ESSAYS ON MERGERS AND ACQUISITIONS

by

TINGTING LIU

(Under the Direction of Harold Mulherin)

ABSTRACT

A key question in mergers and acquisitions (M&As) is whether the transactions are fair. A common practice is to ask a financial advisor to evaluate the fair value of a transaction and provide a fairness opinion. Using manually compiled data on a large sample over the period 1996-2011, I explore the decision to solicit fairness opinions by firms in M&As to identify the wealth effects associated with this choice. Inconsistent with prior studies, my results show that after controlling for endogeneity, the use of fairness opinions does not harm shareholders' wealth. In contrast, I find evidence of a positive treatment effect for the use of fairness opinions on both the bidder and the target side. Overall, my results suggest that firms obtain fairness opinions for incremental information.

INDEX WORDS: Mergers and acquisitions, Financial advisor, Fairness opinions, Shareholders' wealth

ESSAYS ON MERGERS AND ACQUISITIONS

by

TINGTING LIU

B.A., Jilin University, China, 2003

M.B.A., Brock University, Canada, 2010

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

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2015

ESSAYS ON MERGERS AND ACQUISITIONS

by

TINGTING LIU

Major Professor:	Harold Mulherin
Committee:	Jeff Netter
	Stuart Gillan
	Juan Wu

Electronic Version Approved:

Julie Coffield
Interim Dean of the Graduate School
The University of Georgia
May 2015

ACKNOWLEDGEMENTS

I would like to express the deepest appreciation to my dissertation chair Professor Harold Mulherin, whose insights and encouragement were instrumental to my successful completion of this dissertation. Without his guidance and persistent help this dissertation would not have been possible.

I would like to thank my committee members, Professor Jeff Netter, Professor Stuart Gillan, and Professor Julie Wu for their valuable comments. My special thanks go to Professor Bradley Paye, Professor Annette Poulsen, Professor Jack He, Professor Tao Shu, and Professor David Becher for their suggestions.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1 Introduction

This dissertation consists of two essays on the use of fairness opinions in mergers and acquisitions (M&As). The first essay examines the use of fairness opinions on the bidder side, while the second essay investigates the use of multiple fairness opinions on the target side.

During the sample period 1996-2011, the total value of merger transactions is over $5.5 trillion. A key question in Mergers and Acquisitions is whether the transactions are fair. Although it is a difficult task to evaluate the 'fair value' of a transaction, a common practice in mergers and acquisitions is to seek a fairness opinion provided by a financial advisor who evaluates whether the consideration to be paid or received is "fair from a financial point of view".

On one hand, the use of fairness opinion has been criticized as a "rubber stamp" because fairness opinions usually are rendered by the same financial advisor that arranges the merger and charges fees that are contingent on deal completion. Thus, financial advisors have incentive to push the deal to go through and simply certify any prices provided by the management even when management engages in value destroying deals.[1] On the other hand, the literature also argues that investment bankers have economic incentives to maintain a reputation for independence and quality work (DeAngelo

[1] See, e.g., Bebchuk and Kahan (1989), Oesterle (1992), Elson (1992), Shaw and Gac (1995), Cleveland (2006), and Davidoff (2006).

(1981)). Thus, the economic benefits from that reputation give investment bankers incentives to avoid "rubber stamp" approvals of managerial representations. In addition, Fama (1980) shows that managerial incentive problems attributed to the separation of security ownership and control are resolved because managers care about the value of their human capital.

The first essay tests how the use of fairness opinions by bidders affects deal outcomes, measured by premiums paid to targets, bidder announcement returns, and combined firm returns. Over the period 1996-2011, 22% of the bidders choose to rely on in-house experts and do not hire financial advisors. Among the 78% that do hire investment banks, 43% of the bidders obtain fairness opinions from their financial advisors.

To estimate the causal effect of the use of fairness opinions on deal outcomes, I use a regression discontinuity design (RDD). I document strong evidence that bidders are more likely to obtain fairness opinions if they need to issue 20% or more new equity. After identifying a discontinuity in the probability of obtaining a fairness opinion around the cutoff of 20% equity issuance, I compare firms that are around the cutoff of 20% equity issuance. I further show that those firms are comparable in terms of deal characteristics and firm characteristics.

RDD estimates show a positive and significant impact of the use of fairness opinion on both bidder announcement returns and the combined firm announcement returns. The results are robust to different event windows of estimating announcement returns and alternative methodology of estimating abnormal returns. These findings

contradict prior literature that shows the use of fairness opinions by bidders destroys shareholders' wealth.

The second essay investigates why some targets choose to obtain multiple fairness opinions and the wealth impact associated with this decision. Over the period 1996-2011, the use of multiple opinions has increased significantly over time. Specifically, the percentage of target firms obtaining multiple opinions reaches 25% in the later sample period, compared to only 7% in the earlier period.

The use of multiple fairness opinions by targets is more likely to be observed if the deals are large, if targets have more business segments, and if the deals are classified as hostile deals. Target firms are also more likely to seek multiple fairness opinions in deals involving private bidders, especially in management buyout or leverage buyout deals. These results suggest that multiple fairness opinions are more likely to be used in complex deals and in deals where the level of conflicts of interest between target management and target shareholders is high.

To study the wealth effects of the use of multiple fairness opinions, I use two stage least square analysis (2SLS). The results show a significantly positive wealth effect over longer event windows (31% over the window (-20, +20) and 28% over the window (-63, +126)), indicating that the use of multiple fairness opinions increase shareholders wealth once we control for endogeneity.

1.2 Literature Review

1.2.1 Fairness Opinions by Bidders

Prior literature find that hiring financial advisors does not create value for the clients. Servaes and Zenner (1996) finds that acquisition announcement returns are lower

for firms using investment banks. Bowers and Miller (1990) and Michel, Shaked, and Lee (1991) find no relation between financial advisor reputation and acquirer returns.

Contrast to earlier studies that find financial advisors do not matter, recent studies find that financial advisors play an important role in identifying synergistic targets and negotiate favorable terms. Kale, Kini, and Ryan (2003) find wealth gains to hiring reputable advisors. Bao and Edmans (2011) find a significant investment-bank fixed effect in the announcement returns to an acquisition.

While there have been extensive studies about the role of financial advisors in mergers and acquisitions, the role of fairness opinion is less studied. A few papers try to address why bidders choose to obtain a fairness opinion and the wealth implication of this choice. Kisgen, Qian, and Song (2009) and Chen and Sami (2006) find a negative relation between the use of bidder fairness opinion and bidders' abnormal returns around mergers' announcements. They conclude that bidders purchase fairness opinions to reduce their potential litigation risk associated with bad deals against the shareholders and the use of fairness opinion by bidders destroys bidders' shareholders' wealth. Specifically, Kisgen, Qian, and Song (2009) document that the bidder's announcement return is 2.3% lower if the bidder has a fairness opinion; Chen and Sami (2006) report a 3.9% lower return for bidders that purchase fairness opinions; Cain and Denis (2013) find that on average, bidders purchasing fairness opinions experience a lower announcement return of 4.19%.

1.2.2 Fairness Opinions by Targets

The use of fairness opinions can be traced back to a Delaware Supreme Court ruling Van Gorkom (1985). The court held that the directors breached their fiduciary duty

of making an informed judgment in approving the merger. One of the facts that the court noted is that no outside expert such as an investment banker was ever consulted on the fairness of the merger terms. The court suggested that the target board was obligated to duly inform itself of the firm's value through a well-prepared financial analysis.

Fischel (1985) points out that the court's rebuke of the directors for failing to hire outside experts to acquire valuation information is extremely problematic. His conclusion is that investment banks are the biggest winners and shareholders are the biggest losers. Fischel (1985) argues that firms will have no difficulty finding an "expert" who is willing to state that a price at a significant premium over the market price is "fair." But the cost of obtaining such an opinion is, in effect, a judicially imposed tax on fundamental corporate changes and the inevitable consequence will be that fewer transactions will occur and that when they do occur, returns to investors will be lower.

A large body of legal literature also criticizes fairness opinions for their lack of established standards and potential conflicts of interest because the fairness opinion usually is rendered by the same financial advisor that arranges the merger and charges fees that are contingent on deal completion.[2] Thus the fairness opinion is just a checkbox requirement and the Delaware court did not made any substantive recognition, between the opinion itself and the valuation forming the basis of such an opinion.

