in order to examine the determinants of the proportion of the contingent payments relative to the total size of the acquisition. The sample of earnout transactions is used for this analysis. Again, if information is not available for all independent variables in the analysis, the observation is dropped. This leaves a sample of 466 earnout transactions for models one and two, and 395 earnout transactions for models three and four. The independent variables used to analyze the determinants of this choice are the same proxies identified earlier and used in the logistic regression analysis. A tobit regression is used due to the fact that the data for the dependant variable is continuous and truncated at zero. The errors are determined to follow a Weibull distribution, and are specified as such. This is also the reason that the logistic model was employed earlier.

All of the coefficients for the proxies associated with hypotheses relating to agency and informational asymmetry are significant and in the hypothesized direction. Examining the results from model one and two in table four, we observe that when a target is in a service related industry the contingent payments associated with the earnout are a greater proportion of the total value of the transaction. This is evidence in support of the hypotheses related to agency and asymmetry of information. Service industry related targets have fewer assets in place making them harder to value. Also, the human capital and clientele relationships must be retained and the return to these must be maximized in order for the bidding firm to realize the full potential of their acquisition. The greater the contingent portion of the deal relative to the total size of the transaction,

Table 4. Predicted sign and tobit results of the determinants of the size of the contingent payment as a percentage of the transaction value.

Predicted signs and tobit regression results are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition. Prior acquisitions were measured for the acquiring firm for the ten-year period prior to the transaction.

Variable	Predicted Sign	Model 1	Model 2	Model 3	Model 4
Target is Service	+	0.0101**	0.0091*	0.0170*	0.0062*
Target is Hi-Tech	+	0.0955***	0.0676**	0.0712**	0.0539**
Same SIC	-	-0.0841***	-0.0790***	-0.0640**	-0.0616**
Private	+	0.2337***	0.2545***	0.2076***	0.2225***
LN(Bidder Value)	-	-0.0726***	----	-0.0702***	----
LN(Transaction Value)	+	0.0387***	----	0.0427***	----
Tgt Value Relative to the Bidder Value plus Amount Paid	+	----	0.4213***	----	0.3853***
Prior Acquisitions	-	----	----	-0.0064*	-0.0130**
Trgt # of SIC	+/-	----	----	0.0171	0.0209
Mkt-to-Book	+	----	----	0.0000	0.0000
Sales Growth	+/-	----	----	0.0000	0.0000
Cash+Mktable Securities to Deal Value	-	----	----	-0.0011	-0.0014**
Cash Flow to Deal Value	-	----	----	0.0007	0.0008
Debt to Capital Ratio Relative to the Industry	+/-	----	----	-0.0017***	-0.0016***
Obs.		466	466	395	395

***Significantly different than zero at 1% **Significantly different than zero at 5% *Significantly different than zero at 10%

the greater the link is between human capital, clientele retention and the target operator's payout.

The coefficient for the dummy variable associated with the target firm operating in a high-tech industry is significant and in the hypothesized direction in models one and two. This supports the notion that since hi-tech targets are difficult to value, the earnout is used in order to shift some of the risk of misvaluation from the bidder to the target. Since these deals are also associated with high levels of asymmetry of information between targets and bidders, the target can signal its quality to the bidding firm by increasing the contingent proportion of the transaction. Also, the need to retain valuable human capital and proprietary knowledge is greater for deals that involve these types of targets. There is an increased benefit to requiring the operators of the target to remain and maximize their performance in order to receive a higher payout.

In models one and two, we observe that when an acquisition is a cross-industry combination, there is a higher contingent proportion of the payment. This supports the notion that bidding managers have less knowledge in valuing firms outside of their realm of expertise and rely on the increased contingent proportion of the total deal value to help shift some of the risk of misvaluation to the target. The coefficient on the independent dummy variable for private firms is significant and its sign is in the hypothesized direction. Private firms are harder to value due to the absence of information as well as the fact that for these firms it is necessary to retain and provide incentives to operators such that they maximize the bidder's value received from the acquisition. Therefore, when a bidder is acquiring a private firm there is a greater proportion of the deal that is

paid contingently via the use of an earnout. As was mentioned earlier, the earnout also provides the private target an opportunity to signal its quality to the bidding firm. The greater the amount of the transaction that is paid contingently, the more credible the signal that is sent by the private target to the bidder.

As the size of the bidder increases, the lower is the impact of the consequences for the acquirer associated with misvaluation. Therefore, as the size of the bidder increase we would expect that a lower proportion of the total deal will be paid contingently. The evidence in models one and two support this contention. The coefficient on the independent variable associated with the natural log of the value of the bidder is significant and its sign is negative. As the value of the transaction increases, especially relative to the size of the bidder, one would expect that a greater proportion of the transaction would be paid contingently. This is the case in models one and two. Not only are the consequences of misvaluation greater in these cases, the bidder may also need a vehicle to help finance the acquisition. The earnout serves this dual purpose, and we find evidence in support of this in these two models as the values of the coefficients for the natural log of the transaction size and the target value relative to the combined value of the entities is significant and their signs are in the direction hypothesized.

Models three and four further support the evidence found in models one and two. The coefficients for the independent variables used in models one and two are all significant in models three and four and their signs are in the hypothesized direction. We find evidence in models three and four that the more experience the bidder has in merger transactions, the better the bidder is in the evaluation of target value. Since these bidders

have more expertise in determining the value of the target, the risks associated with misvaluation are lower and the bidder will rely less on the use of a contingent payment to help shift some of these risks to the target. This is the case in these two models since the coefficient on the variable associated with the number of prior acquisitions the bidder has been involved in during the prior ten-year period is negative and significant.

The evidence regarding the hypotheses associated with the use of an earnout as a financing vehicle is not as prominent as it was in the logistic regressions discussed in an earlier section. The coefficient of the independent variable for the target value relative to the combined value of the entity is significant and its sign is positive, as discussed in the previous paragraph. However, the only other proxies that test the financing hypotheses that are significant are the coefficients for cash plus marketable securities relative to the deal value (at ten percent significance) and the coefficient on the variable of debt to capital ratio relative to the industry average. This is weak evidence in support of the notion that bidding firms that are able to employ existing financing are less likely to require that a greater proportion of the transaction amount be paid via the use of future contingent payments.

3.4.3 Post-merger Analysis of Earnout Payments and Target Management Retention

To obtain information regarding the post-merger analysis of the earnout, 10Qs and 10Ks for the acquiring firm are obtained for the earnout period, as well as for the two-year period following the conclusion of the earnout. The reason for the extra two-year period of time that the reports are searched is due to the sparse accounting for

payments associated with the payment of earnouts and the retention of target management.

The news wires on Lexus/Nexus as well as Compact Disclosure were also searched for this information. There are major problems with the collection of this data. First, some firms report the payments without using the term earnout. Therefore, documents were searched for various combinations of the terms earnout, earn out, earn-out, contingent, reliant, and conditional. Second, some acquirers are acquired before the period of the earnout is completed. Third, some acquirers use earnouts in multiple transactions, pooling the payments for financial reporting purposes. There is no way to parcel out the individual earnout payments to specific targets. Fourth, in some cases the target is sold prior to the completion of the earnout period.

Starting with our initial sample of 466 earnouts, we were able to acquire some information regarding these transactions in 121 of the observations. Of these 121 observations we were only able to find 82 cases where the information in question was decipherable or of any value. The resulting information from these searches is presented in table five. Earnout payments are tied to future milestones of target performance. In almost all cases these milestones are tied to the profitability of these entities. In only a few cases were the payments were tied to other factors, such as operating efficiency. On average, the length of time that the earnout agreement is in effect is for two to five years.

Examining the results presented in table five we observe that there are 46 cases in which we could determine the exact amount of the earnout that was paid. In 36 of the cases, the entire earnout was paid during the course of the agreement. In 10 cases, only a

Table 5. The post transaction payment of earnouts and information on target management retention.

<i>A. The Post Transaction Payment of Earnouts</i>	
Total Number of Cases	121
A. Number of cases with some earnout disclosure	82
1. Cases where a portion of the earnout is paid	35
a. The average portion of the earnout paid(%)	48
b. Unknown portion of the earnout is paid	25
2. Cases where the entire earnout payment is made	36
3. Cases where no earnout payments are made	11
B. Number of cases with no earnout disclosure	39
Reasons for unavailability of information:	
1. Target is divested	8
2. Bidder is acquirered	14
3. No information available	8
4. Earnout period is still in effect	9
<i>B. Post Transaction Target Management Retention</i>	
Total Number of Cases	121
B. Number of cases with some disclosure	98
1. Cases mentioning target management retention	43
2. Cases with specific information on target managers	55
3. Cases where:	
a. Target managers stays past the earnout period	36
1. Full or partial earnout paid	35
2. No earnout is paid	1
b. Management has left by the end of the earnout	10
1. Full or partial earnout paid	4
2. No earnout is paid	6
c. Specific manager retention is indeterminate	9
Due to:	
1. Bidder is acquired	3
2. Target is divested	3
3. No information available	3

portion of the contingent payments was made to the previous target owners. For these ten cases, on average, bidding firms paid targets 48 percent of the contingent payments agreed upon at the onset of the contract. In 25 of the cases, some portion of the earnout was paid. However, the proportion of the earnout that was paid could not be determined. This is due to either the fact that the bidding firm acquired other targets using an earnout and pooled the payments, or that the bidding firm acknowledged that a payment was made, but did not disclose the amount of the payment. In 11 cases the bidding firm specifically stated that no earnout payment was made.

In 39 of the 121 it could not be determined if any of the earnout was paid due to a variety of reasons. In 8 cases the target was divested before the completion of the earnout agreement; of this eight only three mentioned that a payment was made. However, the amount was not disclosed and, in any event, the targets were divested prior to the completion of the earnout period. In 14 of the 39 cases the bidder was acquired prior to the completion of the earnout. In 8 of the cases there was absolutely no mention of the earnout what so ever. Finally, in nine of the cases the earnout period is still in effect and therefore results could not be compiled.

In panel B of table five, the results for the retention of target management are reported. This information was compiled using 10K reports, news wires on Lexus/Nexus, and Compact Disclosure. Looking at these results, there are 98 cases in which some type of disclosure could be found concerning the retention of target management. In 43 of the 98 cases, there was mention of target management retention, however, no specific information could be found. In 36 of the remaining 55 cases, target

managers remain with the firm past the earnout period. For these transactions where management was retained after the completion of the earnout, 35 received the entire earnout payment. This is evidence that points to the value of the retention of human capital and clientele base needed to make the acquired target a successful performer in the combined firm. In 10 of the 55 cases, retained management had departed prior to the completion of the earnout. Of these ten cases, the majority did not receive any earnout payment. This is indicative of the fact that the retention of these managers was not the key to the successful post-acquisition performance of the acquired firm. In 9 of the 55 cases specific manager retention is indeterminate due to the bidder being acquired, the target being divested or lack of useable information. Overall, this evidence points to the use of the contingent payments associated with the earnout to retain target management and provide incentives for them to maximize their efforts, thereby maximizing their payouts from the transaction.

3.5 Summary

The results of the analysis completed in this chapter confirm that earnouts are being used for the motives that we hypothesized earlier. Specifically, we examine the determinants of the use of an earnout contract. We find that firms who employ an earnout contract in a merger do so in order to mitigate problems associated with agency and asymmetry of information. The earnout helps the bidder to shift some of the risk associated with misvaluation to the target firm. It also allows the bidding firm to retain key personnel and align the incentives of these individuals with the shareholders of the

combined firm. The earnout can be used as a signal by target firms due to the fact they can convey their quality to the bidder by the amount of the contingent payment chosen. We find evidence that the proportion of the contingent payments associated with an earnout is determined by the same factors that determine the choice of this type of contracting technology. Recall that an earnout contract is costly and difficult to enforce. Therefore, the benefits associated with the use of this contracting technology must be material to the bidding firm and these benefits must outweigh the cost associated with the earnout in order for it to be a viable alternative for the firms involved in an acquisition.

CHAPTER 4: METHOD OF PAYMENT AND ADVISOR UTILIZATION

4.1 Overview and Relevance

In this chapter, the method of payment and the use of advisors are examined with respect to earnout contracting. Only transactions involving the acquisition of private entities and subsidiaries of firms are used in this chapter. A later chapter in this dissertation examines transactions involving the acquisition of publicly traded firms. As was noted earlier, the literature has determined various reasons that earnout contracting is utilized in the acquisition of private and subsidiary targets. Earnout contracts lower the cost of asymmetry of information by attaching a contingent payment for part of the transaction based on various performance milestones. This, in effect, lowers the probability for the misvaluation of the target by shifting some of the risk of misvaluation from the bidder to the target. Another determinant for the use of this contracting method in acquisitions is the retention of talented employees, or manager/operators. Yet another possible use for this contracting method in acquisitions is that the target can use the proportion of the deal that is paid contingently to signal the quality of the firm. Since we are considering private and subsidiary targets, the information available to bidders is scant. A target can signal its value by taking a greater proportion of the payment for the acquisition as a contingent payment. Weak firms would not accept or propose this

contract, since the probability that they will be able to achieve the milestones necessary to receive the contingent payments is quite low. These firms prefer getting as much of the proportion of the deal up front as they can, thereby guaranteeing the highest certain amount of payment possible. Since this signal is costly for bad firms to replicate it is credible.

The literature has already identified other technologies used in acquisitions that mitigate these aforementioned problems. Investment bank advisors have been recognized in the literature to help identify targets for acquisitions. Also, due to their superior information gathering abilities they help to mitigate bidder misvaluation. Using equity to pay for an acquisition also helps to mitigate bidder misvaluation. If the target is large enough relative to the bidder, then both parties will share any misvaluation by the bidder in the acquisition of the target. Also by paying for the acquisition with stock, the target has the incentive to put its best efforts forward in order for the combined firm to be successful thereby maximizing the value of the payoff.

Datar, Frankel, and Wolfson's (2001) finding of significant costs associated with earnouts, combined with the increasing use of this contracting form, suggests that participants must be able to reduce these costs or that the benefits associated with this form of contracting outweigh them. In other areas of mergers and acquisitions, the utilization of advisors and the choice of method of payment mitigate similar problems that earnouts have been identified to alleviate. Is it the case that firms are engaging in the behavior of "wearing a belt and suspenders"? In other words, are the problems of agency and asymmetry of information so great in these deals that they need the added protection

of an earnout coupled with either the utilization of investment bank advisors or stock payment in these transactions, or are these technologies are mitigating different problems inherent in merger transactions? Using a sample of private firms and subsidiaries acquired via the use of an earnout, we examine the role of advisor utilization and the method of payment used in financing these types of acquisitions. Moreover, by contrasting the results from this sample to that of a “traditional sample” of acquisitions, we make more exact inferences concerning informational problems, adverse selection and problems of agency.

4.2 Hypotheses

4.2.1 Method of Payment

The hypotheses of this section concern the method of payment of the up-front part of an acquisition involving an earnout. These hypotheses are developed in the traditional acquisition literature to explain the method of payment used in an acquisition. The literature is replete with evidence that the use of equity as the method of payment in acquisitions has an adverse effect on the value of the bidder relative to the effect when cash is the payment medium (Asquith, Brunner and Mullins, 1983; Travlos, 1987; Wansley, Lane and Yang, 1987; Franks, Harris and Mayer, 1988; Servaes, 1991).

The usual explanation for the negative reaction to equity issuances in general, stems from the assumption that managers possess superior information about their firms (Myers and Majluf, 1984). To maximize existing shareholders’ wealth, management would issue equity only when it believes its firm’s shares are overvalued by the market.

The market thus treats equity issues as signals of overvaluation, and reacts unfavorably. Among studies of acquisitions, however, while the general finding of an adverse reaction to equity persists, contrary evidence exists of a positive effect associated with the use of equity in the acquisition of private firms (Chang, 1998) and in asset for equity sales (Slovin, Shushka and Polonchek, 2003). Thus, the hypotheses associated with the choice of method of payment in an acquisition must go beyond asymmetric information. Following Martin (1996) these are referred to as the investment opportunity hypothesis, the control hypothesis, the outside monitoring hypothesis, the cash availability hypothesis, and the risk-sharing hypothesis.

A. Investment opportunity hypothesis. Jung, Kim, and Stulz (1996) argue that an agency cost argument better explains the market reaction to security issuance than do informational asymmetries. Funds raised by equity issues are unrestricted and are invested at management's discretion. They also generate less monitoring than funds from debt issues. If management invests in low return projects, however, the increase in agency costs creates incentives for outsiders to act to realign management's interests with those of the shareholders by increasing monitoring or replacing management. Jung, Kim and Stulz report evidence that firms without valuable investment opportunities (measured by the ratio of firm's market value to its book value) experience the greatest adverse (negative) stock price reactions when they issue equity. Firms with valuable investment opportunities (high market to book ratios) are more likely to issue equity than debt; firms with poorer investment opportunities are more likely to issue debt. Extending this argument

to the method of payment in acquisitions, it follows that bidders would prefer to issue stock when the market would perceive the target as a valuable investment (i.e., growth) opportunity.

B. Control hypothesis. The method of payment is potentially affected by the desire of management to retain control of the bidding firm. Jung, Kim and Stulz (1996) argue that unless management is entrenched, as with a high degree of managerial ownership, issuing equity increases the risk to management of losing control. The importance of “control activities” such as monitoring by outside blockholders increases as agency costs increase. In an acquisition, this would mean that the bidder would be more likely to issue stock when there are existing blockholders (to monitor the bidder and verify the value of the target as an investment opportunity, thereby lessening the agency costs).