Although the Van Gorkom case is directly related to the target board breaching its fiduciary duty and the legal literature mainly criticizes the use of fairness opinions by targets as a "rubber stamp" since every target firm obtains one, the empirical evidence on

[2] See, e.g., Bebchuk and Kahan (1989), Elson (1992), Shaw and Gac (1995), Elson, Rosenbloom, and Chapman (2003), Oesterle (1992), and Davidoff (2006).

the use of fairness opinion by targets is surprisingly limited. Only a few earlier studies try to test the effects of fairness opinions used by targets.

Bowers and Latham (2006) show that when the attitude of the participants in a deal is "friendly", the level of firm-specific litigation risk increases and has the expected positive effect on the probability of obtaining a fairness opinion. Makhija and Narayanan (2007) report that deals with a target fairness opinion earn statistically lower target announcement returns and conclude that investors rationally discount deals certified by fairness opinions.

Those earlier studies examining fairness opinions by targets mainly rely on the Securities Data Corporation (SDC) database (Bowers (2002), Bowers and Latham (2006), and Makhija and Narayanan (2007)). Kisgen, Qian, and Song (2009) point out that SDC provides incomplete/inaccurate information on fairness opinion, especially on the target side. Using manually compiled data, these two essays seek to better understand why fairness opinions are used and the associated wealth implication.

CHAPTER 2

THE WEALTH EFFECTS OF THE CHOICE OF A FAIRNESS OPINION IN M&AS: EVIDENCE FROM A REGRESSION DISCOUNTINUITY DESIGN[3]

[3] Liu, T. To be submitted to *Journal of Financial Economics*.

Abstract

Using manually compiled data on a large sample over the period 1996-2011, I explore the decision to solicit fairness opinions by bidders in mergers and acquisitions to identify the wealth effects associated with this choice. NYSE, AMEX and NASDAQ require a firm to obtain shareholders' approval when issuing more than 20% of new equity to finance a merger. I find that the 20% threshold is the most powerful predictor of the use of fairness opinions. I document a large discontinuity in the probability of obtaining a fairness opinion at the cutoff of 20% equity issuance. Inconsistent with prior studies, the use of fairness opinions does not harm shareholders' wealth. In contrast, I find evidence of a positive treatment effect for the use of fairness opinions on the bidder's announcement return and also the combined firm's return.

2.1 Introduction

As part of the firm's decision to engage in a takeover transaction, it also decides whether to hire a financial advisor. It must next decide whether to obtain a fairness opinion which determines if the consideration to be paid or received is "fair from a financial point of view."

Prior literature finds that hiring financial advisors does not create value for the clients. Servaes and Zenner (1996) find that acquisition announcement returns are lower for firms using investment banks. Bowers and Miller (1990) and Michel, Shaked, and Lee (1991) find no relation between financial advisor reputation and acquirer returns.

Contrast to earlier studies that find financial advisors do not matter, recent studies find that financial advisors play an important role in identifying synergistic targets and negotiate favorable terms. Kale, Kini, and Ryan (2003) find wealth gains to hiring reputable advisors. Bao and Edmans (2011) find a significant investment-bank fixed effect in the announcement returns to an acquisition.

Although recent studies have documented that investment banks do matter for takeover transactions, we are less clear about the channels through which investment banks create value. In this paper, I examine role of fairness opinion used in M&A transactions. Specifically, I investigate why firms choose to obtain fairness opinions and what are the effects associated with this choice.

Over the period 1996-2011, 22% of the bidders choose to rely on in-house experts and do not hire financial advisors. Among the 78% that do hire investment banks, 43% of the bidders obtain fairness opinions from their financial advisors. On the target side, it

seems a standard practice for firms to obtain fairness opinions.[4] In this paper, I examine how the choice of fairness opinions affects bidder and combined firm value in a sample of 2,768 M&A transactions.

There is extensive debate in the legal literature regarding whether fairness opinions provide value to shareholders. Fairness opinions have been criticized in the legal literature mainly for two reasons: 1) lack of established standards,[5] and 2) conflicts of interest since the fairness opinion is usually rendered by the same financial advisor that arranges the merger.[6]

Determining whether the use of fairness opinions is in the best interests of shareholders is obviously important, given the size of the transactions in the market for corporate control. Surprisingly, empirical evidence in the finance literature is limited and existing results are mixed. Kisgen, Qian, and Song (2009) report that the use of fairness opinions by bidders reduces the premium paid to targets, implying that fairness opinions are beneficial to bidders' shareholders. However, they also find that mergers with bidder fairness opinions have lower announcement returns, which seems contradictory to the deal premium results. Cain and Denis (2013) find that target side advisors produce fairness opinion valuations that are informative. However, they find fairness opinions provided by bidder advisors are less informative.

The mixed empirical evidence highlights the need for further investigation on how the use of fairness opinions affects bidder shareholders' wealth. In this paper, I

[4] On the target side, 98.5% of target firms choose to obtain fairness opinions in M&A transactions.
[5] See, e.g., Carney (1992), Elson (1992), Elson, Rosenbloom, and Chapman (2003), and Davidoff (2006).
[6] See, e.g.,Bebchuk and Kahan (1989), Oesterle (1992), Elson (1992), Shaw and Gac (1995), Cleveland (2006), and Davidoff (2006).

contrast two competing hypotheses of the wealth implications of the decision regarding whether to solicit a fairness opinion by bidders. The agency theory hypothesis emphasizes the incentive problems that arise when security ownership and control is separated (Jensen and Meckling (1976)). The agency theory hypothesis argues that bidder management may seek a fairness opinion to certify value destroying deals. The prediction of the agency theory hypothesis is that the use of fairness opinions destroys bidder shareholders' wealth.[7]

In contrast, the information hypothesis argues that management obtains fairness opinions to communicate with shareholders if the deal needs shareholders' approval (Bebchuk and Kahan (1989)). The information hypothesis predicts that fairness opinions contain information and that the use of fairness opinions creates value by reducing information costs.

There are two challenges in testing these hypotheses. As pointed out by Kisgen, Qian, and Song (2009), the Securities Data Corporation (SDC) database reports incomplete data about the use of fairness opinions. To ensure accuracy, for each takeover observation in my sample, I manually collect the data about the use of a fairness opinion and also the fairness opinion provider from the merger documents obtained from the EDGAR filing system of the Securities and Exchange Commission (SEC). By comparing data about bidder use of fairness opinions provided by SDC to data manually collected from SEC filings, I show that SDC under reports fairness opinion information, especially in the early years of the sample.[8]

[7] Kisgen, Qian, and Song (2009) find evidence consistent with this prediction. Specifically, they report that the use of fairness opinions is associated with a significantly lower bidder announcement return of 2.3%.
[8] Please refer Table 2.2 for more details.

The second challenge of the analysis is the endogeneity of the choice of fairness opinions. Since the choice of obtaining fairness opinions is not a random event, the group of bidders with fairness opinions may be systematically different from the group without fairness opinions. For example, firms may choose to obtain fairness opinions in deals that are more complex and harder to evaluate. These selection issues imply that observed cross-sectional correlations are likely to be a biased estimate of the 'treatment' effects associated with bidders' decisions to solicit fairness opinions.

I address the inference challenge by using exogenous variation in the use of fairness opinions due to the fact that the NYSE, AMEX and NASDAQ requires that the firm needs to get shareholders' approval if it wants to issue more than 20% of new equity to finance a merger. I use this exogenous variation as an instrument for differences in the use of fairness opinions. I first document strong evidence that bidders are more likely to obtain fairness opinions if they need shareholders' approval of the new equity issuance. More specifically, I document evidence of a discontinuity in the probability of obtaining a fairness opinion around the cutoff of 20% equity issuance associated with required shareholder approval of the deal. Point estimates suggest that the likelihood that a bidder obtains a fairness opinion jumps by around 64% around the 20% cutoff value.

To estimate the causal effect of the use of fairness opinions on deal outcomes, I use a regression discontinuity design (RDD). The significantly higher probability of obtaining a fairness opinion when the firm issues more than 20% equity provides a good quasi-experiment to compare firms that are just affected by the rule with firms that are just not affected by the rule.

A key assumption that RDD relies on is that companies cannot precisely control the percent of equity issuance. In principle, firms might exhibit tight control over the fraction of equity they issue in the merger. This creates a concern that the local continuity assumption may be violated. However, it is important to note that RDD designs permit some degree of control – it is only precise control that invalidates the design (Lee and Lemieux (2010)). In practice, it is unlikely that firms have precise control over the fraction of equity issuance because the fraction of equity issuance depends on many factors including bidder size, the availability of cash, deal size, bidder's balance sheet flexibility and credit profile. The existing literature suggests that both market-timing opportunities and stage of corporate lifecycle have material influences on the decision of equity issuance (DeAngelo, DeAngelo, and Stulz (2010) and Kim and Weisbach (2008)).

To formally test whether firms precisely manipulate percent of equity issuance, I perform the McCrary (2008) test. The results indicate no evidence of bunching around the cutoff, indicating that firms cannot precisely manipulate the percent of shares issued.

To compare with prior studies, I also report the OLS regression results. Consistent with the existing literature, OLS regression results show that if bidders obtain fairness opinions, the average premium paid to targets is lower and the average bidder announcement return is also lower.

Compared to OLS regression results, RDD results show that the premium paid is lower if bidders obtain fairness opinions (though not statistically significant). However, RDD results indicate a positive treatment effect of the use of fairness opinion on bidder announcement returns, which is opposite to the OLS estimations.

The estimated treatment effect on the combined firm return is also positive and significant (coefficients are between 6.0% and 7.0%). The results on combined firm returns are also economically significant. Given that the median value of the combined firm is $2.9 billion, an increase of value of 6.0%-7.0% indicates a value creation of $174 million.

RDD graphs (Figure 2.5) provide visual evidence of an upward jump of bidder announcement return and the combined firm announcement return at the cutoff of 20% equity issuance. The graphs also show a negative relation between percentage of shares issued and bidder announcement returns. There are two potential explanations to the negative relation between share issuance and bidder announcement returns: 1) bidders issue more shares when their stocks are overvalued (Shleifer and Vishny (2003)); 2) stock bidders experience higher price pressure due to merger arbitrage when issuing more shares (Mitchell, Pulvino, and Stafford (2004) and Liu and Wu (2014)). The negative relation between returns and share issuance indicates that the negative coefficients observed in the OLS regression is driven by the high positive correlation between share issuance and the use of fairness opinion.

To further test the validity of the assumption of the local continuity, I regress the outcome variables (i.e. deal premium, bidder announcement returns, and combined firm returns) on the vector of observable characteristics and repeat the RDD analysis using the residuals as the new outcome variables, as suggested in Roberts and Whited (2012) and Lee (2008). These results show that the treatment effect estimates are largely unaffected if the outcome variables are residuals, suggesting that the local continuity assumption is valid.

My results are also robust to the choice of different bandwidths. Following the suggestion of Roberts and Whited (2012) that one should also look at the estimated treatment effects for arbitrary cutoffs near the true cutoff, I estimate treatment effects at cutoffs of 15 percent and 25 percent (instead of the true cutoff of 20 percent). I fail to find any significant treatment effects at these arbitrary cutoffs. As a further robustness check, I also perform nonparametric RDD estimation suggested by Hahn, Todd, and Van der Klaauw (2001) and Ludwig and Miller (2007). Again, I observe positive treatment effects on bidder announcement returns and the combined firm announcement returns. In summary, my results are robust to the inclusion of a variety of controls and specification choices.

This study contributes to the literature in a number of ways. First, my analyses provide new, important insights on the incentives of the management of bidding firms to use fairness opinions in takeover transactions. Prior literature shows that the use of fairness opinions is highly related to the method of payment (e.g, Kisgen, Qian, and Song (2009)). I clarify this result and show that bidder shareholder voting is the main driving factor instead of method of payment. My results show that the seemingly positive relation between the use of a fairness opinion and stock payment is driven by the positive correlation between stock payment and bidder shareholder voting. When I include shareholder voting as a control variable in the regression, the coefficient of stock payment becomes insignificant.

Second, I reconcile the puzzling empirical findings that when bidders obtain fairness opinions, they pay a lower premium to targets but also experience lower announcement returns. My results suggest that OLS regression estimations are biased

because of severe endogeneity issues. By using RDD, I show a positive treatment effect to bidder announcement returns, indicating that obtaining fairness opinions does not harm shareholders' wealth. These results are inconsistent with the agency theory hypothesis and are consistent with information hypothesis.

Third, my study is the first to investigate the impact of using fairness opinions on the combined firm announcement returns. Studying the combined firm return is important to understand the deal quality.[9] A positive combined return implies that the deal is value creating. RDD results show a positive and significant impact of the use of fairness opinions on combined firm returns, indicating that bidders' decisions to obtain a fairness opinion appear to be positive NPV. The positive treatment effect on combined firm returns is new to the literature and again is inconsistent with the agency theory hypothesis and is consistent with information hypothesis.

2.2 The Use of Fairness Opinions and Related Literature

In M&A transactions, bidders' boards of directors sometimes obtain fairness opinions from financial advisors to determine whether the proposed offer price is 'fair from a financial point of view'. Fairness opinions detail the valuation analyses conducted by the opinion provider in arriving at the overall opinion of fairness and are typically obtained before the formal merger announcements.

Figure 2.1 provides a typical timeline of a merger negotiation process and the use of fairness opinion on the bidder side. As noted in Boone and Mulherin (2007b), merger negotiation usually starts several months or even more than a year prior to the formal merger announcement. The example presented in Figure 2.1 illustrates the deal process

[9] Kale, Kini, and Ryan (2003) study how the use of investment banks affects combined firm returns. However, they do not investigate how the use of fairness opinions affects combined firm returns.

between Baker Hughes (the bidder) and BJ Services (the target). The bidder initiated the deal in July 2008 and retained Goldman Sachs as its financial advisor in August 2008. After several rounds of merger negotiation, Goldman Sachs provided a preliminary financial analysis regarding the potential transaction in July 2009 and rendered a formal fairness opinion in August 2009, right before the merger announcement. This example shows that although the written fairness opinion is provided right before the merger announcement, the valuation analysis could be ongoing for several months and the financial advisor usually needs to present the valuation analysis to the board of directors several times during the negotiation period.

Appendix D presents an example of a fairness opinion provided by Baker Hughes's advisor, Goldman Sachs. It illustrates the valuation details including the methodologies, assumptions, etc. Although the use of fairness opinion is not required by law, once a firm decides to obtain a fairness opinion, it must file the fairness opinion together with the merger documents. Thus, the public has the access to the information contained in fairness opinion.

2.2.1 Background of The Use of Fairness Opinions

The use of fairness opinions can be traced back to a Delaware Supreme Court ruling Van Gorkom (1985). The court held that the directors breached their fiduciary duty of making an informed judgment in approving the merger. One of the facts that the court noted is that no outside expert such as an investment banker was ever consulted on the fairness of the merger terms. The court suggested that the target board was obligated to duly inform itself of the firm's value through a well-prepared financial analysis.

Fischel (1985) points out that the court's rebuke of the directors for failing to hire outside experts to acquire valuation information is extremely problematic. His conclusion is that investment banks are the biggest winners and shareholders are the biggest losers. Fischel (1985) argues that firms will have no difficulty finding an "expert" who is willing to state that a price at a significant premium over the market price is "fair." But the cost of obtaining such an opinion is, in effect, a judicially imposed tax on fundamental corporate changes and the inevitable consequence will be that fewer transactions will occur and that when they do occur, returns to investors will be lower.

A large body of legal literature also criticizes fairness opinions for their lack of established standards and potential conflicts of interest because the fairness opinion usually is rendered by the same financial advisor that arranges the merger and charges fees that are contingent on deal completion.[10] Thus, it is argued that the fairness opinion is just a checkbox requirement and the Delaware court did not made any substantive recognition, between the opinion itself and the valuation forming the basis of such an opinion.