Amihud, Lev and Travlos (1990) find an inverse relation between managerial ownership and the use of stock to pay for an acquisition. Martin (1996) finds a similar result, but notes that the relation is likely to be non-linear, in that at very high levels of ownership, management is insulated from threats to control, and at very low levels of ownership, management is aligned with outside shareholders. Therefore, one should observe that, under these circumstances, equity offers are more prevalent in high and low levels of managerial ownership, where dilution of control is not of importance to management. Since the data used in this chapter is from private firms and subsidiary firms, one would expect to see that more of these deals are paid with cash unless there are high or low

levels of managerial ownership in the bidding firm. If an acquisition of a private or subsidiary firm were paid for with equity, a substantial blockholder would be created.

- C. Outside monitoring hypothesis.** Individuals and entities holding large blocks of the firm's stock should be able to exert considerable influence over management's decisions, including the method of payment in an acquisition. Martin (1996) argues that, since the typical stock price response to the use of stock in acquisitions is negative, blockholders should prefer stock not be used, leading to an inverse relation between the degree of outside blockholdings and the likelihood of equity financing of an acquisition.
- D. Cash availability hypothesis.** Myers (1984) argues that managers prefer internal to external sources of financing. The rationale is not clear, but likely is to avoid the transaction costs of new issues, the monitoring of debt holders, and the adverse price effects of equity issues. A bidder would thus prefer to use internal funds for an acquisition rather than issue equity. Consistent with Myers, Martin (1996) argues that firms with higher free cash flows (or untapped debt capacity) are less likely to issue stock in an acquisition.
- E. Risk sharing hypothesis.** With a cash transaction, the bidder is left with all the risk (and return) of any misvaluation of the target. Thus, as argued by Hansen (1987) and Eckbo, Giammarino, and Heinkel (1990), when the target likely has superior information about its value, the bidder will prefer a stock offer. Shareholders of the acquired firm bear some of the risk of misvaluation per

force. The greater the likelihood or importance of this asymmetric information, the more likely is the acquirer to issue stock. However, as was noted earlier, one determinant for employing earnout contracting in an acquisition is to shift some of the risk of bidder misvaluation from bidder to target. Therefore, it may be the case that the risks of misvaluation are so costly that the bidder employs multiple techniques.

4.2.2 Advisor Utilization

Servaes and Zenner (1996) examine the role of investment banks as advisors in acquisitions. In particular, they conclude that the use of an advisor adds value through reduced transactions costs, decreased informational asymmetries, and certification in the absence of extant monitoring. These three concepts form the basis for the hypotheses in this section.

A. Transaction costs. Servaes and Zenner (1996) argue that investment bankers have a comparative cost advantage in identifying and valuing potential targets or buyers, and in constructing structuring the deal. Using this argument, investment bankers would be called upon when the transactions costs of the acquisition are likely to be high: complex deals, those involving resistance (hostile takeovers and bidding contests), non-cash consideration, or large targets. Transactions costs would also be high when the bidder has little experience in acquisitions.

This argument should hold for earnouts, since they are a sample of the larger merger population. Therefore, if the earnout acquisition involves multiple

considerations or equity payments, there should be a higher probability associated with the use of an advisor. If the acquirer has used an earnout as a vehicle for prior acquisitions, we can say that this party has experience in the use of this contracting method and we should expect a lower probability that the entity uses an advisor. Compared to traditional acquisitions of private and subsidiary targets, the earnout transactions should be more complex. Earnouts require determining the amount of the up front portion of the payment, estimating the probability that the contingent payment will be made, and establishing the milestones for the contingent payments. This poses a much more difficult transaction for the bidder to evaluate. Thus investment advisors should be more likely in earnout transactions than in traditional acquisitions.

B. Asymmetry of Information. Servaes and Zenner (1996) propose that advisors are needed when the informational asymmetry between the target and acquirer is high. Of particular relevance to the present research, Servaes and Zenner argue that informational asymmetries are likely to be high when the target is private or consists of specific assets (a subsidiary, for example). Earnouts commonly involve such targets. Due to the superior information collection and processing associated with investment bank advisors one should observe that their use is more prominent in earnout transactions than in traditional acquisitions. Earnout use is a costly endeavor for the reasons previously mentioned. If one observes the use of this contracting method in conjunction with an advisor (which is also costly) it may be that the informational asymmetries are so high between the

target and bidder that the bidder must use both in order to assure that this event is value increasing for its shareholders.

C. Contracting costs. Investment bankers are perceived in the literature as having the ability to effectively monitor an entity and signal the quality or value of that entity. Serveas and Zenner (1996) argue that the investment banker can be viewed from the same perspective as in Beatty and Ritter (1986), in that the reputational capital of the investment banker is at stake and this credibly conveys the signal. That is, in situations where there is an increased need for monitoring of the target, the use of an advisor should add value.

The targets used for analysis in this chapter are either private entities or subsidiaries. These are exactly the types of entities that will have problems credibly conveying their quality to the bidders in these transactions. One would expect that these acquisitions would have a greater instance of investment bank advisors when compared to the acquisition of a public entity due to the lack of information about these targets. However, when the acquisitions of private and subsidiary targets is delineated between those that use an earnout in the acquisition and those that do not we can make further inferences concerning the motivation for the use of earnout contracts as well as investment bank advisors. Using an earnout contract in an acquisition is a more costly transaction than a non-earnout acquisition. Also, the use of this contract can be thought of as a signaling mechanism (as discussed earlier). If this is the case, then one should observe less advisor utilization in the earnout transactions than the non-earnout

transactions since the targets agreeing to an earnout contract are already signaling their quality to the bidder in the acquisition.

4.3 Method of Analysis

The sample consists of transactions identified from Thompson Financial Securities Data Mergers and Acquisitions files (SDC) involving acquisition of a private entity or a subsidiary of a corporation. The data was then collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor's Compustat files on Academic Universe, news releases found in Lexis/Nexis and Valueline Investment Surveys. Extreme data points were verified by using Lexis-Nexis Academic Universe, SEC filings and Compact Disclosure. Information on insider and institutional holdings is collected from Value Line.

4.3.1 Method of Payment

Variables measuring characteristics of the firm and its ownership structure are used as proxies for each of the hypotheses.

- A. Investment opportunity hypothesis.** To proxy for the investment opportunities of the firm we use the market value of the firm to the book value of the firm, and the growth rate of the firm's sales.
- B. Control hypothesis.** To proxy for the potential loss of control we use the percent of managerial ownership.

- C. Outside monitoring hypothesis.** To proxy for the level of outside monitoring we use the percent of shares held by institutions, and the percent of shares held by outside blockholders.
- D. Cash availability hypothesis.** To proxy for the availability of free-cash we use the sum of cash holdings and marketable securities (relative to the value of the deal), cash flow relative to the value of the deal (where Lehn and Poulsen's (1989) definition of cash flow is used as cash flow is equal to EBIDT minus interest, taxes, preferred dividends, and common dividends), and the ratio of the acquiring firm's debt-to-capital ratio and the industry average (where debt is defined as the sum of long-term debt and short-term debt, and capital is debt plus the market value of common equity and the value of preferred equity).
- E. Risk sharing hypothesis.** Following Hansen (1987) and Martin (1996), we use the ratio of the target value relative to the sum of the bidder value and the amount paid for the acquisition.

These proxies are the independent variables in logistic regressions to predict the use of stock, cash, or a mix for payment of the up-front portion of an earnout. Logistic models are estimated for cash versus stock, cash versus mixed, and stock versus mixed. Also, an ordered logit regression is estimated with the choice variable equal to one if cash is used, two if a mixed payment is used, and three if stock is the method of payment.

4.3.2 Advisor Utilization

- A. Transactions costs.** To proxy for the existence and size of the transactions costs associated with the acquisition we use the complexity of the deal (the number of considerations offered, the size of the deal relative to the bidder, and whether the up front payment is cash, stock, or a combination) and the experience of the bidder in acquisition activity (the number of prior acquisitions over a ten year period).
- B. Contracting costs.** To proxy for the need for monitoring we use the existence of blockholders, and the percent of the contingent portion of the earn-out with respect to the value of the deal.
- C. Information Asymmetry.** Proxies used for the existence of informational asymmetry between targets and acquirers are industry relatedness (which is equal to one if the firms have similar SIC codes, zero otherwise), and the number of industries in which the target/acquirer operates.

Logistic regression models are estimated for each of the three hypotheses separately, then together as a full model. The dependant variable of the models takes the value of one if the firm uses an advisor in the acquisition process and zero otherwise.

4.4 Data and Statistics

4.4.1 Method of Payment

The method of payment sample consists of 9146 acquisitions of private and subsidiary targets by public firms completed through the period of January 1, 1990-May 31, 2001. These observations were identified from Thompson Financial Securities Data Mergers and Acquisitions files (SDC). The data were collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor's Compustat files on Academic Universe, news releases found in Lexis/Nexis and Valueline Investment Surveys. Observations involving the acquisition of public targets, acquisitions involving foreign entities, and acquisitions involving financial firms or holding companies were excluded. Acquisitions for less than \$1.0 million dollars are dropped from the sample. Tables six through ten present the entire universe for deals that fit this criteria and where a transaction value can be found or determined. This leaves 8726 observations of transactions involving the acquisition of a private or subsidiary target by a public bidder. For tables eleven and twelve, deals are dropped if information cannot be found for the variables in question. This leaves a sample of 6772 observations.

The method of payment sample is split between private and subsidiary firms and the value of the deals in question are presented in table six. For the period in question, 5229 of the 8726 observations are private targets. The remaining 3497 observations are subsidiary targets. For the sample as whole, acquisitions of private and subsidiary targets are rising in the early 1990's and level off in the 1997-2001 period (remember the

observations from 2001 only consist of data from January 1 to May 31). This may be due to the cash constrained economy, uncertainty on the NASDAQ concerning the dotcom debacle and that acquirers were waiting for the dust to settle. Also, the size of the deals concerning the acquisition of private and subsidiary targets has been on the rise during the period in question.

As one would expect, the deal value for subsidiary targets is greater than that of private targets. This is possibly due to the fact that, in general, private targets are in the early stages of their life cycle and have not had the time or the opportunity to grow as much as subsidiary firms. Also, subsidiaries have access to their parent's capital, which helps account for their larger size. When looking at the means and medians for the sample, it is apparent that the sample is somewhat skewed, due to a few large deals. We will address the skewness issue later in the paper. However, the medians tell the same story that subsidiary targets are larger than their private counterparts. The deal size for private targets ranges from \$1.0 million dollars (consisting of 40 acquisitions) to \$7.78 billion dollars (the acquisition of WebMD by Healtheon). The deal size for subsidiary firms ranges from \$1.0 million dollars (consisting of 43 acquisitions) to \$10.75 billion dollars (the acquisition of the entertainment subsidiary of USA networks by Vivendi Universal).

Table seven presents the value of the transaction for the sub-sample of acquisitions that use an earnout as a contracting method. The transaction value is determined by adding the upfront payment for the transaction to the amount of the contingent payment. There are 533 observations in this sub-sample. This sub-sample is

Table 6. The transaction value for public firms acquiring private firms, and subsidiaries

Comparative summary statistics are presented for the announcement date by year and over the entire sample period by firm categorization. The transaction value for non-earnout acquisitions is the market value of any equity, debt, etc. plus any cash offered in millions of U.S. dollars. The transaction value for earnouts is the sum of the market value of the up front payment and the estimated value of the earnout in millions of U.S. dollars.

	All Firms			Private			Subsidiaries		
Panel A. Measures of central tendency									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	8726	99.3883	19.0000	5229	66.2668	15.0000	3497	148.9142	28.5000
1990	267	56.5216	12.0000	106	20.2275	8.0000	161	80.4172	20.3700
1991	289	47.6230	10.5000	149	33.3976	9.0000	140	62.7629	12.9000
1992	440	45.5939	11.0000	239	23.2729	7.0000	201	72.1348	23.1300
1993	548	53.6033	11.8500	270	33.6635	8.9465	278	72.9693	20.0000
1994	613	66.6005	11.3400	347	48.2425	9.0000	266	90.5486	16.5000
1995	673	67.4549	15.6000	394	31.5464	11.0430	279	118.1644	26.1000
1996	823	89.6243	20.5000	487	53.0203	16.4900	336	142.6782	27.3500
1997	1068	98.1266	17.0000	649	55.1158	14.0000	419	164.7472	28.9000
1998	1127	97.5258	20.5000	716	57.3836	17.9280	411	167.4573	34.0000
1999	1065	145.2683	27.8860	721	108.1542	22.8200	344	223.0567	44.7500
2000	1107	148.8169	28.7490	771	118.0209	25.0000	336	219.4828	39.9875
2001	706	134.3142	25.0000	380	62.9391	20.0000	326	217.5121	32.5000

	All Firms			Private			Subsidiaries		
Panel B. Minimum and maximum values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	8726	1.000	10749.48	5229	1.000	7782.97	3497	1.000	10749.48
1990	267	1.000	3294.00	106	1.000	225.00	161	1.000	3294.00
1991	289	1.000	1060.00	149	1.000	670.00	140	1.000	1060.00
1992	440	1.000	1275.00	239	1.000	577.00	201	1.000	1275.00
1993	548	1.000	3449.20	270	1.000	3449.20	278	1.000	1575.00
1994	613	1.000	2925.00	347	1.000	2094.38	266	1.000	2925.00
1995	673	1.000	5704.00	394	1.000	482.86	279	1.000	5704.00
1996	823	1.000	3879.23	487	1.000	3425.00	336	1.000	3879.23
1997	1068	1.000	9500.00	649	1.000	3096.09	419	1.000	9500.00
1998	1127	1.000	5676.00	716	1.000	1855.00	411	1.000	5676.00
1999	1065	1.000	7782.97	721	1.000	7782.97	344	1.046	5000.00
2000	1107	1.000	10528.66	771	1.000	3346.42	336	1.000	10528.66
2001	706	1.000	10749.48	380	1.000	1302.00	326	1.000	10749.48

again split into two categories for private targets and subsidiary targets.

There are 392 transactions involving an earnout and the acquisition of a private target. The remaining 141 transactions involve an earnout and the acquisition of a subsidiary target. The implications for deal size and frequency for the sub-sample of earnout transactions is similar to that of the entire sample. Deals are increasing during the period in question and level off during the period from 1997-2001. Again, on average, subsidiary targets are found to be larger than private targets. Looking at this table and comparing it to full sample of we can see that acquisitions involving private targets that use an earnout are, on average, smaller than those that do not use an earnout. This points to the fact that for the acquisitions of smaller firms there are more informational asymmetries between the parties than for larger firms. The same is true for acquisitions involving subsidiary targets that were acquired via an earnout. Looking at the maximums and minimums for transactions involving earnouts, we can see that the maximums for these acquisitions are substantially lower.

Table eight presents the value of the contingent part of the deal for private and subsidiary targets acquired using an earnout. From this table one can see that, on average, a higher percentage of the transaction value is paid contingently for private firms than for subsidiary firms. On average about 28-29% of the deal is paid contingently for private firms compared to about 17-20% for subsidiary firms. Again, this points to the fact that private firms are able to signal their value to the acquirer by taking a larger proportion of the payment contingently. Since the acquisition of private firms has more

Table 7. The sum of the up front payment and the value of the earnout for public firms acquiring private firms, and subsidiaries

Comparative summary statistics are presented for the announcement date by year and over the entire sample period by sector categorization. The transaction size is the sum of the up front payment and the estimated value of the earnout in millions of U.S. dollars.

	All Firms			Private			Subsidiaries		
Panel A. Measures of central tendency									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	533	71.5216	15.5000	392	54.1172	13.9000	141	119.9083	25.0000
1990	9	53.5083	8.6000	7	21.4607	8.6000	2	165.6750	165.6750
1991	23	14.9174	6.6890	21	15.7286	6.6890	2	6.4000	6.4000
1992	24	32.1068	8.5000	17	32.5391	7.5000	7	31.0571	9.0000
1993	33	22.6057	11.3000	22	9.1697	7.6900	11	49.4776	19.9000
1994	33	26.0287	8.0000	22	11.5302	5.9000	11	55.0557	14.5680
1995	29	22.2610	11.7000	21	17.0224	11.1500	8	36.0125	21.6375
1996	29	138.8298	24.0000	18	22.8368	18.2500	11	328.6364	65.0000
1997	61	58.2420	11.2500	47	35.6778	11.0000	14	133.9931	13.9750
1998	76	44.6561	18.3800	61	39.0549	18.0000	15	67.4345	35.7500
1999	75	105.0083	20.1750	58	96.4972	18.6850	17	134.0460	21.0000
2000	80	131.0946	23.2975	54	125.0028	20.0000	26	143.7469	39.1540
2001	61	80.9685	24.7000	44	57.9579	18.6180	17	140.5255	28.5000

	All Firms			Private			Subsidiaries		
Panel B. Minimum and maximum values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	533	1.000	3250.00	392	1.000	3250.00	141	1.000	2050.00
1990	9	1.350	330.00	7	4.000	94.95	2	1.350	330.00
1991	23	1.489	79.05	21	1.489	79.05	2	2.200	10.60
1992	24	1.783	264.80	17	1.783	264.80	7	5.000	125.00
1993	33	1.000	275.00	22	1.000	27.70	11	2.000	275.00
1994	33	1.500	191.00	22	1.500	42.50	11	3.100	191.00
1995	29	1.077	140.00	21	1.077	140.00	8	4.000	133.31
1996	29	4.825	2050.00	18	4.825	65.48	11	5.000	2050.00
1997	61	1.250	900.00	47	1.250	445.00	14	2.150	900.00
1998	76	1.131	287.81	61	1.131	287.81	15	3.850	276.60
1999	75	1.146	3250.00	58	1.146	3250.00	17	2.200	1050.00
2000	80	1.000	2068.09	54	1.588	2068.09	26	1.000	1700.00
2001	61	1.000	1329.10	44	1.000	1329.10	17	2.750	1329.10

Table 8. Estimated value of the earnout for public companies acquiring private firms and subsidiaries

Comparative summary statistics are presented for the announcement date by year and over the entire sample period by sector categorization. The size of the earnout is the estimated value of the earnout in Millions of U.S. dollars.