2.2.2 Related Empirical Literature

Prior studies examining the wealth effects of the use of fairness opinions on the bidder side in general find that the use of fairness opinion harms shareholders wealth. Kisgen, Qian, and Song (2009) and Chen and Sami (2006) find a negative relation between the use of bidder fairness opinion and bidders' abnormal returns around mergers' announcements. They conclude that bidders purchase fairness opinions to reduce their potential litigation risk associated with bad deals against the shareholders

[10] See, e.g., Bebchuk and Kahan (1989), Elson (1992), Shaw and Gac (1995), Elson, Rosenbloom, and Chapman (2003), Oesterle (1992), and Davidoff (2006).

and the use of fairness opinion by bidders destroys bidders' shareholders' wealth. Specifically, Kisgen, Qian, and Song (2009) document that the bidder's announcement return is 2.3% lower if the bidder has a fairness opinion; Chen and Sami (2006) report a 3.9% lower return for bidders that purchase fairness opinions; Cain and Denis (2013) find that on average, bidders purchasing fairness opinions experience a lower announcement return of 4.19%.[11]

Although prior studies consistently find a negative relation between the use of fairness opinion by bidders and bidder announcement returns, it would be problematic to conclude that fairness opinion is just a "rubber stamp" and the use of fairness opinion is value destroying for the following reasons. First, if the fairness opinion is indeed just a "rubber stamp", then we would expect every target and bidder to use a fairness opinion because it is a "check box". However, empirical results show that only about one third of the bidders obtain fairness opinions in M&A transactions, indicating that there are other reasons determining the use of fairness opinions by bidders. Moreover, the historical lawsuits related to the use of the fairness opinion in the merger deals mainly happened on the target side (e.g., Smith v. Van Gorkom, Cottle v. Storer Communication), which implies the bidder has less pressure to use the fairness opinion as a legal protection mechanism.[12]

Second, even if we observe a negative relation between the use of fairness opinion and announcement returns, the negative relation does not imply causality because of endogeneity issue presented in the analysis. In a takeover transaction, bidding firm

[11] Cain and Denis (2013) also show that fairness opinions provided by target advisors do contain information because valuations provided in the fairness opinion by target advisors are significantly related to bidders' stock price reaction to the merger announcement.
[12] On the target side, we do observe that almost all targets obtain fairness opinions in M&A transactions.

management makes the decision whether to use a fairness opinion or not. The decision of fairness opinion is likely to be related to unobservable deal characteristics that also affect announcement returns. Simple comparison and OLS regression results may yield incorrect inference about the use of fairness opinions.

In this study, I first investigate the determinants of the use of bidder fairness opinion. After understanding the driving factors of the use of fairness opinions, I then examine the effect of the use of fairness opinions on bidder announcement returns after controlling for endogeneity. I also study the combined firm announcement returns because the combined firm return is a direct indicator of whether the overall deal is value creating or value destroying.

2.3 Hypotheses Development and Empirical Implications

2.3.1 Testable Hypotheses

I contrast two potential explanations to bidder use of fairness opinions: 1) as argued in the legal literature, fairness opinions may be used by bidder management to certify bad deals and effectively remove litigation risk in case of a subsequent lawsuit (Fischel (1985)); 2) fairness opinions could be used for providing extra information to their shareholders (Bebchuk and Kahan (1989)). The two different incentives for the use of fairness opinions - whether the valuation processes generate a good faith estimate of fair value or instead certify bad deals against the shareholders yield two testable hypotheses. I discuss the two competing hypotheses and their implications to bidder shareholders' wealth and the combined firm wealth in the following sections.

Jensen and Meckling (1976) point out the incentive problems that arise when the security ownership and control is separated. They argue that since the relationship

between the stockholders and manager of a corporation fit in a pure agency relation- ship we should expect to discover that the issues associated with the separation of ownership and control are associated with the general problem of agency.

The legal literature argues that fairness opinions are "rubber stamps" and contain no useful information. The agency theory hypothesis implies that the use of fairness opinions could be even worse than just a "rubber stamp", since it can be used to certify bad deals and effectively reduce management's litigation risk.

The agency theory hypothesis predicts that boards obtain a fairness opinion to remove legal risk from possible negligence in their duty of care regarding the deal decision. The litigation risk is even higher if the deal creates no value to shareholders but provides value to boards and managements. For example, if the bidder overpays a target in an empire building activity, the bidder may seek a fairness opinion to certify the price paid in the case of a law suit. Under the agency theory hypothesis, fairness opinion entrenches managements/boards and destroys shareholders wealth.[13]

H1: Agency Theory Hypothesis: Bidder management uses a fairness opinion to remove potential litigation risk associated with bad deals against the shareholders and the use of fairness opinions harms shareholders' wealth.

Another reason why corporate directors might obtain fairness opinions is to help persuade shareholders to approve transactions (Bebchuk and Kahan (1989)). In this sense, a fairness opinion can be used as a tool of communication between firms and their

[13] The nature of the agency theory hypothesis is similar to the management entrenchment hypothesis and agency costs hypothesis in DeAngelo and Rice (1983), Dann and DeAngelo (1983), and Boone and Mulherin (2007b). Dann and DeAngelo (1983) develop and test competing theoretical explanations for the passage of antitakeover amendments. The management entrenchment hypothesis suggests that antitakeover provisions are adopted because incumbent management seeks job protection at stockholders' expense.

shareholders. Fama (1980) shows that managerial incentive problems attributed to the separation of security ownership and control are resolved because managers care about the value of their human capital. On the other hand, DeAngelo (1990) argues that the economic benefits from that reputation give investment bankers incentives to avoid "rubber stamp" approvals of managerial representations. It is reasonable to expect that firms are more likely to use fairness opinions to communicate with their shareholders when the deals are more complex and harder to evaluate. If man- agers use fairness opinions to better communicate with the shareholders and to solicit shareholders' approval when the firm is facing a complex deal (and the deal is in fact in the best interests of the shareholders), fairness opinions may create value by reducing information cost.

It is important to note that in takeover transactions, bidders do not have to always communicate with their shareholders and get their approval. The NYSE, AMEX and NASDAQ require that the firm needs to get shareholders' approval if it wants to issue more than 20% of new equity to finance a merger. In this case, the firm must issue proxy solicitations and need the shareholders to vote for the issuance of new shares and the merger. If the merger is financed by cash, then shareholders' approval is not required. Appendix E details the shareholder approval policy. In the Listed Company Manual Section 312.03 (Shareholder Approval) C-2, it states that 'if the number of shares of common stock to be issued equal to or in excess of 20 percent of the number of shares of common stock outstanding, then shareholder approval is required prior to the issuance of common stock.'

Appendix A provides an example of the bidding firm issuing more than 20% of new equity and utilizing the fairness opinion to persuade shareholders to vote for the transaction. The transaction is between The Gillette Company (the bidder) and Duracell (the target). In the letter to bidder's shareholders, it states that "the Board of Directors has carefully reviewed and considered the terms and conditions of the merger and has received the opinions of financial advisors, the consideration to be paid by Gillette in the Merger was fair to Gillette from a financial point of view...The board of directors has approved the merger agreement and recommends that you vote in favor of the issuance of shares of Gillette common stock in connection with the merger."

Under the information hypothesis, the cost of information asymmetry between management and shareholders is reduced if a fairness opinion is used. The information asymmetry reduction creates value for the bidding firm and also the combined firm.

H2: Information Hypothesis: Bidder management uses a fairness opinion to communicate with their shareholders and the use of fairness opinions does not harm shareholders' wealth.

2.3.2 Empirical Implications

The two competing hypotheses predict different implications regarding premium paid to targets, bidder announcement returns, and the combined firm announcement returns. The agency theory hypothesis predicts that fairness opinions contain no valuable information and the use of fairness opinions destroys shareholders' wealth, thus, wealth effects of the group with fairness opinions should be significantly lower than the wealth effects of the group without fair opinions. This implies a higher premium paid to the

target, a lower bidder announcement return, and also a lower combined firm announcement return.

By contrast, the information hypothesis argues that, on average, there will be no negative or even positive wealth effects associated with the use of fairness opinions. Under the information hypothesis, management makes decisions to maximize shareholders' interest and obtains fairness opinions to reduce information asymmetry between management and shareholders. Thus, management would seek a fairness opinion only if the benefit of obtaining a fairness opinion outweighs the cost.[14] As a result, the use of a fairness opinion should have a non-negative impact on shareholders' wealth. Table 2.1 provides a summary of the implications regarding the use of fairness opinions.

2.4 Data and Descriptive Statistics

2.4.1 Data Selection and Sample Distribution

To construct the sample, I start with the mergers and acquisitions database of the Securities Data Corporation (SDC). I begin with all M&A deals announced between January 1st, 1996 and December 31st, 2011, since as of May 6, 1996, all public domestic companies were required to make their filings on EDGAR. I require that the deal be completed or withdrawn by the end of 2011 and the deal value to be at least $20 million. I also require a public status for both the bidder and the target, and that bidders seek more than 50% of target shares.

[14] Kisgen, Qian, and Song (2009) show that the median direct cash cost of one fairness opinion is $300,000. The indirect cost can be much higher. For example, the process of producing a fairness opinion involves significant interaction between the advisor and the firm, which takes a significant amount of management time. Another indirect cost is the potential disclosure of competitive secrets in the process to produce a fairness opinion.

The initial screens provide a sample of 4,574 observations. From this set of 4,574 deals, I eliminate deals where the price of the target on the day prior to the takeover announcement is less than $5 to exclude distressed firms. I also exclude deals where target returns or bidder returns are not included in the Center for Research and Security Prices (CRSP) database. Finally, I drop deals in which I was not able to find the merger document from the EDGAR filing system of the Securities and Exchange Commission (SEC). My final sample contains 2,768 observations. Panel A of Table 2.2 describes the formation procedure of my sample.

As pointed out by Kisgen, Qian, and Song (2009), information on the fairness opinion advisors provided by SDC is incomplete. To ensure accuracy, for each takeover observation in my sample, I manually verify the announcement date, the information of financial advisors hired by bidders, and fairness opinions advisors of bidders by reading merger documents from the EDGAR filing system of the SEC.[15]

Panel B of Table 2.2 reports the deals by announcement year. The years after the internet bubble (2002) and financial crisis (2008, 2009, 2010, and 2011) have fewer transactions, compared to other years. 1999 has the most transactions. In general, transactions cluster in the first half of the sample period, with two-thirds of the transactions in the sample announced over the 1996-2003 period.

Panel B of Table 2.2 also compares the data on the use of fairness opinions hand collected from SEC merger documents with the fairness opinion data reported by SDC. Evidence of the incompleteness of the SDC data is provided in this panel. For the full

[15] I search through merger filings including S-4, S-4/A (for stock mergers), DEFM14, DEFM14/A (for cash mergers), and SC14D9(for tender offers). Other files also containing the fairness opinion information include F-4, DEFA14A, PREM14A, and 8-K.

sample, the SEC filings indicate that 34% of the sample takeovers used a fairness opinion. By contrast, the SDC data report the use of fairness opinions for only 23% of the takeovers, a difference of 11%. In other words, SDC under-reports the use of fairness opinions by one third of the time.[16] As also summarized in Panel B of Table 2, the difference between the SEC filings and the SDC data is especially noticeable in the early years of the sample. The differences are 20% or more in 1998 and 2002. In 2005 and later, the differences are not as large.

2.4.2 Variable Construction and Summary Statistics

Table 2.3 reports attributes of the sample firms. Panel A presents summary statistics for the full sample. BidderSize is bidder's equity values in $ million, measured as stock price times shares outstanding, estimated 30 days prior to the merger announcement. DealSize is the transaction value. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. PctShrIssued is the percent of share issued by the bidder in the transaction. Compete is a dummy variable that equals one if there is more than one bidder reported by SDC, and zero otherwise. Friendly is a dummy variable that equals one if the deal attitude is friendly indicated by SDC, and zero otherwise. SameIndustry is a dummy variable that equals one if the target and bidder are from the same industry (with the same first two-digit of SIC Code), and zero otherwise.

An average deal in my sample has a deal value (DealSize) of $2.4 billion. An average bidder in my sample has market capital (BidderSize) of $15.5 billion. The mean

[16] Prior research also shows that SDC does not always have accurate information on merger deals. For example, Boone and Mulherin (2007a) provide evidence on incomplete reporting of termination provisions on the SDC database. The SEC filings indicate that 91% of takeovers had a termination provision while the SDC data report only 66%.

(median) percentage difference between the offer price and target share price 4 weeks prior to the announcement date (Premium) is 38% (33%). On average, the percent of share issued by the bidder in the transaction (PctShrIssued) is 13%, although the median is only 2.7%. The results also show that more than 93% of the deals are classified as friendly deals and 7.8% deals face competitive bidders, consistent with Moeller (2005) who find that majority of the deals are classified as friendly deals in SDC and less than 6% deals have multiple bidders during their sample period.[17] Finally, the results show that about 60% of the transactions have targets and bidders from the same industry.

Panel B of Table 2.3 reports the means and medians of deal characteristics for deals in the sub-samples of use of fairness opinions. The last two columns compare the two groups with and without fairness opinions. The column "T-value" reports the two-tail t-statistics of two-sample T-tests comparing the means. The results show that on average, bidder size is much larger and deal size is much smaller for deals without fairness opinions. Specifically, the average deal size is $4.11 billion in deals with fairness opinions, more than twice the size of deals without fairness opinion (average deal size = $1.59 billion). The difference between the two groups is statistically significant. Consistent with Kisgen, Qian, and Song (2009), deals with fairness opinion are more likely to be friendly deals and to have lower premium paid to the target. Deals with fairness opinions are also less likely to have a competing bid and are more likely to have targets and bidders from the same industry.

[17] The small percentage of multiple bidders is also consistent with Boone and Mulherin (2007b) who report the existence of an active takeover market that takes place prior to the public announcement, thus the observed number of public competing bids is quite small.

Panel C of Table 2.3 reports the means and medians of deal characteristics for deals in the sub-samples of use of fairness advisors. The results show that about 22% (603 out of 2768) of the bidders rely on in-house experts and do not hire outside financial advisors. Deals without financial advisors on average are much smaller. Specifically, the average deal size is $435 million in deals without financial advisors, compared to an average size of 3 billion in deals with advisors. Bidder size, on the other hand, is larger in deals without advisors, compared to those with advisors.

2.5 Empirical Analysis

In this section I perform empirical tests of the two hypotheses on the use of fairness opinions. I first study why some bidders choose to obtain fairness opinions in M&A transactions. I then examine the wealth effects associated with this choice. Specifically, I study the impacts of the use of fairness opinions on deal outcomes including premium paid to targets, bidder announcement returns and combined firm announcement returns. To control for the endogeneity issue caused by the non- random assignment of a fairness opinion, I employ a regression discontinuity design (RDD) approach to identify the treatment effect of the use of fairness opinions.

2.5.1 Probit Regression Analysis-Determinants of the Use of Fairness Opinions

Table 2.4 examines the determinants of the use of fairness opinions on the bidder side. The dependent variable is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise. The main variable of interest is T , which is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise. As discussed above, if the bidder needs to issue more than 20% of its equity in the takeover transaction, shareholder's approval is required. If

the information hypothesis is correct, I expect this variable to be highly correlated to the use of fairness opinion. Reading merger filings also reveals that in most cases, management use fairness opinions to communicate with shareholders and persuade shareholders to vote for the issuance of the new equity. I report marginal effects rather than probit coefficients in this table and the reported coefficients represent the change in the probability per unit change in the relevant independent variables; for dummy variables, the coefficient represents the change in the probability associated with moving the dummy variable from 0 to 1.

Column 1 to 3 of Table 2.4 report the Probit regression results for the full sample. Consistent with the results reported in the summary statistics, DealSize, Friendly, and SameIndustry are positively related to the bidders' use of fairness opinions. It is less likely for bidders to obtain fairness opinions if there is a competing bid or if the deal has a tender offer. Consistent with prior literature (e.g., Kisgen, Qian, and Song (2009)), Model 2 shows that the use of fairness opinions is highly related to the method of payment (t-stat=6.75). The coefficient of the dummy variable Stock indicates that if the deal uses stocks as the only method of payment, the probability of the bidder obtaining a fairness opinion increases by 15%. Interestingly, when including the dummy variable T (i.e. the dummy variable that equals one if the bidder issues more than 20% equity) in Model 3, the coefficient of Stock becomes insignificant (t-stat=-0.62), and the coefficient of T is highly significant (t-stat=32.1). The results indicate that if the deal needs bidder shareholders' vote, the probability of the bidder obtaining a fairness opinion increases by 64%. Model 1 shows that the Pseudo R square is 30% if we only include this dummy variable in the probit regression. Including all other independent variables increases the

Pseudo R square by only 4%, indicating that shareholders' vote is the main driving variable of the use of fairness opinions.