	All Firms			Private			Subsidiaries		
Panel A. Measures of central tendency									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	533	17.5340	4.5000	392	16.0959	4.0000	141	21.5319	5.0000
1990	9	8.4889	4.0000	7	7.9571	4.0000	2	10.3500	10.3500
1991	23	3.8783	2.1000	21	4.1524	2.3000	2	1.0000	1.0000
1992	24	13.8333	3.5000	17	17.1588	4.0000	7	5.7571	3.0000
1993	33	8.8879	2.0000	22	3.3000	1.5000	11	20.0636	4.4000
1994	33	5.1394	3.0000	22	3.4273	2.4000	11	8.5636	5.8000
1995	29	7.5759	3.0000	21	6.4000	3.0000	8	10.6625	7.7500
1996	29	21.2897	7.0000	18	9.5500	4.0000	11	40.5000	8.0000
1997	61	17.9689	4.0000	47	12.7851	4.0000	14	35.3714	4.5000
1998	76	12.5763	4.8000	61	11.9361	4.6000	15	15.1800	5.9000
1999	75	23.8307	5.9000	58	22.1431	7.7500	17	29.5882	5.0000
2000	80	31.5150	7.0000	54	36.5315	7.0000	26	21.0962	7.1500
2001	61	19.4689	7.0000	44	18.9705	7.0000	17	20.7588	6.0000

	All Firms			Private			Subsidiaries		
Panel B. Minimum and maximum values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	533	0.100	822.80	392	0.100	822.80	141	0.100	270.00
1990	9	0.700	30.00	7	0.800	30.00	2	0.700	20.00
1991	23	0.200	12.40	21	0.200	12.40	2	0.400	1.60
1992	24	0.100	200.00	17	0.100	200.00	7	1.000	25.00
1993	33	0.400	150.00	22	0.400	10.00	11	1.000	150.00
1994	33	0.300	23.00	22	0.300	10.50	11	2.100	23.00
1995	29	0.200	65.00	21	0.200	65.00	8	2.000	35.80
1996	29	0.800	250.00	18	0.800	31.00	11	2.000	250.00
1997	61	0.700	200.00	47	0.700	159.00	14	0.800	200.00
1998	76	0.200	130.00	61	0.200	130.00	15	1.000	105.00
1999	75	0.300	500.00	58	0.300	500.00	17	0.400	270.00
2000	80	0.100	822.80	54	0.700	822.80	26	0.100	150.00
2001	61	0.500	170.00	44	0.500	170.00	17	0.500	125.00

Table 9. The transaction value of the acquisition for public firms acquiring private firms and subsidiaries categorized by the method of payment.

Comparative summary statistics are presented for the announcement date by year and over the entire sample period for the total sample and by method of payment categorization. For earnouts, the transaction size is the sum of the up front payment and the estimated value of the earnout in millions of U.S. dollars. The transaction value for non-earnout acquisitions is the market value of any equity, debt, etc. plus any cash offered in millions of U.S. dollars.

	All Mergers			Cash			Stock			Mix		
Panel A. Measures of central tendency												
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	8726	99.3883	19.0000	4748	93.9829	19.6000	1592	111.5801	24.7250	2386	101.8915	15.1055
1990	267	56.5216	12.0000	169	49.2169	14.0000	30	37.6548	23.2000	68	82.9996	7.2000
1991	289	47.6230	10.5000	171	48.4277	10.5000	51	35.5690	12.5000	67	54.7445	8.5000
1992	440	45.5939	11.0000	228	45.9140	11.4000	76	60.1141	14.2100	136	36.9431	8.4500
1993	548	53.6033	11.8500	305	52.4077	15.0000	93	43.8527	10.2600	150	55.0388	9.4650
1994	613	66.6005	11.3400	331	81.1203	13.7500	86	35.6544	11.7800	196	56.1166	8.1300
1995	673	67.4549	15.6000	366	80.1857	17.0000	123	50.5813	20.0000	184	53.4113	12.7700
1996	823	89.6243	20.5000	445	94.2928	23.5000	162	55.4305	20.0500	215	106.6969	17.4330
1997	1068	98.1266	17.0000	609	91.4121	18.0000	166	62.3833	21.1695	293	132.9953	14.5000
1998	1127	97.5258	20.5000	645	107.8072	24.0000	183	60.3631	24.6040	299	98.8172	15.7000
1999	1065	145.2683	27.8860	565	105.3576	25.0000	242	223.6093	38.0000	258	160.0916	27.0000
2000	1107	148.8169	28.7490	489	124.8195	22.5000	288	222.6866	70.1690	330	119.9087	25.0000
2001	706	134.3142	25.0000	425	139.4434	27.0000	91	89.0349	19.8290	190	144.5272	25.073

Table 9. (continued)

	All Mergers			Cash			Stock			Mix		
Panel B. Minimum and maximum values												
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	8726	1.000	10749.48	4748	1.000	7800.00	1592	1.000	7782.97	2386	1.000	10749.48
1990	267	1.000	3294.00	169	1.000	642.00	30	1.350	176.00	68	1.000	3294.00
1991	289	1.000	1060.00	171	1.000	1060.00	51	1.125	376.80	67	1.000	670.00
1992	440	1.000	1275.00	228	1.000	1275.00	76	1.090	1170.00	136	1.000	692.64
1993	548	1.000	3449.20	305	1.000	1575.00	93	1.250	922.25	150	1.000	3449.20
1994	613	1.000	2925.00	331	1.000	2925.00	86	1.050	325.03	196	1.000	2094.38
1995	673	1.000	5704.00	366	1.000	5704.00	123	1.017	1574.48	184	1.000	2412.12
1996	823	1.000	3879.23	445	1.000	3600.00	162	1.150	2870.00	215	1.012	3879.23
1997	1068	1.000	9500.00	609	1.000	2950.00	166	1.000	1500.00	293	1.000	9500.00
1998	1127	1.000	5676.00	645	1.000	5000.00	183	1.055	925.93	299	1.000	5676.00
1999	1065	1.000	7782.97	565	1.000	3270.00	242	1.050	7782.97	258	1.046	5000.00
2000	1107	1.000	10528.66	489	1.000	7000.00	288	1.201	5761.65	330	1.000	10528.66
2001	706	1.000	10749.48	425	1.000	7800.00	91	1.000	1300.00	190	1.000	10749.48

Table 10. The sum of the up front payment and the value of the earnout for firms acquiring private firms and subsidiaries using an earnout categorized by the method of payment

Comparative summary statistics are presented for the announcement date by year and over the entire sample period for the total sample and by method of payment categorization. The transaction size is the sum of the up front payment and the estimated value of the earnout in millions of U.S. dollars.

	All Mergers			Cash			Stock			Mix		
Panel A. Measures of central tendency												
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	533	71.5216	15.5000	258	53.2695	15.0000	74	98.5653	10.5950	201	84.9947	19.1000
1990	9	53.5083	8.6000	4	11.7250	11.6500	1	1.3500	1.3500	4	108.3313	49.6625
1991	23	14.9174	6.6890	6	32.2500	18.9500	6	4.4202	3.4015	11	11.1890	4.2500
1992	24	32.1068	8.5000	11	38.9620	16.0000	3	10.4800	7.5000	10	31.0541	8.5000
1993	33	22.6057	11.3000	15	38.5169	12.7500	6	7.9632	3.8750	12	10.0378	9.5400
1994	33	26.0287	8.0000	16	20.1319	10.0000	6	35.9045	2.9500	11	29.2492	14.5680
1995	29	22.2610	11.7000	16	12.4969	11.4250	2	11.2765	11.2765	11	38.4606	14.0000
1996	29	138.8298	24.0000	14	79.9107	37.0000	3	27.4583	12.0000	12	235.4115	15.2165
1997	61	58.2420	11.2500	40	51.8093	11.0000	5	94.8166	38.8700	16	62.8941	22.5000
1998	76	44.6561	18.3800	35	46.4245	20.0000	7	60.9434	18.0000	34	39.4825	17.6445
1999	75	105.0083	20.1750	42	40.7635	14.5000	10	35.2681	13.7180	23	252.6465	36.0530
2000	80	131.0946	23.2975	31	124.1820	25.0000	18	307.2271	37.9690	31	35.7368	21.1280
2001	61	80.9685	24.7000	28	57.0280	27.5000	7	11.8470	10.2520	26	125.3602	30.3500

Table 10. (continued)

	All Mergers			Cash			Stock			Mix		
Panel B. Minimum and maximum values												
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	533	1.000	3250.00	258	1.0000	1700.00	74	1.1460	2068.09	204	1.0000	3250.00
1990	9	1.350	330.00	4	4.1000	19.50	1	1.3500	1.35	4	4.0000	330.00
1991	23	1.489	79.05	6	5.9500	79.05	6	1.4890	8.85	11	1.6640	36.04
1992	24	1.783	264.80	11	1.7830	264.80	3	2.4300	21.51	10	4.2560	125.00
1993	33	1.000	275.00	15	1.3500	275.00	6	1.4850	23.87	12	1.0000	27.70
1994	33	1.500	191.00	16	3.1000	83.20	6	1.5000	191.00	11	3.5500	170.00
1995	29	1.077	140.00	16	3.9000	30.00	2	2.2400	20.31	11	1.0770	140.00
1996	29	4.825	2050.00	14	5.2500	534.00	3	4.9000	65.48	12	4.8250	2050.00
1997	61	1.250	900.00	40	1.2500	900.00	5	7.3500	269.00	16	3.5800	685.00
1998	76	1.131	287.81	35	1.5720	276.60	7	6.9660	232.34	34	1.1310	287.81
1999	75	1.146	3250.00	42	1.7500	235.00	10	1.1460	201.82	23	3.8360	3250.00
2000	80	1.000	2068.09	31	1.0000	1700.00	18	1.3050	2068.09	31	3.1000	151.49
2001	61	1.000	1329.10	28	2.7500	331.00	7	6.1990	19.83	26	1.0000	1329.10

problems associated with informational asymmetries than subsidiary firms, the need to signal their value is of more importance.

Table nine and table ten present the value of the deal grouped by method of payment for the full sample and for the earnout sample respectively. Looking at table nine and ten it can be seen that the transactions that are paid for using cash as the method of payment are, on average, smaller than those involving a payment of stock. This should be the case if we expect that firms are using the method of payment to help finance the transaction due to the future need for favorable investment opportunities. However, this table also shows that transactions that are paid for with cash outweigh the number of deals that are paid for with stock. This could be due to the fact that the acquiring firm may have a reluctance to create a substantial blockholder. Only the use of cross-sectional analysis will help us in determining the motives behind the observed behavior.

Table eleven presents the mean values across the three methods of payment used in the traditional acquisitions and in the upfront portion of the earnout transactions. For each continuous variable, the results of the univariate F-tests for equality of means appear to the right of the table. The results for the univariate t-tests for pairwise comparisons appear as superscript stars next to the value in the table. The first set of stars refers to the comparison of cash deals to stock, and cash to mixed payment deals. The second set of stars on the mixed payment means refers to the pairwise comparison between stock and mixed payments. Since the data exhibits skewness, the sample was Winsorized at the ten percent level and the comparisons were run again for all pairs. The results are not

Table 11. Descriptive statistics of the determinants of the method of payment in the sample of merger transactions for acquirer.

Means are presented for the mergers in our sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Managerial ownership is defined as the % of outstanding shares owned by management prior to the transaction. % Institutional holdings refers to the percentage of shares outstanding held by institutional investors prior to the transaction. Outside blockholder is a dummy variable that takes the value of one if there is a presence of an outside blockholder. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition. Significant differences in means are identified by an F-statistic that tests the null hypothesis of no difference in means. T-tests are performed on pairwise comparisons of means between cash vs. stock, cash vs. mixed, and stock vs. mixed.

	Cash Payment	Stock Payment	Mixed Payment	F-Statistic
	Mean	Mean	Mean	
Market-to-Book ratio	2.41	9.10***	4.53 ^{0/} **	1.54***
Growth in Sales	38.88	77.37***	66.25*** / *	2.04***
Managerial Ownership (%)	0.18	0.22	0.21	1.01
Private	0.47	0.86***	0.69*** / ***	1.70***
Earnout to Deal	0.0181	0.0197	0.027*** / **	1.11**
Same SIC	0.5836	0.595	0.5683 ^{0/} *	1.02
Acq # of SIC	3.96	3.02***	3.15*** / *	1.22***
Trgt # of SIC	1.62	1.70**	1.68** / ⁰	1.02
% Institutional Holdings	0.13	0.12	0.10	1.05
Outside Blockholder	0.63	0.52	0.59	1.01
Cash Holdings plus Marketable Securities Relative to Deal Value	19.07	16.89	26.28	9.20***
Cash Flow Relative to Deal Value	1.51	-0.013	-2.07** / ⁰	7.53***
Debt to Capital Ratio Relative to the Industry Average	42.94	22.51***	38.80 ^{0/} ***	9.02***
Target Value Relative to the Bidder Value plus Amount Paid	40.72	45.26**	37.99	1.16***
Number of Observations	3613	1236	1923	

***Significantly different at the 1% level **Significantly different at the 5% level *Significantly different at the 10% level
⁰No Significance

fundamentally different from those reported in the table. The data was checked for heteroskedasticity and collinearity and no problems were found.

In table eleven, one would expect more variation between sample means for the pairs of cash versus stock and cash versus mixed payment, than for mixed versus stock. Both a stock and mixed payment have similar implications involving the control of the firm, and risk and return sharing of the combined entity.

With respect to the comparison of the cash payment sample to the stock payment sample, the variables of market-to-book, growth in sales, the private dummy, acquirer number of SIC codes, and the debt-to-capital ratio all differ significantly at the one percent level. The number of target SIC codes and the values of the target relative to the combined value of the new firm are significantly different at the five percent level.

The results for the two variables associated with the investment opportunity hypothesis are examined next. The market-to-book values for acquirers that use stock to pay for the deal are, on average, higher than those that use cash as a payment. The market assesses the future prospects of the acquiring firms in stock based transactions to be more favorable than those in cash based acquisitions. At the same time, a higher growth in (past) sales is associated with acquirers using stock to pay for a transaction. That is, realized growth and growth opportunities favor the use of equity financing.

The acquirers using cash to pay for their transactions, on average, operate in more industries than those acquirers paying with stock. However, targets in cash based acquisitions operate in fewer industries than targets acquired for stock. Recall that this variable is associated with information asymmetry. The greater is the number of

industries, the greater is the risk of misvaluation. When the bidder operates in multiple industries, owners of the target are less willing to accept stock; when the target operates in multiple industries, the bidder is less willing to offer cash.

A greater proportion of the stock payment sample involves a private firm than is the case for the cash payment sample. Again, this may point to the fact that since deals involving private targets are, on average, ones that involve substantial informational asymmetries, the bidder will use equity as the method of payment to help shift some of the risks associated with misvaluation. This need to shift some of the risk of misvaluation also explains why the acquisitions that use stock as a payment involve larger targets relative to the bidder than acquisitions for cash. Larger targets mean greater repercussions from misvaluation for the acquiring firm.

We find the relative debt to capital ratio significantly higher for cash than stock transactions. The differences in cash and cash flow are not statistically significant. Martin (1996) argues that greater liquidity (more cash, greater cash flows, and more debt capacity) should be associated with the use of cash in acquisitions, but he finds only weak or inconsistent results. Our results are inconsistent with Martin's cash availability hypothesis.

Relative to cash payments, mixed payments should have many of the same implications involving risk and control as the use of stock payments. Although most of the mean values for the mixed sample ratio lie partway between the means for the cash and stock payment samples, the differences in means between the cash payment and the mixed payment samples draw many of the same conclusions that were mentioned earlier

for the differences between the cash and stock samples. When compared to the cash payment sample, significant differences are much the same as found for the stock payment sample, with the exception of differences in the market-to-book ratio and the relative debt-to-capital ratio.

Comparing the mixed payment sample to the cash payment sample, statistically significant differences in means exist for the growth in sales variable, private status dummy, earnout-to-deal value and the number of acquirer SIC codes (all significant at the one percent level), and the number of target SIC codes and the cash flow variable (significant at the five percent level).

The result for growth in sales is consistent with the prior finding. The mean for the mixed sample is greater than the mean for the cash sample. No significant difference is observed for the market-to-book ratio, but the mean for the cash payment sample is numerically twice that of the mixed payment sample. Realized growth favors the inclusion of equity in the initial payment; growth opportunities favor cash.

The risk of misvaluation favors the inclusion of equity in the upfront portion of the payment. As found for the stock payment sample, acquirers in the mixed payment sample operate in fewer industries than acquirers in the cash sample, while their targets are in more industries. Again, like the stock payment sample, the mixed payment sample has a greater proportion involving the acquisition of a private entity than does the cash payment sample. Unlike the stock payment sample, however, the relative size of the target in the mixed payment sample is not different from that of the cash sample.

The earnout-to-deal value is greater, on average, for mixed payments than for cash payments. This result is counterintuitive in that a higher earnout-to-deal value should serve as a positive signal of the target management's valuation of their firm, and thereby lessen the need to share the risks of misvaluation through the use of equity. This result is also difficult to interpret in that no significant difference was observed in the comparison of cash to stock financed acquisitions. The proportion of earnouts in the mixed payment sample is much higher than in either the cash or stock payment samples. The effect that might have on the univariate results is not clear.

The cash flow of the acquirer relative to the deal value is higher for those transactions that use a cash payment compared to those that use a mixed payment for the deal. No significant differences were observed in the other two variables measuring cash availability, relative cash holdings and relative debt-to-capital.