The results reported in Table 2.4 also indicate that the observed positive relation between methods of payment and the use of fairness opinions found in prior studies is driven by the positive relation between shareholders' vote and stock payment. To provide additional evidence that the driving factor of using fairness opinions is share- holders' vote instead of methods of payment, I form a subsample that only includes stock deals. The subsample allows a cleaner test of whether bidder shareholders' vote or stock payment drives the use of fairness opinion. If stock payment drives the use of fairness opinion, then in the subsample that only contains stock deals, the dummy variable T should be insignificant. Model 4 to 6 of Table 2.4 report the probit regression results for the stock subsample. The coefficients of Model 4 and Model 6 are 0.64 (t-stat=25.5) and 0.66 (t-stat=24.9), which are very similar to the coefficients obtained from the full sample. These results further illustrate that it is bidder shareholders' vote, not the method of payment, drives bidder use of fairness opinions.

2.5.2 The Use of Fairness Opinions and Deal Outcomes

To provide direct evidence to the wealth effects of fairness opinions in takeover transactions, I examine the choice of fairness opinions and deal outcomes. To make my study comparable to prior studies, I start with simple event study analysis. I then employ OLS regression to control for deal characteristics. I acknowledge that event study and OLS regression results may provide inconsistent estimates because of selection bias. To control for endogeneity, I use RDD approach to estimate the causal effect of the use fairness opinions on deal outcomes.

Event Study Analysis

Table 2.5 reports event study returns for bidders, targets, and also the combined firms. To my knowledge, no studies have examined the effects of the use of fairness opinion on the combined firm wealth, which is a direct indicator of whether the takeover is value creating or value destroying. The abnormal returns are net of market returns for the (-1, +1) event window, where day 0 is the announcement date and the market index is the CRSP value-weighted index. Panel A of Table 2.5 reports the results for the full sample, and Panel B reports returns for subgroups of use of fairness opinions. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1). TargetCAR is target cumulative net of market returns over the event window (-1, +1). CombinedCAR is the weighted average of Bidder CAR and TargetCAR, weighted by equity values (EV) measured one month prior to the merger announcement. Specifically, I follow Houston and Ryngaert (1994), Becher (2000), and Mulherin and Boone (2000) to calculate the cumulative abnormal returns of the combined firm using the following equation:

$$\text{CombinedCAR} = \frac{EV_{target} * CAR_{target} + EV_{bidder} * CAR_{bidder}}{EV_{target} + EV_{bidder}} \quad (2.1)$$

Consistent with Becher, Mulherin, and Walkling (2012), Panel A of Table 2.5 shows that on average, the 3-day announcement returns (BidderCAR) for the merger bidders in my sample have a negative mean (-1.69 %) and median (-1.12 %), and the 3-day announcement returns (CombinedCAR) for the combined firm is positive, with a mean of 1.74% and median of 1.00%. Consistent with prior literature, targets on average experience larger positive abnormal returns around the merger announcements. All

returns are significantly different from zero at the 1% level. The results indicate that on average, takeovers create wealth for the full sample.

Panel B of Table 2.5 compares results for the two subgroups of the use of fairness opinions. "T-value" reports the two-tail t-statistics of two-sample T-tests comparing the means. Consistent with prior studies, the results show that on average, bidders with fairness opinions experience lower announcement returns.[18] The mean return for bidders without fairness opinions is -0.75% and the mean return for bidders with fairness opinions is -3.54%. The difference is 2.79% and highly significant. The average target return is 14.69% if the bidder uses a fairness opinion, compared to an average of 22.28% target return without bidder use of a fairness opinion. The difference is 7.59% and highly significant. The average combined firm return for deals with fairness opinion is 1.23% and statistically significant, indicating that takeovers of this subgroup also create value. However, the average combined firm return of fairness opinion group is still lower than that of non-fairness opinion group. The difference is 0.78% and statistically significant.

While the mean tests in Table 2.5 offer an initial comparison, it is important to note that the average returns do not consider deal characteristics that could also affect announcement returns. In the next section, I employ multivariate regression to control for other factors.

Ordinary Least Squares (OLS) Regression Analysis

In this section, I examine the relation between the use of fairness opinions and various deal outcomes by using a multivariate analysis. It is important to note that the use of fairness opinions is endogenously determined by bidder management. Thus, the

[18] E.g., Chen and Sami (2006), Kisgen, Qian, and Song (2009), and Cain and Denis (2013).

endogeneity issue of the choice of opinions may cause serious bias toward estimates in OLS regressions (Roberts and Whited (2012), and Prabhala and Li (2007)). Nevertheless, I report the OLS regression results for comparison with prior studies. Table 2.6 reports the results of the multiple regression analysis for the full sample.[19]

The dependent variables are Premium for Model 1 to 3, BidderCAR for Model 4 to 6, and CombinedCAR for Model 7 to 9. The major independent variable is FO, a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise. I also control for deal characteristics, year fixed effect, and industry fixed effect in the regression analysis. For estimation methods, I follow Petersen (2009) and Harford, Mansi, and Maxwell (2008) and report t-statistics for the pooled results using standard errors corrected for clustering at the firm level.

Consistent with Kisgen, Qian, and Song (2009), Model 1 to 3 of Table 2.6 show that on average, if bidders obtain fairness opinions in M&A transactions, they pay a lower premium by 3%-5%, indicating that bidders are better off because they pay less to targets.[20] However, Model 4 to 6 show that the use of fairness opinions by bidders leads to a lower bidder announcement return of 2.1% -2.3%. This result is also consistent with prior studies but seems contradict with the finding of a lower premium. Model 7 to 9 show that the use of fairness opinions does not have any impact on the combined firm return, indicating that deals with fairness opinions and deals without fairness opinions are similar in terms of value creating. However, as argued above, OLS estimations have the potential to bias the true treatment effect because of the endogeneity issue. Thus, any

[19] As a robustness check, I also estimate the OLS regressions for the subsample with some equity issuance (with zero equity issuance excluded) and find similar results.

[20] Kisgen, Qian, and Song (2009) show that the use of bidder fairness opinion leads to a reduction of 4.32% in the deal premium compared to deals without a bidder fairness opinion in their merger sample.

interpretations based on the OLS coefficients may be problematic. In the next section, I employ regression discontinuity design as my identification strategy to identify the average treatment effect.

Regression Discontinuity Analysis

In this section, I estimate the causal effect of use of fairness opinions on deal outcomes using a regression discontinuity design (RDD). A firm is considered 'treated' if it obtains a fairness opinion in a takeover transaction. Ideally, we want to compare the deal outcomes for the case that the firm obtains a fairness opinion to a counter- factual setting in which the firm did not obtain a fairness opinion. Unfortunately, it is impossible to observe the outcomes in the counterfactual setting. RDD is a commonly used method to estimate treatment effects in a non-experimental setting.

The intuition behind the RDD is as follows. As shown in Table 2.4, the probability of obtaining a fairness opinion is much higher if the deal needs shareholders' vote and the fact that the NYSE, AMEX and NASDAQ requires that the firm needs to get shareholders' approval if it wants to issue more than 20% of new equity to finance a merger provide good quasi-experiments when we compare firms that are just affected by the rule with firms that are just not affected by the rule. In the case of the use of fairness opinions, RDD takes advantage of a cutoff of 20% equity issuance determining the probability of receiving a fairness opinion. Firms issuing more than 20% equity are much more likely to obtain fairness opinions, compared to firms issuing less than 20% equity, implying there is a discontinuity in the probability of treatment at the cutoff of 20% equity issuance.

Figure 2.2 illustrates the probability of obtaining a fairness opinion by bidders in M&A Transactions. The X axis presents the forcing variable - percentage of share issued by the bidding firm in the transaction. The probability of obtaining a fairness opinion is estimated using the following Probit regression:

$$FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i \quad (2.2)$$

where F O is a dummy variable that equals one if the bidder obtains one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. In untabulated results, I find that the marginal effect of the dummy variable T is 0.48 (t-stat=11.18), indicating an increase of 48% likelihood of obtaining a fairness opinion at the cutoff. The visual evidence presented in Figure 2.2 is compelling: there is indeed a jump of the probability of obtaining a fairness opinion (being treated) at the cutoff of 20% equity issuance.

Since the probability jump at the cut off is not a 0-1 step function, I implement the fuzzy RDD following the standard procedure using two stage least squares. Specifically, I estimate the following regressions:

$$OutComes_i = \alpha + \beta_1 FO_i + \beta_2 PctShrIssued_i + \beta_3 T_i * PctShrIssued_i + \varepsilon_i \quad (2.3)$$

$$FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i \quad (2.4)$$

where FO is the endogenous variable in the outcome equation and the dummy variable T is the instrument. The estimated β1 will be equal to the average treatment effect. Again, the outcome variables include Premium, BidderCAR and CombinedCAR.