Mixed payments have characteristics of both stock and cash, and so differences from the stock sample are expected. When looking at the pairwise comparisons between stock and mixed payment samples we find a statistically significant difference at the one percent level for private status and for the debt-to-capital ratio. Market-to-book and earnout value to deal value are significantly different at the five percent level, while growth in sales, same SIC for target and acquirer and acquirer number of SIC codes are significant at the ten percent level. With the exception of the earnout-to-deal ratio and the proportion of the sample in which the bidder and target have the same SIC code, these differences are in the same direction as the differences between the cash and stock payment samples.

Table 12. Predicted sign and logistic results of the determinants of the method of up-front payment in the earnout transaction for acquirer.

Predicted signs and logistic regression results are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Managerial ownership is defined as the % of outstanding shares owned by management prior to the transaction. % Institutional holdings refers to the percentage of shares outstanding held by institutional investors prior to the transaction. Outside blockholder is a dummy variable that takes the value of one if there is a presence of an outside blockholder. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition.

Variable	Predicted Sign	1 if Stock 0 if Cash	1 if Mixed 0 if Cash	1 if Stock 0 if Mixed	3 if Stock 2 if Mixed 1 if Cash
Mkt-to-Book	+	0.000620	0.0078	0.0062	0.00188
Sales Growth	+/-	0.00287**	0.00579	0.00396***	0.0083**
Mgr Ownership	-	-0.0641	-0.0163	-0.0896	-0.0098
Private	+	0.6011	0.9185**	1.1671***	1.4114***
Earnout/Deal	-	-0.5078	-1.3175**	-1.2457**	-0.1720
Same SIC	-	-0.1383	-0.2317	-0.0670	-0.0102
Acq # of SIC	-	-0.1321**	-0.2854***	-0.0205	-0.1264***
Trgt # of SIC	+	0.0455	0.1972	0.0508	0.0695
% Institutional	-	-0.0219	-0.1002	-0.0135	-0.0194
Blockholder	-	-0.0662	-0.0247	-0.0329	-0.0965
Cash+Mktable Securities to Deal	-	0.0106**	-0.00815	0.0602	-0.0878**
Cash Flow to Deal	-	-0.0130	-0.0172	-0.0483	-0.0129
Debt to Capital Relative to Industry	+	-0.00024	0.0173*	-0.0163	0.0070
Tgt Value Relative to Combined Value	+	0.00181**	0.0074*	0.0041	0.00111**
Obs.		237	329	192	379
Pseudo R ²		0.138	0.130	0.081	0.082
Lklihd Ratio		67.6326***	38.4031***	41.0746***	61.3948***
Wald Statistic		49.1964***	29.1853***	30.1471***	51.5051***

***Significantly different than zero at 1% **Significantly different than zero at 5% *Significantly different than zero at 10%

Table twelve presents the logistic regression results and the ordered logistic results for the sub-sample of earnout transactions identified earlier. In the first regression, the dependent variable takes the value of zero if the method of payment in the upfront portion of the transaction is cash, and one if stock. Earnouts with a mixed payment are omitted. In regression two, the dependent variable takes the value of one if the up front portion of the transaction was a mixed payment and zero if cash was used. Stock only payments are omitted. In the third regression, the dependent variable takes the value of one if the payment is stock and zero if the payment method was a mix. Cash only payments are omitted. Finally, the fourth regression is a ordered logit in which the dependent variable takes the value of 1 if the method of payment is cash, 2 if the acquirer uses a mixed payment, and 3 if the payment is stock.

The Wald statistic of the regressions, and the likelihood statistic of the regressions are significant at the one percent level. This implies that the independent variables have more explanatory power than the intercept alone in describing the choice in these regressions. Using the formula for McFadden's pseudo R^2 , we find a pseudo R^2 of about 13 percent for the cash versus stock and cash versus mixed regressions and about an 8 percent pseudo R^2 for the stock versus mixed and the ordered logistic regressions.

With respect to the stock versus cash logit, the percentage of sales growth for the acquirer is significant at the five percent level. Firms with higher growth opportunities tend to finance the up front portion of the acquisition with stock, consistent with the investment opportunities hypothesis. Contrary to Martin (1996), we find support for the risk-sharing hypothesis. The coefficient for the variable measuring the target's value

relative to the sum of the bidder's value and the amount paid is significant at the five percent level and is positive as hypothesized. The coefficient for the variable that measures the sum of cash and marketable securities relative to the value of the deal is significant at the five percent level and its sign is negative as hypothesized under the cash availability hypothesis. We also find that the acquirer number of SIC codes significantly influences the choice of cash versus stock as a method of payment, consistent with the risk-sharing hypothesis. We do not find support for the control hypothesis. The variables associated with control all have estimated coefficients not significantly different than zero.

In the logistic regression comparing cash to mixed methods of payment, the results mostly relate to the risk-sharing hypothesis. The significance and sign on the coefficient of the private dummy variable is consistent with that hypothesis. Subsidiary firms are larger and more transparent than private firms. Therefore one would expect that the coefficient on this variable would be positive, since an acquirer would have less information to value the target if private and would require the target to share in the risk associated with misvaluation. We find additional support for the risk sharing hypothesis in that the acquirer number of SIC codes and target value relative to the combined value of the new firm are both significant and in the direction of the hypothesized sign on the coefficients. Finally, the coefficient for the value of the earnout to deal value is significantly less than zero at the five percent level. When the target signals its quality to the bidder by taking more of the payment for the transaction as a contingent payment it is sharing in the risk associated with misvaluation. In the comparison of pure cash to pure

stock transactions (the first model), the statistically not significant coefficient on this variable indicates that when the upfront payment is all stock or all cash, the proportion of the deal that is the earnout has no effect on the method of payment. In contrast, the negative coefficient in the cash versus mixed payment model indicates that if some cash is going to be received in the upfront payment, then a larger contingent part of the deal is associated with a greater likelihood that the upfront portion is all cash rather than a mixture of cash and stock. When all stock is not a possibility, risk sharing is limited to the contingent part of the deal. The results for the mixed versus cash model also support the cash availability hypothesis. The coefficient for the debt to capital ratio is significant and its sign is in the direction that the cash availability hypothesis would predict.

Looking at the logistic regression for mixed versus stock we find support for the investment opportunity hypothesis, signaling hypothesis, and the risk-sharing hypothesis. Similar to the result in the first model (all cash versus all stock), the coefficient for sales growth is significant and positive indicating that investment opportunities as measured by recent sales growth are associated with a greater tendency to use all stock in the upfront payment. Similar to the result in the second model (all cash versus mixed payment), the coefficient for the dummy variable for private firms is significant and positive. The greater informational asymmetry of private targets favors bidders offering stock. Also similar to the result in the second model, the coefficient for the ratio of earnout to deal value is significantly less than zero. When all cash is not a possibility, the proportion of the deal to be paid as earnout is inversely related to the likelihood of an all stock upfront payment. Some cash is preferred to none.

The results for the ordered regression (model four) confirm the initial findings from the logistic regressions. We find evidence for the cash availability hypothesis, investment opportunity hypothesis, and the risk-sharing hypothesis. We find no evidence in support of the control hypothesis. Investment opportunities as measured by recent sales growth are associated with a greater (smaller) tendency to use all stock (all cash) in the upfront payment. Private targets increase the likelihood that stock will be the medium of payment. The more diversified is the acquirer (greater number of SIC codes) and the more cash available to the bidder (relative to deal value) the less likely stock is to be in the upfront payment. Finally, the larger the target is relative to the bidder, the more likely stock will be offered. The role of earnout to deal value appears to be nonlinear, in that statistical significance is observed only when comparing mixed payments to either all stock or all cash (favoring the choice which offers the most cash upfront), but not when the choice is all stock versus all cash (model one) with mixed payments in the middle (model four).

The sample is Winsorized at the ten percent level and the results for the regressions, for the most part, were stable. The coefficient for the debt-to capital ratio is no longer statistically significant in the cash versus mixed regression. All of the signs of the coefficients remained in the direction hypothesized. Due to the fact that the earnout sub-sample contained many deals that were small, we believed it better to leave the data intact. We would rather retain the information contained in those observations as long as they were not driving the results. Since the results did not fundamentally change after being Winsorized, the results reported for the logistic regressions are robust to outliers.

The models were also run with dummy variables for the year in which the acquisition took place. None of the dummy variables for the year of the acquisition were significant.

It is possible that the results reported in table twelve reflect characteristics of all acquisitions during this period. Although the distribution of method of payment differ significantly between the two samples, in that a larger proportion of the earnout sample is of mixed payment and smaller proportions are for all cash and all stock than is observed in the traditional sample ($X^2 = 18.473$; $p \neq 0.001$), the factors underlying the choice of method of payment might not differ between the two samples. Table thirteen presents the results for the entire sample of private and subsidiary firms acquired by public bidders. These regressions are used in order to determine if the behavior that was observed in the previous table for earnout transactions is a consequence of the sample as a whole and has nothing to do with the earnout. A dummy variable is included to differentiate the earnout sample from the traditional acquisitions.

Qualitatively, the results for the pooled sample are similar to those for the earnouts alone. Each of the variables that are significant in model four (the ordered logit regression) of table twelve are also significant with the same sign in model four of table thirteen. The pooled sample also generates statistically significant coefficients for the variables measuring market-to-book, the target's number of SIC codes, and the relative debt to capital ratio. As expected, the coefficient for the earnout dummy variable is highly significant at the one percent level for each of the logistic regressions and is significant at the five percent level for the ordered logit regression. To determine whether this is simply a difference in the proportion of the sample associated with each of

Table 13. Predicted sign and logistic results of the determinants of the method of payment in merger transactions for acquirers.

Predicted signs and logistic regression results are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Managerial ownership is defined as the % of outstanding shares owned by management prior to the transaction. % Institutional holdings refers to the percentage of shares outstanding held by institutional investors prior to the transaction. Outside blockholder is a dummy variable that takes the value of one if there is a presence of an outside blockholder. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition.

Variable	Predicted Sign	1 if Stock 0 if Cash	1 if Mixed 0 if Cash	1 if Stock 0 if Mixed	3 if Stock 2 if Mixed 1 if Cash
Mkt-to-Book	+	0.0283***	0.00341**	0.0078	0.00231***
Sales Growth	+/-	0.00093***	0.00120***	0.0003***	0.00048***
Mgr Ownership	-	-0.0117	-0.0319	-0.0296	-0.0179
Private	+	0.7570***	0.4622***	0.3506**	0.6350***
Earnout to Deal	-	-0.4325*	-0.3329**	-0.4916**	-0.2732
Same SIC	-	-0.1036	-0.1143*	-0.0640	-0.0681
Acq # of SIC	-	-0.0966***	-0.0961***	-0.0185	-0.0983***
Trgt # of SIC	+	0.0975**	0.0774***	0.0328	0.0923***
% Institutional	-	-0.0093	-0.0076	-0.0036	-0.0065
Outside Blockholder	-	-0.1038	-0.0391	-0.0968	-0.0873
Cash+Mktable Securities to Deal	-	-0.00691***	-0.00976***	-0.00228	-0.00613***
Cash Flow to Deal	-	-0.0005	-0.00177**	-0.00074	-0.00644
Earnout	-	-0.9100***	-0.5356***	-0.4832***	-0.4423**
Debt to Capital Ratio Relative to Industry	+	0.0180***	0.0153	0.0134***	0.00521***
Tgt Value Relative to Combined Value	+	0.0086***	0.00455***	0.0036***	0.0053***
Obs.		4849	5536	3159	6772
Pseudo R ²		0.268	0.088	0.128	0.092
Lklihd Ratio		1418.71***	656.1468***	497.1490***	1311.96***
Wald Statistic		771.35***	505.3757***	262.6394***	1058.15***

***Significantly different than zero at 1% **Significantly different than zero at 5% *Significantly different than zero at 10%

Table 14. Predicted sign and logistic results of the determinants of the method of payment in mergers for acquirer with earnout interactive terms.

Predicted signs and logistic regression results are presented for the mergers in the sample. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. R&D plus advertising is measured for the year prior to the transaction. Managerial ownership is defined as the % of outstanding shares owned by management prior to the transaction. % Institutional holdings refers to the percentage of shares outstanding held by institutional investors prior to the transaction. Outside blockholder is a dummy variable that takes the value of one if there is a presence of an outside blockholder. Cash holdings and marketable securities were measured for the year prior to the transaction. Cash flow is measured for the year prior to the transaction as in Lehn and Poulsen (1989). The debt to capital ratio is measured for the year prior to the transaction and is divided by the industry average. Target value is measured for the firm prior to the transaction and is divided by the value of the acquirer plus the amount paid for the acquisition.

Variable	Predicted Sign	3 if Stock 2 if Mixed 1 if Cash	Earnout Interaction Terms
Mkt-to-Book	+	0.0026***	0.0041
Sales Growth	+/-	0.0005***	0.0003
Mgr Ownership	-	-0.0164	-0.0098
Private	+	0.6709***	0.4175
Earnout/Deal	-	-0.0422***	
Same SIC	-	-0.0735	-0.0898
Acq # of SIC	-	-0.0909***	-0.0210
Trgt # of SIC	+	0.0989***	0.0737
% Institutional	-	-0.0055	-0.0076
Outside Blockholder	-	-0.0888	-0.1002
Cash+Mktable Securities to Deal	-	-0.0061***	-0.0146***
Cash Flow to Deal	-	-0.0006	-0.0111
Debt to Capital Ratio Relative to Industry	+	0.0064***	0.0101*
Tgt Value Relative to the Combined Value	+	0.0005***	0.0004
Obs.	6772	Pseudo R ²	0.093
Lklihd Ratio	1263.85***	Wald Statistic	1014.47***

***Significantly different than zero at the 1% level

**Significantly different than zero at the 5% level

*Significantly different than zero at the 10% level

the three methods (cash, mixed, or stock) or represents differences across the individual variables, we re-estimate the ordered logit regression including an earnout interactive term for each variable. The results are presented as table fourteen.

In table fourteen, the coefficients on the interactive terms indicate the extent to which the earnout sample differs from the traditional sample in explaining the method of payment. Looking at this table, it is apparent that the evidence presented with respect to the full sample in table twelve is confirmed here. Only the coefficients for cash plus marketable securities relative to the value of the deal and the relative debt-to-capital ratio, two variables associated with the cash availability hypothesis of method of payment, are significantly different for earnout transactions than for traditional acquisitions. Earnout transactions have a greater probability of being paid for with cash the greater the bidder's cash position and the smaller the bidder's debt to capital ratio, when compared to non-earnout transactions. Given that the coefficients are significant for the pooled sample as well, we interpret the result to mean that cash availability is an important determinant of method of payment in all acquisitions of private and subsidiary firms, but even more so in earnouts. This may be pointing to the possibility that a bidder, as a means to help finance the transaction is using an earnout agreement. This is the case since the upfront burden on the acquirer is lessened by the use of this type of agreement. Again the data was Winsorized with no fundamental difference in the results.

4.4.2 Advisor Utilization

The advisor utilization sample consists of 5626 acquisitions made by public firms completed through the period of January 1, 1990 to May 31, 2001. These observations were identified from Thompson Financial Securities Data Mergers and Acquisitions files (SDC). The data were collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor's Compustat files on Academic Universe, news releases found in Lexis/Nexis, and Valueline Investment Surveys. Observations involving the acquisition of public targets, acquisitions involving foreign entities, and acquisitions involving financial firms or holding companies were excluded.

Table fifteen reports the values of transactions involving the acquisition of private or subsidiary entities by year, grouped by the use of investment bank advisors. Transactions involving the use of an investment bank as advisors are, on average, larger than those transactions that do not. Larger transactions are likely to be more complex and have more severe ramifications for misvaluation by the bidder, and therefore require the bidder employ an investment banker for help in valuation. For smaller deals, the costs of an investment bank advisor would consume a greater part, if not all, of the expected benefits. Table fifteen also indicates that while the number of deals per year is greater in the latter part of the sample period, the frequency of deals that use investment bank advice is around 80 percent, down from near 90 percent in the first four years.

Looking at table sixteen, the same inferences can be made about the earnout sub-sample as the full sample with respect to deal size. The sub-sample of transactions

Table 15. The transaction value for public firms acquiring private firms, and subsidiaries categorized by advisor utilization

Comparative summary statistics are presented for the announcement date by year and over the entire sample period categorized by investment bank use. The transaction value for non-earnout acquisitions is the market value of any equity, debt, etc. plus any cash offered in millions of U.S. dollars. The transaction value for earnouts is the sum of the market value of the up front payment and the estimated value of the earnout in millions of U.S. dollars.

	All Firms			Investment Bank Used			In House Transaction		
Panel A. Measures of central tendency									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	5626	157.0247	30.0000	4460	170.9758	31.5000	1166	103.6614	25.0000
1990	162	83.42040	15.2500	144	88.3588	16.7500	18	43.9125	12.0000
1991	157	77.6474	14.0000	136	78.7629	14.0000	21	70.4233	36.8000
1992	216	74.0389	22.2500	193	79.6328	23.1300	23	27.0991	17.7000
1993	283	90.8125	14.9000	253	80.7612	13.5000	30	175.5787	33.5000
1994	401	118.7781	17.5640	323	125.9611	18.8630	78	89.0331	11.9700
1995	505	95.2521	23.0000	381	108.2671	24.2600	124	55.2627	16.3975
1996	619	134.6250	25.0000	437	162.9966	34.0000	182	66.5019	16.7000
1997	704	159.8148	24.2300	548	180.7540	26.0000	156	86.2572	15.9450
1998	658	155.3456	36.3000	535	173.4736	39.7530	123	76.4960	25.0000
1999	691	227.4135	47.0000	521	252.6151	48.0000	170	150.1779	39.5000
2000	694	236.5473	64.5460	564	248.3714	65.0000	130	185.2487	60.0000
2001	536	188.2939	40.3260	425	203.7519	41.0000	111	129.1081	36.4000

	All Firms			Investment Bank Used			In House Transaction		
Panel B. Minimum and maximum values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	5626	0.0100	10749.48	4460	0.0100	10749.48	1166	0.0500	5000.00
1990	162	0.5000	3294.00	144	0.5000	3294.00	18	1.0000	150.00
1991	157	0.1000	1060.00	136	0.1000	1060.00	21	4.9300	450.00
1992	216	0.2500	1275.00	193	0.2500	1275.00	23	0.2500	76.50
1993	283	0.0700	3449.20	253	0.0700	3449.20	30	0.2500	1575.00
1994	401	0.1500	2925.00	323	0.1500	2925.00	78	0.2700	1270.00
1995	505	0.2500	5704.00	381	0.2500	5704.00	124	0.3000	482.86
1996	619	0.0100	3879.23	437	0.0100	3879.23	182	0.2500	3085.70
1997	704	0.1000	9500.00	548	0.1000	9500.00	156	0.3000	1408.30
1998	658	0.3750	5676.00	535	0.4000	5676.00	123	0.3750	690.00
1999	691	0.0580	7782.97	521	0.0580	7782.97	170	0.5000	5000.00
2000	694	0.0160	10528.66	564	0.0160	10528.66	130	0.1400	1237.85
2001	536	0.0500	10749.48	425	0.0500	10749.48	111	0.0500	1300.00

involving an earnout numbers 329. Again, size of the deals generally increases with time and around 80 percent involve an investment bank advisor.