As robustness checks, I also include year fixed effects and industry fixed effects in the above specification. While fixed effects are not required for consistent inference in

the RDD, they mitigate concerns that certain years may be different from others and there may be unobserved heterogeneity at the industry level. The results (reported in Table 2.7) show that RDD estimates are essentially unaffected with or without the fixed effects. To account for any potential within-firm dependence over time (i.e. serial bidders), I cluster standard errors at the firm level.

Test for Quasi-Randomized Assignment

A key assumption that RDD relies on is imprecise control (Imbens and Lemieux (2008) and Lee and Lemieux (2010)). This assumption requires that companies can- not precisely control the percent of equity issuance. One concern is that firms might be able to manipulate the percentage of shares issued in the transaction to avoid shareholders' vote. If this is indeed the case, the local continuity assumption may be violated. Thus, it is crucial to examine the ability of manipulating the forcing variable (i.e., percent of equity issued).

Lee and Lemieux (2010) show that as long as firms cannot precisely manipulate the forcing variable, RDD is still valid. On the other hand, if firms are able to precisely manipulate the percent of share issued to avoid shareholders' vote, we would expect the frequency on the left side of the cutoff to be much higher than that on the right side of the cutoff.

Figure 2.3 shows the frequency and density distribution of equity issuance. The bin width is two percent. The frequency distribution does not suggest a jump at the left side of the cutoff. There is also no evidence suggesting a discontinuity of the density at the cutoff. To formally test a discontinuity in the density of the forcing variable (i.e. percent equity issuance), I perform the McCrary (2008) test for discontinuity. The Z

value for the McCrary test is 0.016 (p value=0.95). Thus, I am unable to reject the null of continuity of the density function at the cutoff, suggesting that firms cannot precisely manipulate the percent of shares issued in M&A transactions.

Results

Table 2.7 reports Fuzzy RD estimation for the treatment effects. To alleviate the concerns that cash deals may be systematically different from stock deals, I exclude deals with zero equity issuance in the RD analysis. Models 1 to 3 show that the magnitude of the reduction of premium paid in the transaction is larger, compared to OLS estimations, although none of the coefficients are statistically significant. Models 4 to 6 present evidence that there is a positive treatment effect of the use of fairness opinion on bidder announcement returns, which is opposite to the OLS estimations. Specifically, the results show that if bidders use fairness opinions, on average, the announcement returns are 5.7%-5.8% higher. The estimated treatment effect on the combined firm return is also positive and significant. The results are also economically significant. The median value of the combined firm is $2.9 billion. The coefficients are between 6.0% and 7.0%, indicating that use of fairness opinion creates value by $174 million.

Figure 2.4 shows the RDD graphs for deal premium, Bidder CAR, and the Combined CAR. Several findings are observed. First, the graph of BidderCAR illustrates an upward jump of bidder announcement return at the cutoff point. Second, a negative correlation between percent of share issued and bidder announcement return is observed. Further, the negative slope seems larger at the left side of the cutoff, compared to the slope at the right side of the cutoff. This graph visually explains the negative relation between F O and BidderCAR observed in the OLS regression (reported in Table 2.6).

Since OLS regressions only try to fit the data with a linear line that minimizes the sum of squared errors, a negative slope of the fitted line would be expected if we run a pooled OLS regression of BidderCAR on F O. However, as illustrated in the graph, the negative relation observed in the OLS regression is driven by the high positive correlation between percent of share issued and the use of fairness opinions. The actual treatment effect estimated by RDD is positive and significant. A very similar pattern is observed for the combined firm return.

The results reported in Table 2.7 indicate a positive treatment effect for the use of fairness opinion on both bidder announcement returns and combined firm announcement returns. The positive wealth effect associated with the use of fairness opinion is consistent with the prediction of information hypothesis and is inconsistent with the prediction of agency theory hypothesis.

Balancing Tests and Falsification Tests

In this section, I perform additional tests to check internal validity. I first provide further evidence on the assumption of the local continuity. I then estimate the treatment effects at nearby cutoffs: 15 percent equity issuance and 25 percent equity issuance.

The local continuity assumption implies that firms should be comparable both in terms of observable and unobservable characteristics. Roberts and Whited (2012) suggest testing for balance (i.e., similarity) among the observable characteristics. Lee (2008) suggests that one regress the outcome variable on the vector of observable characteristics and repeat the RDD analysis using the residuals as the outcome variable, instead of the outcome variable itself. Following Lee (2008)'s recommendation, I first

regress the three outcome variables (i.e. Premium, BidderCAR, and CombinedCAR) on all control variables in OLS regressions and use the residuals to repeat RDD analysis.

The RDD results of using residuals at outcome variables are reported in Table 2.8. Again, positive treatment effects on BidderCAR and CombinedCAR are observed. The magnitude of the coefficients are very similar to those reported in Table 2.7. In short, the treatment effect estimates are largely unaffected if the outcome variables are residuals, suggesting that the local continuity assumption is valid.[21]

Roberts and Whited (2012) also suggest looking at the estimated treatment effects for arbitrary cutoffs near the true cutoff. If there is indeed a jump at the true cutoff, the estimate corresponding to the true cutoff should be significantly larger than those at the alternative cutoffs, all of which should be close to zero.

Table 2.9 reports the estimated treatment effects at cutoffs of 15 percent and 25 percent. The results show that there are no statistically significant treatment effects at these nearby cutoffs. In untabulated results, I also use 10 percent and 30 percent as the cutoffs. Again I fail to find any significant treatment effects at these cutoffs.

Robustness Tests

The RDD results presented in previous section use all observations that have some equity issuance. While using all data with equity issuance mitigates power concerns, it may introduce bias into the estimated treatment effect as observations further from the discontinuity are incorporated into the estimation. Imbens and Lemieux (2008) suggest estimating linear specifications on both sides of the threshold while restricting the observations to those falling within a certain distance of the threshold (i.e., bin width).

[21] In untabulated results, I also find the treatment effects are similar if I directly include the additional control variables in the RDD analysis.

As pointed out by Roberts and Whited (2012), too wide a window increases the accuracy of the estimate, by including more observations, but at the risk of introducing bias. Too narrow a window and the reverse occurs. They suggest experimenting with a variety of window widths to illustrate the robustness of the results. In this section, I explore three different bandwidths to estimate the treatment effects: 10, 15, and 20. RDD with a bandwidth of 10 (15) only includes observations with equity issuance between 10 (5) percent and 30 (35) percent. RDD with a bandwidth of 20 only includes observations with positive equity issuance and equity issuance smaller than 40 percent. I estimate the difference at the cutoff of the regression functions to the left and to the right of the cutoff using a triangular kernel. This kernel has been shown to be optimal in estimating such regressions at boundaries (Fan and Gijbels (1996)). The coefficients are estimated via local linear regression with a triangle kernel on each side of the cutoff.

Table 2.10 reports the RDD estimates with different bandwidths. The results show that at all bandwidths, the sign of the outcome variables remain the same, and the magnitudes and significance levels are slightly different. For example, at a band- width of 10, the coefficient of premium is negative and significant. The coefficients of BidderCAR and CombinedCAR are also positive although not significant. This could be caused by the fact that returns are very noisy and with limited number of observations, the statistically power becomes weaker within a relatively narrow bandwidth. The coefficients of BidderCAR and CombinedCAR become statistically significant once the bandwidths are widen to 15 and 20.

Hahn, Todd, and Van der Klaauw (2001) and Ludwig and Miller (2007) suggest relaxing the functional form assumptions by using the nonparametric RDD approach.

This method uses local linear regressions (Fan (1992)) to estimate the left and right limits of the discontinuity, where the difference between the two is the estimated treatment impact. Again, I use triangle kernel to estimate the nonparametric RDD for different bandwidths. I present analytic standard errors derived using the formula from Porter (2003). I also show p-values from a paired-bootstrap percentile-T procedure with 2000 replications, which may offer more accurate asymptotic inference than the analytic standard errors (Cameron and Trivedi (2005)).