Table seventeen presents the value of the contingent portion of the deal when an earnout is utilized. Similar to the earlier result, deals involving investment banks are generally larger than in-house deals. However, looking at the proportion of the contingent payment relative to deal value we find that the average contingent proportion of the payment is significantly smaller when investment bankers are utilized. On average, the contingent proportion of deals involving investment bankers is about 21 percent. The acquisitions that do not utilize investment bankers have a contingent proportion that averages 28 percent. It may be the case that since the target firm is able to credibly signal its value to the bidder by the proportion of the deal that is paid contingently, the problems associated with informational asymmetries are somewhat mitigated. Alternatively, recognizing that these are smaller transactions for which the expected benefits might not exceed the cost of an investment banker, it is also possible that the bidder requires a larger portion of the deal to be in the earnout as a form of insurance against misvaluation.

Table eighteen presents mean values for the characteristics believed to influence the decision to use an investment bank as an advisor in acquisitions. This table presents the full sample of 4909 transactions involving the acquisition of private and subsidiary entities by public firms where information is available for the data items in question. For each continuous variable, the results from the univariate t-test for equality in means appear to the right of the table. From this table, one can see that the experience of the

Table 16. The transaction value for public firms acquiring private firms and subsidiaries using an earnout categorized by advisor utilization

Comparative summary statistics are presented for the announcement date by year and over the entire sample period categorized by investment bank use. The transaction value for earnouts is the sum of the market value of the up front payment and the estimated value of the earnout in millions of U.S. dollars.

		All Firms			Investment Bank Used			In House Transaction		
Panel A. Measures of central tendency										
	Obs	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	
All	329	95.7459	20.0000	262	107.6188	20.3810	67	49.3175	18.8630	
1990	7	124.7250	94.9500	7	124.7250	94.9500				
1991	12	23.2462	19.4000	9	24.9333	8.8500	3	24.9333	8.8500	
1992	15	26.1435	8.0000	15	26.1435	8.0000				
1993	10	20.9605	13.5000	9	23.0672	13.5000	1	2.0000	2.0000	
1994	21	41.7663	18.8630	17	43.9215	18.8630	4	32.6065	18.8630	
1995	25	33.3555	10.5000	17	29.4341	10.5000	8	41.6884	11.4000	
1996	10	137.3655	26.0000	8	167.7069	37.0000	2	16.0000	16.0000	
1997	48	51.4665	12.6250	38	61.2875	13.2500	10	14.1470	10.5000	
1998	44	75.0513	19.2910	37	76.0014	19.8820	7	70.0289	17.2100	
1999	42	227.4187	20.9810	29	310.7063	36.0530	13	41.6233	16.4980	
2000	49	144.0911	35.1500	38	167.7216	39.0250	11	62.4586	30.4550	
2001	46	92.9845	29.2500	38	89.6202	28.2500	8	108.9649	51.2575	

		All Firms			Investment Bank Used			In House Transaction		
Panel B. Minimum and maximum values										
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	
All	329	0.3800	3250.00	262	0.3800	3250.00	67	1.0770	340.23	
1990	7	4.1000	330.00	7	4.1000	330.00				
1991	12	1.6640	60.00	9	1.6640	60.00	3	5.9500	60.00	
1992	15	1.7830	121.26	15	1.7830	121.26				
1993	10	2.0000	110.00	9	4.1050	110.00	1	2.0000	2.00	
1994	21	4.0000	191.00	17	4.0000	191.00	4	9.5000	83.20	
1995	25	0.3800	140.00	17	0.3800	140.00	8	1.0770	133.31	
1996	10	5.1800	625.00	8	5.1800	625.00	2	13.0000	19.00	
1997	48	2.1500	900.00	38	2.1500	900.00	10	4.200	27.75	
1998	44	1.6500	287.81	37	1.6500	287.81	7	4.1130	276.60	
1999	42	3.5000	3250.00	29	5.0000	3250.00	13	3.5000	162.50	
2000	49	1.0000	1915.11	38	1.0000	1915.11	11	3.9000	340.23	
2001	46	4.2500	1329.10	38	4.2500	1329.10	8	7.3040	331.00	

Table 17. The earnout value for public firms acquiring private firms, and subsidiaries categorized by advisor utilization

Comparative summary statistics are presented for the announcement date by year and over the entire sample period categorized by investment base use. The value for the contingent earnout payment is the maximum potential payoff that is conditional upon the achievement of future milestones.

	All Firms			Investment Bank Used			In House Transaction		
Panel A. Measures of central tendency									
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All	329	20.6015	5.4000	262	22.3366	5.3000	67	13.8164	6.0000
1990	7	15.3000	20.0000	7	15.3000	20.0000			
1991	12	4.8500	2.7500	9	4.3556	2.0000	3	6.3333	6.5000
1992	15	5.4533	3.0000	15	5.4533	3.0000			
1993	10	6.7300	4.0000	9	7.2556	4.0000	1	2.0000	2.0000
1994	21	8.9381	8.0000	17	8.4824	8.0000	4	10.8750	8.0000
1995	25	10.6200	2.0000	17	9.6765	2.0000	8	12.6250	6.7000
1996	10	17.1300	9.0000	8	19.6625	11.2500	2	7.0000	7.0000
1997	48	18.8354	4.0000	38	22.5263	4.0000	10	4.8100	4.2000
1998	44	21.0909	9.5000	37	23.0703	10.0000	7	10.6286	8.0000
1999	42	43.5661	5.5000	29	58.8828	12.0000	13	9.4000	3.0000
2000	49	26.1857	11.0000	38	27.7816	10.8000	11	20.6727	12.0000
2001	46	19.4348	4.8000	38	16.3132	4.6500	8	34.2625	16.2500

	All Firms			Investment Bank Used			In House Transaction		
Panel B. Minimum and maximum values									
	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum	Obs.	Minimum	Maximum
All	329	0.1000	500.00	262	0.1000	500.00	67	0.2000	170.00
1990	7	0.8000	30.00	7	0.8000	30.00			
1991	12	0.4000	10.00	9	0.4000	10.00	3	2.5000	10.00
1992	15	0.1000	23.00	15	0.1000	23.00			
1993	10	1.5000	30.00	9	1.5000	30.00	1	2.0000	2.00
1994	21	0.5000	23.00	17	0.5000	23.00	4	4.5000	23.00
1995	25	0.2000	65.00	17	0.3000	65.00	8	0.2000	35.80
1996	10	3.5000	53.00	8	3.5000	53.00	2	4.0000	10.00
1997	48	0.7000	200.00	38	0.7000	200.00	10	0.8000	18.50
1998	44	0.2000	130.00	37	0.2000	130.00	7	0.5000	39.60
1999	42	1.8000	500.00	29	2.0000	500.00	13	1.8000	45.00
2000	49	0.3000	363.00	38	0.5000	363.00	11	0.3000	66.70
2001	46	0.5000	170.00	38	0.5000	125.00	8	0.8000	170.00

Table 18. Descriptive statistics of the determinants of the use of an investment bank versus in-house transactions for acquirer.

Means are presented for the mergers in my sample. # of considerations offered is the ln of the number of considerations the acquirer extends to the target during the acquisition. The size of the deal relative to the bidder is the value of the transaction, measured in millions of U.S. dollars, divided by the value of the acquirer. Cash payment is a dummy variable that takes the value of one if the deal is financed using cash, zero otherwise. Bidder merger experience measures the ln of the number of prior acquisitions that the bidder has been involved in during the ten-year period leading up to the transaction date. Contingent portion of the earnout divided by deal value measures the earnout payment as a percentage of the total value of the deal. Industry relatedness is a dummy variable that takes on the value of one if the firms have a SIC code match based on the first three digits of the code. # of industries the target operates is measured as the ln of the number of SIC codes based on multiple SIC code listing of the target firm. Private target takes the value of 1 if the target is private, zero if the target is a subsidiary. Outside Blockholder takes the value of one if an outside blockholder is present. Same state takes the value of one if both the target and bidder are in the same state. Significant differences in means are identified by a T-statistic that tests the null hypothesis of no difference in means.

	Investment Bank Used	In-house Transaction	T-Statistic
	Mean	Mean	
# of Considerations Offered	0.3111	0.3056	-0.40
Size of the deal relative to the Bidder	0.3701	0.2628	-1.37
Cash Payment	0.1939	0.1998	0.45
Bidder Merger Experience	0.7196	0.8363	4.32***
Outside Blockholder	0.7534	0.7388	1.04
Contingent Portion of the Earnout Divided By Deal Value	0.0187	0.0192	0.17
Industry Relatedness	0.5978	0.5935	-0.26
Private Target	0.5812	0.6226	2.59***
Trg and Bid in Same State	0.0341	0.0352	0.18
# of Industries the Target Operates	0.4021	0.3752	-1.64*
Number of Observations	3980	929	

***Significantly different at the 1% level

**Significantly different at the 5% level

*Significantly different at the 10% level

bidder in prior acquisitions, the private target dummy variable, and the number of industries in which the target operates are all significantly different when comparing transactions involving the use of investment bankers as advisors to those transactions that are done “in house”. On average, if a transaction is done without the use of an investment banker, the bidder has significantly more experience in merger transactions than those deals that involve investment bankers. A greater proportion of the in house transactions involve private companies than is observed in the investment banking group. This is contrary to the expectation that the superior valuation ability and information gathering ability of investment bankers would be needed for private targets since bidders have much less information about private targets to help in their valuation of the acquisition. If there are sufficient private transactions too small to justify the use of an investment banker, this proportion would be skewed in the observed direction. Finally, we observe an increased use of investment bankers as the number of industries in which the target has operations increases. These types of transactions are much harder to value for the bidding firm due to the informational asymmetries and the fact that some of the industries the target operates in may be out of the bidder’s expertise.

Table nineteen presents the results from each of the individual models and the full model for transactions involving the use of investment banks as advisors when a public firm acquires a private or subsidiary entity. The first model contains the proxies used to test hypotheses related to transactions costs. The second model tests the asymmetric information hypothesis using the proxies identified earlier. The third model examines the contracting costs hypothesis. The full model estimates these three models together.

Table 19. Predicted sign and logistic results of the determinants of the use of an investment bank in merger transactions for the acquirer.

Predicted signs and logistic regression results are presented for the mergers in the sample. The three models are estimated individually as a logit and then combined. The dependant variable takes on a value of one if investment bankers are used as advisors, zero otherwise. The # of considerations offered is the number of considerations the acquirer extends to the target during the acquisition. The size of the deal relative to the bidder is the value of the transaction, measured in millions of U.S. dollars, divided by the value of the acquirer. Cash payment is a dummy variable that takes the value of one if the deal is financed using cash, zero otherwise. Bidder merger experience measures the number of prior acquisitions that the bidder has been involved in during the five-year period leading up to the transaction date. Contingent portion of the earnout divided by deal value measures the earnout payment as a percentage of the total value of the deal. Industry relatedness is a dummy variable that takes on the value of one if the firms have a SIC code match based on the first three digits of the code. # of industries the target operates is measured based on multiple SIC code listing of the target firm. Outside blockholder takes a value of one if an outside blockholder is present. Earnout takes the value of one if the transaction is structured as an earnout. Private takes the value of one if the target is private, zero if the target is a subsidiary.

Variable	Predicted Sign	Transactions Costs Model	Informational Asymmetry Model	Contracting Costs Model	Full Model
LN (# of Considerations Offered)	+	0.0510	—	—	0.0156
Size of the deal relative to the Bidder	+	0.0220	—	0.0250	0.0184*
Cash Payment	-	-0.0508	—	—	-0.0111
LN (Bidder Merger Experience)	-	-0.1949***	—	—	-0.1920***
Private	+	—	0.1833*	—	0.1597**
Earnout	+	0.00089	0.1355	0.1626	0.1538
Outside Blockholder	-	—	—	-0.0220	-0.0153
Contingent Portion of the Earnout Divided By Deal Value	+	—	0.3061	0.4374	0.4524
Industry Relatedness	-	—	-0.0189	—	-0.00701
LN (# of Industries the Target Operates)	+	—	0.1055*	—	0.1215**
Obs.		4909	4909	4909	4909
Pseudo R2		0.04	0.02	0.001	0.06
Lkelihood Ratio		21.3158***	10.1550	2.1572	29.2528***
Wald Stat		21.1076***	10.0425	1.4812	28.9858***

***Significantly different than zero at 1% **Significantly different than zero at 5% *Significantly different than zero at 10%

Looking at table nineteen, we find only very limited evidence for the contracting costs argument for the use of investment bankers in these merger transactions. For the individual contracting costs model (column five) we find no support. The likelihood ratio and the Wald statistic are not significant, indicating that the data does not have any explanatory value over the intercept. In the full model (column 6), the coefficient for the size of the deal relative to the bidder is significant at the ten percent level, but this variable is also associated with the transaction costs model (discussed below), and the effect is clearly secondary to another variable or variables in this model.

Similarly we find scant evidence in favor of the informational asymmetries argument for the use of investment bankers as advisors in these acquisitions. The coefficient on the natural log of the number of industries in which the target operates is in the hypothesized direction and is significant at the ten percent level in the individual informational asymmetry model (column four) and is significant at the five percent level in the full model. This is indicative of the notion that as the number of industries in which the target operates increases, the informational asymmetries between the bidder and target are exacerbated. It becomes less likely that the bidder would have specific knowledge about all of the target's operations as the scope of these operations increases. Therefore, an investment banker can help due to its superior informational gathering abilities. The coefficient for the private target dummy variable is also significant and its sign is in the hypothesized direction for both the individual and the full model. Private targets would present greater problems in valuation and thus greater needs for the superior information collection and valuation abilities of the investment banker.

We find significant evidence concerning the transactions costs argument for why investment bankers are used in these transactions. The Wald statistic and the likelihood ratio are both significant in the individual model (column three). The natural log of the number of merger transactions that the bidder has been involved with over the previous ten-year period is significant at the one percent level and the sign is also in the direction hypothesized for both the individual model and the full model. As the bidder's merger experience increases, the need for outside help in valuation decreases.

In none of the reduced models nor in the full model is the coefficient on the earnout dummy variable significant. Unlike its effect on the method of payment, the presence of an earnout does not change the likelihood that an investment banker will be utilized ($X^2 = 0.025$; $p \neq 1.0$, not significant). An earnout could still influence the effect of other variables have on the decision to use an investment bank advisor.

Table twenty presents the full logistic model with earnout interaction terms. The results in this table confirm the results from table fourteen. Again, the coefficients for the size of the deal relative to the bidder, the natural log of bidder experience, the private dummy variable, and the natural log of the number of industries in which the target operates are all significant and have a sign in the direction that was previously hypothesized. The likelihood ratio and the Wald statistic are significant at the one percent level, meaning that the variables in question have explanatory value above the explanatory value of just the intercept alone.

With respect to the earnout interaction terms, the coefficient for the size of the earnout transaction relative to the value of the bidder is significant and positive at the ten

Table 20. Predicted sign and logistic results of the determinants of the use of an investment bank in mergers for the acquirer with earnout interaction terms.

Predicted signs and logistic regression results are presented for the mergers in the sample. The dependant variable takes the value of one if an investment bank was used as an advisor, zero otherwise. The earnout interaction terms are calculated by multiplying the earnout dummy by the variable in question. The # of considerations offered is the number of considerations the acquirer extends to the target during the acquisition. The size of the deal relative to the bidder is the value of the transaction, measured in millions of U.S. dollars, divided by the value of the acquirer. Cash payment is a dummy variable that takes the value of one if the deal is financed using cash, zero otherwise. Bidder merger experience measures the number of prior acquisitions that the bidder has been involved in during the five-year period leading up to the transaction date. Contingent portion of the earnout divided by deal value measures the earnout payment as a percentage of the total value of the deal. Industry relatedness is a dummy variable that takes on the value of one if the firms have a SIC code match based on the first three digits of the code. # of industries the target operates is measured based on multiple SIC code listing of the target firm. Outside blockholder takes a value of one if an outside blockholder is present. Private takes the value of one if the target is private, zero if the target is a subsidiary.

Variable	Predicted Sign	Full Model	Earnout Interaction Terms
LN (# of Considerations Offered)	+	0.0265	0.0329
Size of the deal relative to the Bidder	+	0.0856*	0.1092*
Cash Payment	-	-0.0212	-0.1953
LN (Bidder Merger Experience)	-	-0.1888***	-0.0891
Private	+	0.1557**	0.0708
Outside Blockholder	-	-0.0120	-0.0904
Contingent Portion of the Earnout To Deal Value	+	0.4784	
Industry Relatedness	-	-0.0219	-0.2669
LN (# of Industries the Target Operates)	+	0.1407**	0.3791*
Obs.	4909		
Pseudo R2	0.08		
Liklihd Ratio	41.9196***		
Wald Stat	39.6685***		

***Significantly different than zero at the 1% level

**Significantly different than zero at the 5% level

*Significantly different than zero at the 10% level

percent level. For a given relative size of target, there is a greater probability that an investment banker will be used as an advisor in earnouts than in non-earnout transactions, due to the complex nature of earnout deals. Earnouts require decisions concerning what is an appropriate amount for the contingent payment to the target, as well as what company milestones to which this payment should be tied. This creates a greater magnitude of complexity when compared to a non-earnout transaction. The complexity of these deals is further exacerbated when the target operates in multiple industries. Consistent with the information asymmetry hypothesis, the interaction coefficient for the natural log of the number of industries in which the target operates is significant and positive. Earnout transactions have a greater probability that an investment bank will be used as the number of industries in which the target operates increases, when compared to non-earnout transactions.

4.5 Summary

Datar, Frankel, and Wolfson (2001) argue that earnout transactions contain significant informational asymmetries and agency problems. They also argue that the costs of inefficient risk sharing, increased contractual complexity, increased administrative costs, and litigation risk associated with the earnout likely offset the informational benefits. In these transactions we also observe the use of investment bank advisors and a continuum of methods of payment. Both of these characteristics of merger transactions are shown in the literature to mitigate the very same problems of agency and

asymmetry of information as the earnout. Since these contracting technologies are costly, there must be a reason that we observe them being used in conjunction with one another.

Examining the method of payment used in the upfront portion of these transactions, we find support for the investment opportunities hypothesis, the cash availability hypothesis, and the risk sharing hypothesis. We do not find support for any of the hypotheses related to agency and control. We observe that the distribution of method of payment for earnouts differs from that for traditional acquisitions, with mixed payments being more common than would otherwise be expected. We find the availability of cash to have a greater influence on the method of payment in these earnouts than in the control sample, and that the complexity of the deal favors the inclusion of stock in the payment. The literature has shown that earnouts are used to mitigate problems of agency and adverse selection. When this is coupled with the results of this paper, it can be seen that although earnouts may alleviate the previously mentioned problems, these firms are faced with an adverse selection problem that is beyond the scope of the earnout. In these cases, firms achieve a further reduction of the costs of adverse selection problems by choosing a method of payment appropriate to the transaction.

With respect to the use of an investment bank as an advisor in these transactions, we find support for the transactions costs hypothesis. This result confirms the notion that investment bankers have a comparative advantage in identifying targets, valuing targets, and preparing a bid. We find some support for the informational asymmetries hypothesis but only questionable support for the contracting costs hypothesis. These results show

that although an earnout may alleviate some of the informational asymmetries and agency issues associated with a merger transaction, the transactions costs associated with these deals are quite large. Given this, it appears that firms that acquire a target using an earnout need the services of an investment bank to mitigate these transactions costs.

CHAPTER 5: THE MARKET'S PERCEPTION OF EARNOUT CONTRACTING

5.1 Introduction

In this chapter we examine the market's perception of mergers involving earnout transactions. In chapter 3 we construct a sample of publicly traded firms that acquire a private or subsidiary firm via the use of an earnout, and contrast those firms to a sample of similar traditional mergers. We found evidence that earnouts are used to mitigate the consequences associated with agency problems and asymmetry of information. In particular, these contracts are found to help shift some of the risk of misvaluation from the bidder to the target. Also, this type of contract structure allows high quality targets to signal their value to the bidding firm by taking a larger proportion of the deal as a contingent payment. Finally, we find that the earnout contract can help retain and incent managers of the target firm to work for the combined firm's best interests, in order to maximize their contingent payout received under this type of contracting method.

In chapter four we examine the method of payment and the use of investment bank advisors in these types of transactions. Both the method of payment used in acquisitions and the use of investment bank advisors appear in the literature on mergers and acquisitions as factors that help mitigate problems associated with informational

asymmetry and agency. But these are the same hypothesized reasons for the use of an earnout. Either earnouts mitigate different types of problems, or the firms that use investment bank advisors and specific methods of payment in earnouts face consequences from problems of informational asymmetry and agency that are so great, that redundant costly contracting methods are employed in order to avoid detrimental outcomes. We find that earnouts are used in conjunction with method of payment and advisor utilization to mitigate the problems of informational asymmetry and agency. We also find that earnouts are used as a financing mechanism in merger transactions.

Earnout acquisitions are a costly form of merger contracting. It must be that in any earnout, these costs must be outweighed by the benefits that are expected to be received. The empirical question is whether the market perceives that these types of contracting methods are in fact beneficial to the shareholders of the firms involved. Prior studies of mergers and acquisitions suggest that the returns to bidder firms are on average negative or near zero when the targets are publicly traded firms, but positive when the targets are private firms. Similar results are found for secondary equity offers (negative) versus privately placed equity (positive). This suggests that the market perception of an earnout when the target of an earnout is a private entity may well be different from that when the target is a publicly traded firm.

In the present chapter, we examine the market perception of earnout transactions, as measured by the stock price reaction to the announcement of those earnouts. In addition to our sample of publicly traded bidders in earnouts of private or subsidiary firms, and our control sample of bidders in similar but traditional acquisitions, we expand

the analysis to include earnouts in which both the bidder and the target are publicly traded. Unfortunately, the number of such transactions is very small, limiting our analysis of this group strictly to the market reaction itself.

Myers and Majluf (1984) present the case for adverse selection, or the “lemons problem,” leading to a negative price response to a firm issuing equity. The authors argue that management has an incentive to issue equity when the market overvalues the firm's stock. Knowing this the market perceives an issuance of equity as a negative signal, and reduces its valuation of the shares.

Chang (1998) argues that issuing equity to acquire a privately held, potentially creates a new blockholder of the combined firms, which should be perceived as a positive event. The new blockholder increases monitoring of the combined firm, lessening the problems associated with agency. Chang (1998) finds that, on average, the acquisition of a private target is perceived more favorably by the market than the acquisition of a public target. In his study, acquirers of private firms experience mean abnormal returns of 4.96 percent when a new blockholder is created compared to 1.77 percent when no blockholder is created; acquisitions involving publicly traded targets, on average, experience an abnormal return of -1.24 percent when a blockholder is created, compared to an abnormal return of -2.565 percent when no blockholder is created.

Based on these results, it is apparent that the market perceives the acquisition of publicly traded firms quite differently than it perceives the acquisition of private or subsidiary firms. Also, when these results are compared to Bradley, Desai, and Kim (1988), and Kale, Kini, and Ryan (2003) who find abnormal returns for bidders of 0.97

percent and 0.4 percent, respectively, it is apparent that the market views the acquisition of private targets much more favorably due to the potential creation of a new blockholder. (Differences in sample and length of event window account for the differences in results. Bradley, Desai, and Kim (1988) and Kale, Kini, and Ryan (2003) use an event window of five days prior to the announcement of the acquisition to five days following a successful announcement; Chang (1998) uses an event window of the day before and the day of the announcement of an acquisition.) Chang's results are also consistent with Wruck (1989) and Hertz and Smith (1993), who find a favorable market reaction to private placements of equity due to the creation of new blockholders, and Slovin, Shuska and Polochek (2003) who report a positive reaction to asset for equity sales.

To determine the market's perception of earnout events, results for a sample of earnout acquisitions will be contrasted to those for a non-earnout sample. Abnormal returns (prediction errors) generated around the announcement of the acquisition will be used to determine whether the market perceives these mergers as value creating events. These abnormal returns will be examined for both acquirers of private and subsidiary targets as well as public targets. When the acquisition involves a public target, we will be able not only to observe the gains to the acquiring firm, but also the gains to the target. This will allow us to determine if an earnout transaction creates more value for the existing shareholders than a traditional merger, as opposed to just shifting some of the gains from the target to the bidder. We do expect that some of the gains from the target will be shifted to the bidder, due to the more efficient risk sharing that the earnout

provides. However, we also expect that, on average, both parties in the merger will be made better off due to the use of an earnout. Using a matched sample of public targets and bidders we can also determine how the gains from the transaction are split between the target and the bidder for earnout versus non-earnout transactions.

We next conduct a cross-sectional analysis of the abnormal returns to determine the factors underlying the market's reaction to the announcements of earnout transactions. This analysis is restricted to the sample involving private and subsidiary targets, however.

The sections of this chapter are organized as follows. Section two examines the methods used to determine the gains from the transactions and describes the variables used to determine the markets perception of these events. The hypotheses used in the analysis of these events are discussed here. Section three will look at the data used for the analysis. In section four we report the results of the analysis of the abnormal returns for acquisitions involving public bidders and private and subsidiary targets, and the transactions involving public bidders and public targets. Section four also reports the results of the cross-sectional analysis of the sample of acquisitions involving public bidders and private and subsidiary targets. Section five contains concluding remarks.

5.2 Method of Analysis and Hypotheses

We estimate the gains to target and bidding firms based on the usual event study, market model approach as in Brown and Warner (1985) and Bradley, Desi, and Kim (1988). In this model, expected returns on a particular stock on day t are expressed as:

$$\text{Expected Return}_t = a + b \text{ Market Portfolio Return}_t$$

The parameters of the market model are estimated for each announcement using ordinary least squares over a 240-day period beginning 300 days before the announcement of the acquisition and ending 61 days prior to the announcement. The market portfolio return is estimated as the return on the equally weighted market portfolio on day t . There is always some uncertainty regarding the actual timing of a corporate announcement. To capture the market reaction to the announcement, we calculate abnormal returns for each bidder over a three-day event window: the day before, the day of, and the day after the official announcement date:

$$\text{Abnormal Return}_t = \text{Actual Return}_t - \text{Expected Return}_t$$

For each of the bidders in the sample involving the acquisition of private and subsidiary firms, the three abnormal returns are summed to form a cumulative abnormal return for the (-1,1) event window. Our (-1,1) event window is comparable to the (-1,0) window that Chang (1998) uses and the (0,1) window that Kohers and Ang (2000) use.

For the transactions that involve the acquisition of a public target by a public bidder utilizing an earnout, the above procedure is implemented for both the bidders and the targets, except that the event window is expanded to that used in Bradley, Desi and Kim (1988) among others. In this case, our event window is the eleven days from five trading days prior to the announcement of the acquisition to five days after the announcement of a successful acquisition. Since our transactions are all successful, do not involve multiple bidders and are friendly acquisitions, we believe that the downward bias due to failure of the acquisition at the end of the event window, and upward bias due

to the positive probability that another bidder will top the outstanding bid, as mentioned by Bradley, Desi, and Kim (1988), would not pertain to this analysis.

Dollar gains for the acquiring firms are calculated using the market value of the acquiring firm's equity six days prior to the announcement of the acquisition multiplied by the cumulative abnormal return previously discussed.

In the sample involving publicly traded targets and bidders, the total percentage of abnormal gains are computed by estimating the cumulative abnormal return using the market model for a value weighted portfolio of the two firms as in Bradley, Desi, and Kim (1988). The reason a value weighted portfolio is used to determine the abnormal return, rather than an equal weighted average of the abnormal returns to the bidder and target, is that the properties of the two distributions of target and bidder abnormal returns may not be comparable. Therefore the properties of the distributions of the value weighted portfolio abnormal returns may not be the same as the distribution of the equal weighted average of bidder and target abnormal returns. Again, the market model is estimated for a period involving 300 days prior to the announcement of the acquisition to 60 days prior to the acquisition for the value-weighted portfolio of targets and bidders. The event window is from five days prior to the announcement of the acquisition to five days after the announcement of a successful acquisition. The dollar gains for the combined portfolio are obtained by taking the market value of the target, as measured six days prior to the announcement of the acquisition, plus the market value of the bidder, measured six days prior to the announcement of the acquisition, and multiplying this measure by the cumulative abnormal return for the value weighted portfolio.

The hypotheses that will be tested in the following section are motivated by the discussion contained in the introduction of this chapter. Specifically, we expect that the market will have a favorable reaction to acquisitions involving publicly traded bidders acquiring private and subsidiary targets. This favorable reaction will manifest itself in the form of positive cumulative abnormal returns for the event window in question. If the firm issues cash to pay for the acquisition, one would expect a slightly positive or no reaction from the market based on the literature mentioned earlier. If the firm issues stock to pay for the transaction, then we expect the market to react favorably to these transactions due to the fact that these events are tantamount to a private issuance of equity. Due to this, a potential new blockholder is created, resulting in a higher degree of monitoring for the combined firm. Also, the potential new blockholder has, to some extent, certified the future prospects of the combined firm since he will now hold a considerable proportion of the bidding firms stock. He therefore has the incentive to highly scrutinize the firm, and his holding of a large block of the firm's stock conveys positive information to the market.

For the subset of these transactions that involve the use of an earnout, we expect the market to react even more favorably than in a traditional acquisition, in that the earnout achieves added benefits above all of the benefits mentioned in the earlier paragraph, and does so much more efficiently than a straight issuance of stock used to pay for the transaction. The earnout will more effectively align the incentives of the target owner/manager by requiring him to stay with the combined firm as well as maximizing his efforts in order to receive the highest payout possible. The earnout ties

the future compensation of the owner/manager directly to the performance that his firm brings to the combined firm, rather than tying his future compensation to the performance of the combined firm, as is the case when the acquisition is paid for with stock. Also, the risk of misvaluation is more efficiently shared between the target and the bidder, due to the use of an earnout in an acquisition. Additionally, the owner/manager of the target can credibly signal the quality of the target to the bidder and the market.

With respect to the cross-sectional analysis of the transactions involving the acquisitions of private and subsidiary targets, we expect the following to be motives affecting the market's perception of these events, as measured by the cumulative abnormal return over the event window. First, we expect that the market will react more favorably to acquisitions when a new blockholder is created for the reasons mentioned earlier. Second, we expect that when a service or hi-tech firm is acquired, this will have a negative effect on the markets perception unless an earnout is involved. The reason for this is that these transactions involve problems associated with agency and high degrees of informational asymmetry. The earnout can circumvent some of the problems associated with informational asymmetries by allowing the target to share in the risk associated with misvaluation. The earnout can also lower problems associated with informational asymmetry by allowing the target to credibly signal the quality of their firm by taking a greater proportion of the deal as a contingent payment tied to the future performance of the target within the combined firm's operations. Along this line of reasoning, we also expect that the higher the proportion of the earnout deal taken as a contingent payment, the more favorable will be the market's reaction to this event.

We expect that when the bidding firm has had prior experience in mergers and acquisitions, the market will react more favorably to the merger due to the superior valuation and information gathering ability of the bidder. Therefore, when an earnout is employed in conjunction to this, we should not observe an additional favorable reaction by the market. We also expect this to be true for deals that involve the use of investment bank advisors for the same reasons. When looking at the amount of informational asymmetry associated with the deal we expect that when an acquirer and a target are in the same industry, the market will have a more favorable reaction than for diversifying acquisitions. This should be the case since the acquiring firm can better value and access the future prospects of the target firm. We expect that when the target operates in multiple industries the market will not react favorably to these transactions unless an earnout is involved. When a target operates in multiple industries, it is much more difficult for the acquirer to value the future prospects of this firm and the earnout will help to mitigate the effects associated with misvaluation. When the bidder has a higher growth in sales we would expect the market to have a more favorable reaction when an earnout is employed since this type of contracting will tie the compensation of the target to the performance of the target within the combined firm instead of allowing target owners to share in the performance of future opportunities that the bidder already had in place at the time of the acquisition. The same is true for the market to book value of the acquiring firm.

When the target firm involved in the transaction is publicly traded we must reconsider the hypotheses that we have laid out due to the reasons mentioned in the

introduction. This is why these transactions must be examined separately. Again, to access the market's perception of these events, or from another perspective, the gains that these transactions create, cumulative abnormal returns will be measured over an event window surrounding the announcement of the transaction. We must also take into account that the transactions that are involved in this section of hypotheses are ones where the level of informational asymmetry is high. We expect that when a publicly traded firm acquires a publicly traded target where informational asymmetry is quite high, the market will not react favorably with respect to the bidding firm's shares unless an earnout is utilized. This is due to the fact that when informational asymmetry is high there is a huge risk of misvaluation. The earnout contract can mitigate some of this by allowing both the target and bidder to more efficiently share this risk as well as affording the target the opportunity to credibly signal its quality to the bidder and the market.

When looking at the targets cumulative abnormal return, we expect that with these transactions involving high levels of informational asymmetry, most of the gains from the transaction will flow to the target unless an earnout is used. Due to the fact that the earnout forces the target to more efficiently share in the risks associated with misvaluation, we expect to see that targets involved in transactions that employ an earnout will have a smaller cumulative abnormal return than those that are involved in non-earnout transactions. With respect to the total gains created by the transaction, we expect that acquisitions involving an earnout will create more gains for both parties than acquisitions that do not involve an earnout. Therefore, both parties in the transaction will be better off when an earnout is used in the acquisitions involving high informational

asymmetries and agency problems. This is due to the factors influencing the other hypotheses mentioned earlier, including more efficient risk sharing, increased monitoring, the mitigation of problems associated with agency, and the decreased level of informational asymmetry due to the ability of the target to credibly signal its quality.

5.3 Data

The sample of public firms acquiring private and subsidiary targets, as described in chapters 3 and 4, is used to help determine the motives behind the market's perception of earnout transactions. Market information was gathered using the Center for Research on Security Prices (CRSP) data files. In order for an observation to be included in the sample, returns must be available on CRSP for the period involving 300 days prior to the announcement of an acquisition to one day after the announcement of a successful acquisition. This leaves us with a sample of 4398 total acquisitions in which 4131 are traditional acquisitions and 267 involve the use of an earnout.

The sample data for acquisition of publicly traded targets consists of 100 earnout acquisitions of public targets by public firms completed through the period of January 1, 1990-May 31, 2001. These observations are identified from Thompson Financial Securities Data Mergers and Acquisitions files (SDC). The data are collected using Compact Disclosure, Thompson Financial Securities Data Mergers and Acquisitions files (SDC), Standard and Poor's Compustat files on Academic Universe, news releases found in Lexis/Nexis and corporate filings with the SEC of 10Ks and 10Qs. Observations involving the acquisition of private and subsidiary targets, acquisitions involving foreign

entities, and acquisitions involving financial firms or holding companies are excluded. In order for an observation to be included in the analysis, return data must be available on the CRSP files for the period involving 300 days prior to the announcement of an acquisition to five days after the announcement of a successful acquisition. Eighteen observations involving the use of an earnout contract in the acquisition of a public target meet these qualifications. This sample was then matched to a sample of traditional mergers, based on acquirer size, target size, and industry characteristics. This produced a sample of 18 matched pairs of traditional and earnout acquisitions.

5.4 Analysis

Cumulative abnormal returns are shown in panel A of table twenty-one. Traditional mergers have a mean cumulative abnormal return of 1.97 percent, which is statistically different from zero at the one percent level and comparable to the results in Chang (1998). Chang reports a mean cumulative abnormal return of 0.09 percent for cash offers and a mean cumulative abnormal return of 2.64 percent for offers involving the payment of stock.

. Acquisitions that involve the use of an earnout experience a cumulative abnormal return of 2.88 percent, which is significantly different from zero at the one percent level. Comparing the CARs of bidders using an earnout to those that do not, the cumulative abnormal returns are significantly different at the ten percent level. When bidders use an earnout to acquire a private or subsidiary firm, the bidder takes more of

Table 21. Cumulative abnormal returns and t-tests for differences between acquirer CARs of earnout vs. non-earnout transactions where the target is a subsidiary or private firm.

Cumulative abnormal returns are estimated using the market model for the acquirers in the sample using a (-1, 1) event window around the announcement of the acquisition. Dollar abnormal returns are estimated by multiplying the CAR for the bidder times the market value of the bidder taken six days prior to the announcement of the acquisition. Standardized abnormal dollar returns are estimated by dividing the cumulative dollar abnormal return by the value of the transaction.

	All (4398)	Earnout (267)	Traditional (4131)
Panel A. Acquirer Abnormal Returns			
Mean Abnormal Returns	0.0198	0.0288	0.0197
t-Statistic (H0: mean equals zero)	12.51***	3.72***	12.00***
t-Statistic (H0: means are different)			-1.65*
Median Abnormal Return	0.0065	0.0089	0.0063
Standard Deviation	0.1153	0.0994	0.1162
Panel B. Acquirer Abnormal Dollar Returns			
Mean Abnormal Returns	61.5611	19.5742	64.0812
t-Statistic (H0: mean equals zero)	2.39**	0.60	2.36**
t-Statistic (H0: means are different)			1.05
Median Abnormal Return	1.4654	0.6746	1.5027
Standard Deviation	1774.30	502.85	1821.10
Panel C. Standardized Abnormal Dollar Returns			
Mean Abnormal Returns	2.6645	0.2709	2.8072
t-Statistic (H0: mean equals zero)	1.66*	0.36	1.65*
t-Statistic (H0: means are different)			0.36
Median Abnormal Return	0.0828	0.554	0.0836
Standard Deviation	110.44	11.48	113.58

the gains from the transaction, as hypothesized, indicating that the earnout helps shift some of the risk of misvaluation from the bidder to the target firm.

For this sample of acquisitions, acquirers, on average, gained a total dollar return of \$61.5 million dollars. When the sample is divided between traditional acquisitions and those that involve an earnout, we observe that the traditional acquisitions account for most of these gains. This is to be expected since the acquiring firms that use an earnout tend to be smaller firms where the problems associated with very high levels of asymmetry of information are much more detrimental. The same result obtains when these dollar returns are standardized, by dividing the dollar return by the value of the target. Both samples have a very skewed distribution of abnormal dollar returns as evidenced by the difference between the mean and median in each group.

The results from the multivariate regression in table twenty-two indicate some of the motives behind the market's perception of the use of earnouts in acquisitions of private and subsidiary targets. The regression results in table twenty-two represent a model where the cumulative dollar abnormal return to the acquirer is the dependent variable in a multivariate interactive framework. The coefficient on the variable that represents the value of the earnout relative to the value of the deal is significant at the ten percent level, and its sign is in the direction hypothesized. The market reacts more favorably the greater the contingent portion of the deal. This is due to the fact that a greater portion of the risk of misvaluation is shifted from the bidder to the target. Also, the target is able to credibly signal its quality to the bidder and the market by the

Table 22. Predicted sign and regression results using acquirer dollar abnormal returns as the dependant variable with earnout interaction terms for transactions with private and subsidiary targets.

Predicted signs and regression results are presented for the mergers in the sample. The dependant variable in the regression is the acquirer dollar cumulative abnormal return measured on an event window of (-1, 1) around the announcement of the acquisition. Market to book is calculated as the market value of the firm divided by its book value. Growth in sales is estimated for a three-year period prior to the transaction. Outside blockholder is a dummy variable that takes the value of one if there is a presence of an outside blockholder. Private is a dummy variable that takes the value of one if the target is a private firm. Earnout to deal is calculated as the potential earnout payment divided by the total value of the transaction. Same SIC take the value of one if the transaction in question involves the merger of two entities with the same first two digits of their SIC code. Target number of SIC is the number of different SIC codes the target has. The variable for prior acquisitions is the number of acquisitions the bidder has been involved in over the prior ten year period. Investment bank advisor is a dummy variable that takes on the value of one when an investment bank is used as an advisor in the transaction. Service target takes the value of one when the target is involved in a service industry. Hi-tech target takes the value of one when the target is involved in a hi-tech industry.

Variable	Predicted Sign		Acquirer Dollar CAR	Earnout Interaction Terms
	Model	Interaction		
Mkt-to-Book	+	+	0.1597	3.61332
Sales Growth	-/+	+	-0.2597*	0.35117
Private	-	+	0.4445	64.81415
Earnout/Deal	+		65.58949*	
Same SIC	+	np	32.3202	-96.47511
Trgt # of SIC	-	+	-125.8688**	75.37977
Prior Acquisitions	+	+	47.7474***	-51.54291
Outside Blockholder	+	np	39.8224*	-25.48940
Service Target	-	+	-128.1464**	98.87995*
Investment Bank Advisor	+	+	130.6298*	-174.03086
Hi-Tech Target	-	+	-148.7298***	185.36064*
Obs.		4398	R ²	0.0299
F-Value		3.86***		

np – no prediction for interaction term
***Significantly different than zero at the 1% level
**Significantly different than zero at the 5% level
*Significantly different than zero at the 10% level

proportion of the deal that is paid contingently based on the future milestones put in place by the earnout contract.

The coefficient on the variable that represents the number of industries in which the target operates is significant at the ten percent level and is in the direction hypothesized. When a target operates in multiple industries, it is much more difficult for the bidder to value the future prospects of the firm. When this is coupled with the fact that these transactions involve high levels of asymmetry of information, one would expect the market to react unfavorably. An earnout arrangement has no statistically significant influence on this effect.

We find that the coefficient of the variable associated with the number of acquisitions that the bidder has been involved within the prior ten-year period to be significantly positive. This indicates that when a bidder has more experience in the merger and acquisition realm, the market recognizes the superior information gathering and valuation abilities of this entity and reacts favorably. Again, earnouts have no statistically significant influence on this effect.

When examining the coefficient on the dummy variable that measures whether or not the target is in a service industry, we find that in general, the market reacts significantly unfavorably. This is possibly due to the high amount of information asymmetry and agency problems associated with these firms. These are the type of firms that have a small amount of assets in place, as well as a large amount of their value determined by the individuals employed with the firm. However, when looking at the earnout interaction term for this variable, we observe that some of this negative reaction

is significantly reversed, as indicated by the positive significant coefficient on this term. The earnout agreement mitigates some of the market's negative perception regarding the acquisition of targets involved in service industries. Similarly, the coefficient for the variable that relates to whether or not the target operates in a high-tech industry is significantly negative. These acquisitions, like the acquisition of service targets, involve a great amount of asymmetry of information and problems associated with agency. As with the service industries, the earnout interaction term for this variable reveals a reversal of this negative reaction by the market.

Investment bank advisors and outside blockholders have a positive effect on the dollar returns to acquiring firms in general. Earnouts have no statistically significant influence on these effects. As argued in the previous chapter, investment bank advisors are perceived as having superior information gathering and valuation abilities, while outside blockholders are better able to monitor and influence management's actions. The results from the F-test are significant at the one percent level, meaning that the model has more explanatory power than the intercept alone. The R^2 for this model appears to be quite low, just under 3 percent, but a low R^2 is to be expected in cross-sectional regressions of acquirer abnormal returns. Similarly low values of R^2 are reported by Travlos (1987), Morck, Shleifer, and Vishny (1990), Chang (1998), and Kale, Kini, and Ryan (2003).

Now we will consider acquisitions for publicly traded bidders that acquire a publicly traded target. As was mentioned earlier, these are quite different than those acquisitions involving a private or subsidiary target. When a private target is acquired,

there is a possibility that a new blockholder of the bidding firm's stock is created. This may not be the case for a publicly held target, due to the lack of concentration of public ownership for the firm. We observed in our previous analysis that the creation of a new blockholder positively affects the abnormal return that the bidder receives.

Looking at table twenty-three, panel B, we observe this to be the case for our sample of acquisitions involving publicly traded targets. Recall that, on average, acquirers of private and subsidiary targets had abnormal returns of about two percent. For our sample involving publicly traded targets this measure is about 1 percent, and is statistically not different from zero at the usual levels. However, when one considers the average mean abnormal return for bidders when no earnout contract is involved, the mean abnormal return falls to a negative four percent. Although this is a smaller return than previous literature has observed, this makes sense when one considers that the acquisitions in the matched sample of traditional acquisitions includes the type of targets that are associated with severe problems of informational asymmetry and agency. When the deal is structured as an earnout, however, the average return to the acquiring firm is almost seven percent and is significant.

The results in panel A indicate that on average, targets in this matched sample earned an abnormal return of 31.01 percent, consistent with the findings of Bradley, Desai, and Kim (1988), Stulz, Walkling and Song (1990) and Kale, Kini and Ryan (2003). When the abnormal returns are split by acquisitions that used an earnout and those that did not, we find that the abnormal returns for these two groups are statistically

Table 23. Cumulative abnormal returns and t-tests for differences between the matched sample of earnout and non-earnout transactions.

Cumulative abnormal returns are estimated using the market model for the acquirers and targets in the sample using an event window of five days prior to the announcement of the acquisition to five days following a successful merger announcement. Value-weighted abnormal returns are estimated using the market model for the value-weighted portfolio of targets and bidders.

	All (36)	Earnout (18)	Traditional (18)
Panel A. Target Abnormal Returns			
Mean Abnormal Returns	0.3101	0.2003	0.4199
t-Statistic (H0: mean equals zero)	8.02***	7.27***	8.65***
t-Statistic (H0: means are different)			1.99**
Median Abnormal Return	0.3462	0.2493	0.4387
Standard Deviation	0.1623	0.1468	0.1747
Panel B. Acquirer Abnormal Returns			
Mean Abnormal Returns	0.01385	0.0690	-0.0413
t-Statistic (H0: mean equals zero)	1.25	1.65*	-2.33**
t-Statistic (H0: means are different)			-2.81***
Median Abnormal Return	-0.0101	0.0120	-0.0521
Standard Deviation	0.1258	0.1103	0.1468
Panel C. Value-Weighted Portfolio Abnormal Returns			
Mean Abnormal Returns	0.02525	0.07495	-0.02445
t-Statistic (H0: mean equals zero)	1.56*	1.73*	-1.87*
t-Statistic (H0: means are different)			-2.35**
Median Abnormal Return	-0.0153	0.0248	-0.0228
Standard Deviation	0.1397	0.1247	0.1563

different at the five percent level. When targets are acquired via an earnout they receive an abnormal return of 20.03 percent, compared to an abnormal return for targets that were not acquired by an earnout of 41.99 percent. This is the result that was hypothesized. When the acquisition employs the use of an earnout, some of the consequences associated with the risk of misvaluation are shifted from the bidder to the target. In other words, the bidder receives more of the gains from the acquisition at the targets expense. Looking at the bidder gains in these transactions, we find that when a bidder uses an earnout, the abnormal return received is 6.9 percent, compared to an abnormal return of -4 percent when an earnout is not involved. This difference is significant at the one percent level.

The value-weighted portfolio of abnormal returns for the matched sample has a mean of 2.5 percent, statistically significant at the ten percent level. When an earnout is utilized the mean abnormal return for the value weighted portfolio is 7.5 percent, compared to a mean of -1.4 percent for the non-earnout matched sample. Both means are significantly different from zero at the ten percent level and their difference is significant at the five percent level. This is evidence that the earnout transaction creates more value for the parties involved, compared to non-earnout transactions.

Table twenty-four examines the dollar abnormal returns for the matched sample of merger transactions. We find that the mean dollar abnormal return for targets in the matched sample is \$27.13 million dollars, which is significantly different from zero at the ten percent level. When the matched sample is split between earnout and non-earnout transactions, we observe that targets that are acquired via the use of an earnout gain about \$19.6 million dollars of abnormal return compared to a mean dollar abnormal return of

Table 24. Cumulative abnormal dollar returns and t-tests for differences between the matched sample of earnout and non-earnout transactions.

Dollar returns are estimated for the target bidder and value weighted portfolio for the matched sample of earnout versus non-earnout transactions. These values are obtained by multiplying the cumulative abnormal returns for the target, bidder, and value weighted portfolio of the two by the market value of the entities in question as measure six days prior to the announcement of the acquisition.

	All	Earnout	Traditional
(Number of Transactions)	(36)	(18)	(18)
Panel A. Target Abnormal Dollar Returns			
Mean Abnormal Dollar Returns	27.1300	19.5842	34.6758
t-Statistic (H0: mean equals zero)	1.32*	1.11	1.42*
t-Statistic (H0: means are different)			1.01
Median Abnormal Return	30.1735	24.4381	36.7648
Panel B. Acquirer Abnormal Dollar Returns			
Mean Abnormal Dollar Returns	21.6698	70.3140	-26.9744
t-Statistic (H0: mean equals zero)	1.18	1.28	-1.38*
t-Statistic (H0: means are different)			-1.75**
Median Abnormal Return	4.4756	9.0818	-10.0253
Panel C. Value-Weighted Portfolio Abnormal Dollar Returns			
Mean Abnormal Dollar Returns	43.6467	81.8657	5.4276
t-Statistic (H0: mean equals zero)	1.21	1.18	0.99
t-Statistic (H0: means are different)			-1.53*
Median Abnormal Dollar Return	6.3384	11.8364	-1.6354

\$34.68 million dollars for non-earnout transactions. This is what one would expect considering the fact that on average earnout targets received less of the gains from the transaction on a percentage basis when compared to non-earnout transactions. The difference is not statistically significant at the usual levels, however.

For acquirer abnormal returns, we observe the same pattern as we did in table twenty-three. Acquirers that use an earnout reap more of the gains from the transaction than those that do not employ an earnout contract. These acquirers, on average, lose value. Acquirers using an earnout experience an abnormal dollar return of \$70.31 million dollars compared to -\$26.97 million dollars for non-earnout bidders. These amounts are significantly different at the five percent level. The amount of abnormal dollar returns for non-earnout bidders is a greater loss than what was found in Bradley, Desai, and Kim (1988) and Kale, Kini, and Ryan (2003), \$17.3 million and negative \$17.49 million respectively. However, this is probably due to the fact that the acquisitions in this matched sample involve targets with high degrees of problems associated with asymmetry of information and agency.

When considering the mean abnormal dollar return of the value-weighted portfolio for the target and bidder, we observe an average of \$43.65 million dollars. Therefore, these events appear to be value creating, on average, but this mean is not significantly different from zero at the usual levels. We then split these transactions into earnout and non-earnout acquisitions in order to see if we can ascertain whether one of these types of transactions creates more total value for the existing shareholders. We find that transactions involving an earnout have a mean of \$81.87 million dollars for the

value-weighted portfolio of targets and bidders, compared to a mean of \$5.43 million for non-earnout transactions. This difference is significant at the ten percent level. This result confirms another hypothesis mentioned earlier. Due to the nature of the earnout contract, both the target and bidder are made better off. The target is required to maximize their efforts in order to maximize their future payout. The bidder reaps some of the benefits for this maximized effort as well. Both parties share in the consequences associated with an initial misvaluation of the target, which gives both parties the incentive to more objectively judge the future opportunities of the target as well as the combined firm.

5.5 Summary

Throughout this dissertation we have hypothesized that an earnout contract creates value in certain instances in merger transactions. This should be the case because, as mentioned earlier, this type of agreement is costly to implement and monitor. In order to observe this type of contracting method in practice it must be the case that for some set of firms the benefits outweigh the costs. In this chapter of the dissertation we have shown that for the set of firms that employ an earnout, the market has determined that the benefits received do indeed outweigh the cost, and the market responds favorably to the use of this contracting method in certain circumstances. By utilizing an earnout, target and bidding firm more efficiently share the risks associated with misvaluation due to asymmetry of information. It is also the case that problems associated with agency are

mitigated, to some extent, due to the alignment of incentives between targets, bidders, and shareholders.

The results in this chapter show that for transactions involving a publicly traded acquiring firm merging with a private or subsidiary target, an earnout creates value for the bidder's shareholders. When a sample of these types of transactions that involve an earnout are compared to non-earnout acquisitions, we find that the cumulative abnormal returns for acquirers are higher when an earnout is employed. However, the abnormal dollar returns are not found to be higher for transactions involving earnouts. This is potentially due to the fact that the acquirers involved in earnout transactions are smaller than their non-earnout counterparts. When the dollar abnormal returns are standardized by the value of the target the same conclusion is drawn.

When examining the motives for the perception of these transactions by the market we find that the market reacts favorably to the use of an earnout. Interaction terms involving hi-tech targets and service targets both mitigate, if not eliminate, the negative perception of the market with respect to these types of transactions. Since the acquisitions of hi-tech and service targets involve transaction fraught with agency problems and high levels of informational asymmetry, it is not surprising that the market reacts negatively to these events, especially when this is coupled with the fact that the targets are either a private or subsidiary firm. It appears that the earnout helps to alleviate some of the problems of informational asymmetry and agency inherent in these deals, which may account for the market's perception of these events when an earnout contract is used. We also find that when the proportion of the deal that is paid contingently through

the use of an earnout contract is increased, the market reacts favorably. This is possibly due to the fact that under this type of contract the target can credibly signal its quality to the bidding firm and the market. Also, the bidder benefits by being able to align the incentives of the target owner/managers and retain their valuable human capital. The bidder further benefits by being able to finance the transaction with a small upfront expense and contingent payments that are funded by the future cash flows of the target firm's operations within the combined firm. Finally, both the target and the bidder are better off due to the fact that the target can reap the benefits of their potentially overoptimistic valuation while the bidder is insulated from initially overpaying for the target's operations.

For transactions involving a publicly traded bidder and publicly traded target, the earnout seems to accomplish what we have hypothesized it accomplishes throughout this dissertation. When looking at the cumulative abnormal returns for the targets involved in these transactions, we find that the mean cumulative abnormal return for targets involving an earnout are significantly less than their matched sample counterparts that do not. This is due to the fact that the earnout shifts some of the risk of misvaluation to the target resulting in more efficient sharing of this risk between the two parties. Also, the earnout requires that the target firm will get less of the value of the deal upfront, leaving the remainder of the deal's payment in an uncertain future amount contingent on the target's performance in the combined firm.

When examining the cumulative abnormal return to bidders for the transactions in the matched sample involving public targets, we find that bidders earn a significantly

greater return when an earnout is employed. The reasoning behind this result is that in transactions that involve an earnout, most of the risks of misvaluation are shifted to the target firm. The bidder has a much lower probability that they have initially overpaid for the target firm due to the construction of the earnout contract. If the target firm meets its valuation of future performance, the contingent payments associated with the earnout will be paid and the bidder has essentially accomplished the task of financing the acquisition with little initial outlay and benefits received from the acquisition of the target. If the target does not meet the valuation of its future performance, little or no contingent payments will be made to the target and the bidder has not initially overpaid for this overoptimistic assessment of the future opportunities of the target firm.

Based on this type of argument, we hypothesized that both firms will be made better off by the use of the earnout agreement. Therefore we should expect to find that the market's perception of these events would be more favorable compared to similar, non-earnout transactions. In other words, more value should be created from the merger of the two entities when an earnout is employed. This is in fact the case. We find that when an earnout agreement is utilized in merger transactions, the value weighted portfolio of the target and bidder has a significantly higher cumulative abnormal return than those transactions that do not employ an earnout. Therefore, both parties are better off when an earnout is used in transactions involving a high degree of informational asymmetries and problems associated with agency. These results are further buttressed when looking at the abnormal dollar returns that the parties involved in these transactions realize.

In sum, it appears that earnout contracts can create value in transactions that involve great amounts of informational asymmetry and problems associated with agency. In this chapter we have also determined some of the reasons behind this increased value as perceived by the market. However, the analysis of the motivations behind the market's perception of these events was only accomplished for the sample involving the acquisition of private and subsidiary targets. Further research in this area can be accomplished for the set of transactions that involve the acquisition of a publicly traded target, once enough observations are in place. It has already been observed that the frequency of this type of contracting in acquisitions has been rising. Therefore, it is just a matter of time before this type of analysis can be accomplished.

Chapter 6: Summary and Conclusions

In this dissertation, we examine various hypotheses involving the use of earnout contracting in mergers and acquisitions. An earnout is a contracting method used in mergers and acquisitions in which a certain, up front, amount is paid for an acquisition with additional future payments contingent upon the successful attainment of milestones set forth in the earnout contract. These milestones are based on the future performance of the target's operations within the combined firm. Therefore, an earnout agreement is effectively an equity claim on the future cash flows of the combined firm, and is treated as such in this dissertation. An earnout is a relatively new type of contracting technology in the merger and acquisition realm. However, the use of this type of contracting technology is growing in frequency and size of the deal.

The previous literature has put forth the notion that earnout contracts are used in transactions where there are problems associated with informational asymmetry and agency. An earnout is, perhaps, most valuable as a means of having the owners of the target firm bear some of the risk of misvaluation of the target, whether those errors in valuation stem from agency or incomplete information about the target. The alternative means for risk sharing would be for the acquirer to pay for the acquisition with its stock. That, however, creates a potential adverse selection problem for the bidder in that the stock market could react negatively to the equity issuance. In addition, with equity as the

means of payment the owners of the target firm would per force share the rewards of any *undervaluation* of the target with the owners of the acquiring firm. Moreover, since the targets of earnouts tend to be small relative to the bidder, the performance of the target post-merger would have a proportionately small effect on the future returns to the owners of the target. Consequently we see a strong preference for cash in both the traditional and the earnout sample, but especially so in the earnout sample. Nearly half of the earnouts in this study are for cash alone, and another 37 percent are for some combination of cash and stock. Pure stock transactions account for only 13 percent of the earnouts. Although all-cash is also the dominant method of payment in sample of traditional acquisitions, that sample involves a significantly greater use of pure stock deals as well.

The preference for cash also reflects an advantage earnouts provide the bidder in financing the transaction. Rather than having to pay the full amount of the transaction in the initial payment, the bidder in an earnout defers a portion of the total deal at least for the duration of the earnout (permanently if the milestones are not met). Moreover, in an earnout involving cash payments, the bidding firm will be able to fund the future contingent payments from the cash flows generated by the target's operations within the combined firm. Therefore, by using an earnout, the bidder can get around the negative consequences associated with paying for a transaction with stock. The bidder can keep his cash to deploy elsewhere.

The earnout affords bidders a mechanism in which it can mitigate agency problems associated with the acquisition. This type of contracting method can require that owner/managers of the target firm stay on board with the combined firm in order for

the contingent payments to be made. This is advantageous due to the types of transactions in which earnouts are used. These transactions involve firms that have few assets in place and derive most of their value from human capital and intellectual property. Here, an earnout accomplishes two goals. First, the earnout can retain this valuable human capital and align the incentives of the combined firm and the human capital from the target. This type of agreement will push retained managers to optimally perform in order for the managers to receive the maximum value of their contingent payments. Secondly, by retaining the owner/manager, the earnout has effectively captured the intellectual property of the target firm. In this circumstance, the intellectual property of the target firm may not be deployed elsewhere, and ultimately compete against the target's operations within the combined firm.

The earnout gives the target firm an opportunity to signal its quality to the bidder as well as the market. We know that in order for a signal to be credible, it must be costly for poor quality firms to imitate. Therefore, by a target firm agreeing to accept a greater proportion of the deal as payments contingent upon the attainment of future performance milestones, the target has credibly signaled its quality to the bidder as well as the market. This signal is credible due to the fact that a poor quality firm will not agree to this type of arrangement, knowing that it does not have a chance of reaching these future milestones, and will want to receive as much of the payment that it can in a certain up-front amount.

Previous research has noted that an earnout is a costly type of contracting method used in mergers and acquisitions. This contract is costly for the bidder to employ. Performance milestones must be set, lawyer's fees and the negotiation process is costly.

The contract is also costly for both the bidder and the target to monitor. The bidder must be certain that the performance milestones are not being achieved at the detriment of the future performance of the combined firm. For all of these reasons, the costs for this type of contracting may outweigh the benefits derived from its use. However, we observe that this contract exists in practice. We also observe that the use of this type of contracting method is on the rise. Therefore, it must be the case that for a certain set of transactions this type of contracting method is optimal. Otherwise, we would not observe the use of this contracting method in mergers and acquisitions.

We have explored many hypotheses involving the use of this type of contracting technology. In chapter three we examined the motives behind the use of earnouts in mergers and acquisitions. In chapter four, the use of method of payment and advisor utilization in conjunction with earnouts help us to determine additional motives for the use of earnout contracting as well as further buttressing our prior findings. In chapter five, we examined the markets reaction to this type of contracting in mergers and acquisitions and analyzed the motives behind the markets perception of these events.

Looking back at the evidence, we find that private targets are taking a greater proportion of the payment in the transaction contingently when compared to the subsidiary targets. This makes sense due to the fact that private targets need the earnout contract to signal their quality to the bidding firm. We also observe that when a target is acquired using an earnout there are a greater number of SIC codes associated with the target compared to a traditional acquisition. The larger the target value relative to the combined firm value for earnout acquisitions, points to the greater consequences resulting

from misvaluation for the deals that employ earnouts. Therefore, in these transactions we observe an increased use of earnout contracting. The number of prior acquisitions by the bidder is significantly greater for traditional transactions than for those that involve an earnout. Therefore as bidder experience in valuing targets increases, there is less of a need for earnout contracting.

All of this points to the fact that private and subsidiary targets are harder to value due to the asymmetry of information between the parties. As was mentioned earlier in chapter three, private firms can use the earnout contract to signal their quality to the bidding firm. When considering the types of industries in which the private and subsidiary targets operate (for example, hi-tech and service firms), one can see that these firms traditionally have fewer assets in place, thereby exacerbating the problem of valuation. In addition, private targets have a greater propensity to be operated by their owner. In the case of hi-tech and service firms, the retention of the owner/operator may be necessary for a variety of reasons. In these cases the earnout helps to shift some of the problems associated with the risk of misvaluation to the target as well as retain valuable human capital.

When a target operates in a service related industry there is a greater probability that these acquisitions will involve earnouts. This points to the notion that with service related industries, it is key to retain managers and their client relationships. Also, since these targets generally have fewer assets in place, they are more difficult to value. We also find that when a target is involved in a high-tech industry, there is a greater likelihood that an earnout will be used in the acquisition. Mergers where the target and

bidder share the same first two digits of their SIC code are associated with a decreased likelihood that the deal will employ an earnout contract. In these transactions, the bidder is better positioned to analyze the value of the target firm. Since private targets involve a higher degree of asymmetry of information, an earnout is chosen to help shift some of the risk of misvaluation from the bidder to the target. When a bidder is of large enough size, the problems associated with the risk of misvaluation are not as devastating to the bidder's financial position. As bidding firms have more experience in acquisitions, their expertise helps them to better value the target firm. Therefore, as bidder merger experience increases and bidder size increases, we observe a decreased probability that an earnout contract will be utilized.

We also find that earnout transactions have a greater probability of being paid for with cash, the greater the availability of access to cash by the bidder, when compared to non-earnout transaction. This may be pointing to the possibility that a bidder, as a means to help finance the transaction, is using an earnout agreement. This is the case since the upfront burden on the acquirer is lessened by the use of this type of agreement. We find that the use of investment bankers in earnout transactions is significantly different than their use in non-earnout transactions. The size of the earnout transaction relative to the value of the bidder yields a higher probability that an investment banker will be used as an advisor when compared to non-earnout transactions. This is probably due to the complex nature of earnout deals. In these deals it is difficult to decide what is an appropriate amount for the contingent payment to the target, as well as what company milestones to which this payment should be tied. This creates a greater magnitude of

complexity when compared to a non-earnout transaction. The complexity of these deals is further exacerbated when the target operates in multiple industries. We find evidence that with earnout transactions there is a greater probability that an investment bank will be used as the number of industries in which the target operates increases when compared to non-earnout transactions.

Comparing the CARs of bidders using an earnout to those that do not, the cumulative abnormal returns are significantly different. When bidders use an earnout to acquire a private or subsidiary firm, the bidder takes more of the gains from the transaction. This was the hypothesized result, due to the fact that the earnout helps shift some of the risk of misvaluation from the bidder to the target firm. Furthermore, if a target firm meets the future milestones required by the earnout, both the target and the bidder will share in these gains. Since the target's future payments are tied to the performance of the target firm's operations, this will help to give managers that stay on an incentive to maximize their operations. Both parties in the deal win.

When more of the deal is financed by the contingent payments afforded by the earnout contract, the market reacts more favorably. This is due to the fact that a greater portion of the risk of misvaluation is shifted from the bidder to the target. Also, the target is able to credibly signal its quality to the bidder and the market by the proportion of the deal that is paid contingently based on the future milestones put in place by the earnout contract. When a target operates in multiple industries, it is much more difficult for the bidder to value the future prospects of the firm. When this is coupled with the fact that these transactions involve high levels of asymmetry of information, one would expect the

market to react unfavorably. We find this to be the case. We observe that the coefficient of the variable associated with the number of acquisitions that the bidder has been involved within the prior ten-year period to be significantly positive. This indicates that when a bidder has more experience in the merger and acquisition realm, the market recognizes the superior information gathering and valuation abilities of this entity and reacts favorably.

When examining the coefficient on the dummy variable that measures whether or not the target is in a service industry, we find that the market reacts significantly unfavorably. This is possibly due to the high amount of information asymmetry and agency problems associated with these firms. These are the type of firms that have a small amount of assets in place, as well as a large amount of their value determined by the individuals employed with the firm. However, when looking at the earnout interaction term for this variable, we observe that some of this negative reaction is significantly reversed, due to the positive significant coefficient on this term. When the two are taken together, we observe that the earnout agreement has helped to mitigate some of the markets negative perception regarding the acquisition of targets involved in service industries.

The coefficient for the variable that relates to whether or not the target operates in a high-tech industry is significantly negative. Again, these acquisitions, just as the acquisition of service targets, are the types of transactions that involve a great amount of asymmetry of information and problems associated with agency. When the earnout interaction term for this variable is examined, we find that this negative reaction by the

market is reversed. Therefore, when an acquisition of a high-tech firm involves the use of an earnout the market perceives this as a favorable event. When the bidding firm utilizes an investment bank in the acquisition of a private or subsidiary target the market reacts favorably, as measured by the significant positive coefficient on the dummy variable for investment bank use.

Our prior discussion in this chapter has involved acquisitions where the bidder is public and the target is a private or subsidiary firm. The acquisitions where both the bidder and target are publicly traded must be considered separately for the reasons previously mentioned in chapter five. When looking at these transactions we find, on average, targets in the matched sample earned an abnormal return of 31.01 percent. When the sample is delineated between earnout and non-earnout mergers, we find that the targets that are acquired via an earnout receive an abnormal return of 20.03 percent, compared to an abnormal return for targets that were not acquired by an earnout of 41.99 percent. When the acquisition employs the use of an earnout, some of the consequences associated with the risk of misvaluation are shifted from the bidder to the target. In other words, the bidder receives more of the gains from the acquisition at the targets expense. Looking at the bidder gains in these transactions, we find that when a bidder uses an earnout, the abnormal return received is 6.9 percent, compared to an abnormal return of -4 percent when an earnout is not involved. The value-weighted portfolio of abnormal returns for the matched sample has a mean of 2.5 percent. When an earnout is utilized the mean abnormal return for the value weighted portfolio is 7.5 percent, compared to a mean of -1.4 percent for the non-earnout matched sample. This is evidence that the

earnout transaction creates more value for the parties involved, compared to non-earnout transactions.

Acquirers that use an earnout reap more of the gains from the merger transaction than those that do not employ an earnout contract. Bidders using an earnout experience an abnormal dollar return of \$70.31 million dollars compared to -\$26.97 million dollars for non-earnout bidders. When considering the mean abnormal dollar return of the value-weighted portfolio for the target and bidder, we observe an average of \$43.65 million dollars. Therefore, we believe that, on average, mergers are value creating. We then split these transactions into earnout and non-earnout acquisitions in order to see if we can ascertain whether one of these types of transactions creates more value for the existing shareholders. We find that transactions involving an earnout are associated with an abnormal dollar return of \$81.87 million dollars for the value-weighted portfolio of targets and bidders, compared to a mean of \$5.43 million for non-earnout transactions. Due to the nature of the earnout contract, both the target and bidder are made better off, and the market reacts accordingly. The target is required to maximize their efforts in order to maximize their future payout. The bidder reaps some of the benefits for this maximized effort as well. Both parties share in the consequences associated with an initial misvaluation of the target, which gives both parties the incentive to more objectively judge the future opportunities of the target as well as the combined firm.

All in all, the combined evidence of the chapters point to the fact that earnout contracting is employed in mergers and acquisitions to mitigate problems associated with asymmetry of information and agency. Earnout contracts are used by bidders to

efficiently shift some of the consequences associated with the risk of misevaluation to the target firm. Earnout contracts are used by bidders to help retain the valuable human capital of target firms and to help align the incentives of the target's human capital to that of the combined firm's shareholders. The earnout contract does this much more efficiently than when a bidding firm uses stock to finance the transaction. The earnout contract is used by bidding firms as a vehicle to help finance the merger transaction. This contract allows the bidding firm to acquire a target with a lesser amount of upfront capital. The remainder of the deal is paid with future contingent amounts that are effectively financed by the target's operations within the combined firm. Targets can credibly signal their quality to the bidding firm and the market through the use of an earnout. By using this type of contracting the deal can get done and the target can share in its own valuation of the future performance of its operations within the combined firm.

The market reacts favorably to this type of contracting method in mergers and acquisitions. When earnout contracts are employed in deals with high levels of informational asymmetry and greater potential for problems associated with agency, more value is created for shareholders than when an earnout is not used. In addition the gains from transactions involving earnouts are more efficiently split between the target and bidding firms involved. However, the increased gains to the bidding firm are not just a redistribution of transaction gains from the target to the bidder. These deals create more value for the combined portfolio of firms involved, and therefore the increased gains to the bidder are not solely a consequence of a redistribution of the gains. Both firms involved are better off.

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