Table 2.11 reports the nonparametric RD estimates with different bandwidths. Again, I observe positive treatment effects on bidder announcement returns and the combined firm announcement returns. Although in smaller magnitudes, all coefficients on BidderCAR and CombinedCAR (except the coefficient on BidderCAR with a bandwidth of 15) remain statistically significant.

Figure 2.5 shows the nonparametric RD graphs for the function relating percent share issued to the outcome variables (BidderCAR and CombinedCAR) using a bandwidth of 10, and raw cell means (trangles) and their 95 percent confidence intervals (bars) from grouping the data into five categories on each side of the cutoff. The graphs provide visual evidence of positive treatment effects on bidder announcement returns and also combined firm announcement returns.

In summary, the results reported in Table 2.10 and Table 2.11 provide evidence of positive treatment effects to bidder announcement returns and combined firm announcement returns. No negative treatment effects are observed in any of these specifications. Again, these results are consistent with information hypothesis, and are not consistent with agency theory hypothesis.

Financial Advisors Versus Fairness Opinions

In this section, I provide evidence that the observed positive wealth effects are indeed caused by the use of fairness opinions and are not caused by the use of financial advisors. Obviously, if a firm obtains a fairness opinion, one financial advisor has to be hired in the M&A transaction. In untabulated results, I find that in the sub-sample with equity issuance, 82% of the bidders obtain financial advisors and the correlation between the use of financial advisors and the use of fairness opinions is 0.45. Thus, the observed positive relation between deal outcomes and the use of fairness opinions may be driven by the positive correlation between the use of financial advisors and the use of fairness opinions.

To alleviate this concern, I perform the following two tests. First, I examine whether there is a jump of the probability of using financial advisors at the cutoff of 20 percent equity issuance. Results (untabulated) show a t-value of 0.83, indicating there is no jump of the probability of hiring financial advisors. Second, I form a cleaner sub-sample that excludes transactions that do not hire financial advisors. I then repeat RDD analysis using this sub-sample. If there we still observe a positive treatment effect at the cutoff, then this positive treatment effect should not be confounded by the use of financial advisors since all deals have advisors.

Table 2.12 reports the RDD estimates based on the sub-sample with financial advisors. The results show that for this sub-group, we still observe positive treatment effects on bidder announcement returns and combined firm announcement returns.

My analysis uses net-of-market returns as the estimate of abnormal returns around the takeover announcement. I replicate my analysis using market model returns estimated

over the 170 trading days ending 10 days before the announcement, using the CRSP daily value-weighted index as a proxy for the market index. The results are similar to the results for the net-of market returns reported in the tables.

Other than 3-day event window over (-1, +1) around merger announcements, I also compute 5-day event window over (-2, +2) and 11-day event window over (-5, +5). Both the magnitudes and significance levels are not affected using these alternative event windows. Thus, my results are robust to different event windows as well as alternative measure of abnormal returns.

2.6 Conclusion

Using a comprehensive hand-collected data, this paper examines the use of fairness opinions by bidders in M&A transactions over the period 1996-2011. Specifically, I examine the determinants of the use of fairness opinions and the impact of fairness opinions on deal premium, bidder abnormal returns, and the combined firm abnormal returns to differentiate two competing hypotheses: the agency theory hypothesis and the information hypothesis. During the 1996-2011 sample period, 33.7% of the bidders obtain fairness opinions in takeover transactions.

I first document that a bidder is more likely to obtain a fairness opinion if the deal needs shareholders' approval (i.e., the bidder needs to issue more than 20% equity to finance the merger). I find a discontinuity in the probability of obtaining a fairness opinion at a cutoff of 20% equity issuance. The results indicate that firms use fairness opinions to communicate with shareholders and persuade shareholders to approve the issuance of new equity to finance the merger.

After identifying the jump of probability of obtaining fairness opinions at the cutoff of 20% equity issuance, I employ a regression discontinuity design (RDD) to estimate the causal effect of the use of fairness opinions on deal outcomes. Prior studies in general show a negative relation between the use of fairness opinions by bidders and bidder announcement returns. However, my results show that OLS estimates are biased because of the selection issue. After controlling for endogeneity, RDD estimates show a positive and significant impact of the use of fairness opinion on both bidder announcement returns and the combined firm announcement returns. The results are robust to different event windows of estimating announcement returns and alternative methodology of estimating abnormal returns.

My analyses provide new evidence to the wealth effects of the use of fairness opinions by bidders. The empirical evidence provided in this study indicates that, on average, bidder management obtains fairness opinions to provide extra information to shareholders. The main evidence provided in this study is consistent with the information hypothesis and not consistent with the agency theory hypothesis since the use of fairness opinions has positive impacts on bidder shareholders' wealth and also the combined firm wealth. There are probably some transactions that bidder management may use fairness opinions to entrench themselves, but they are dominated by cases where providing information to its shareholders is the main motivation for the management to seek fairness opinions.

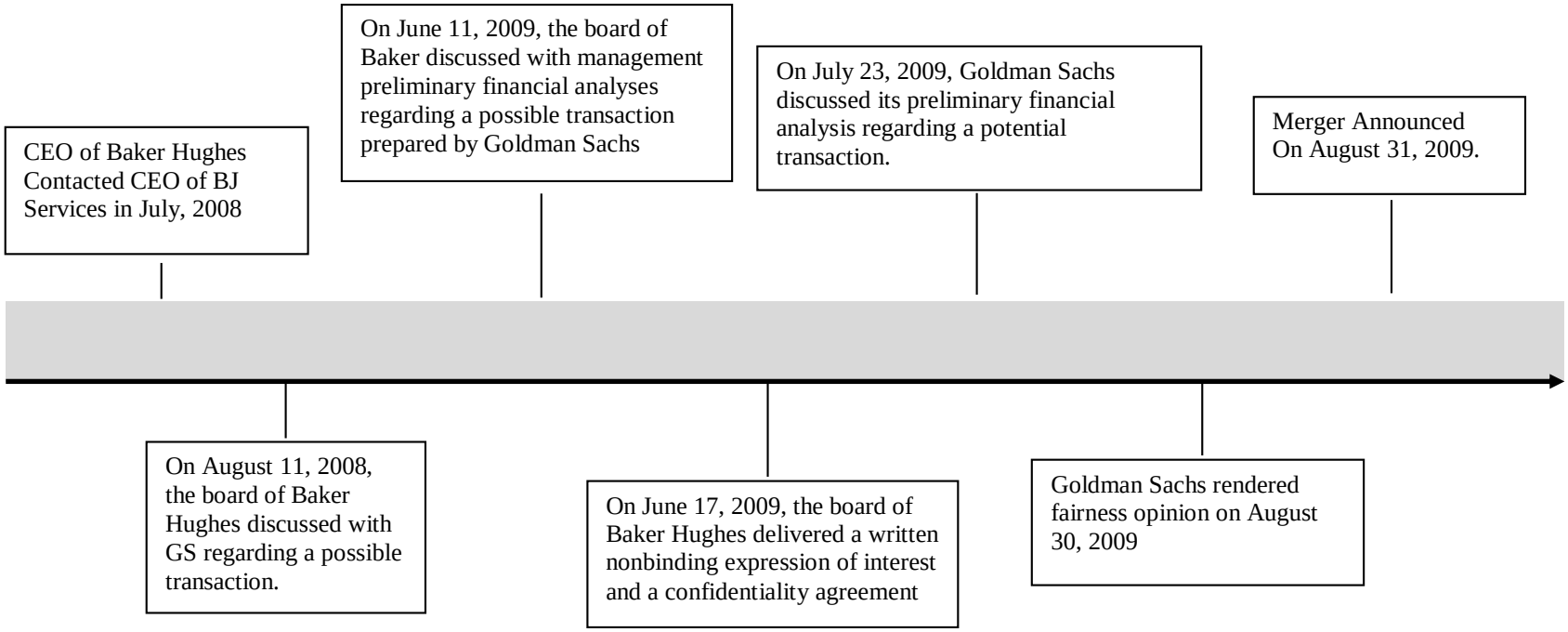


Figure 2.1: A Typical Timeline of a Merger Negotiation Process
This figure displays the negotiation process of the merger between Backer Hughes (the bidder) and BJ Services (the target). This timeline indicates the date when the deal was initiated, dates when financial advisors were contacted, the date when fairness opinions were delivered and the date of the merger announcement. The information is from the archive of historical EDGAR documents, FORM S-4, background of the merger section.

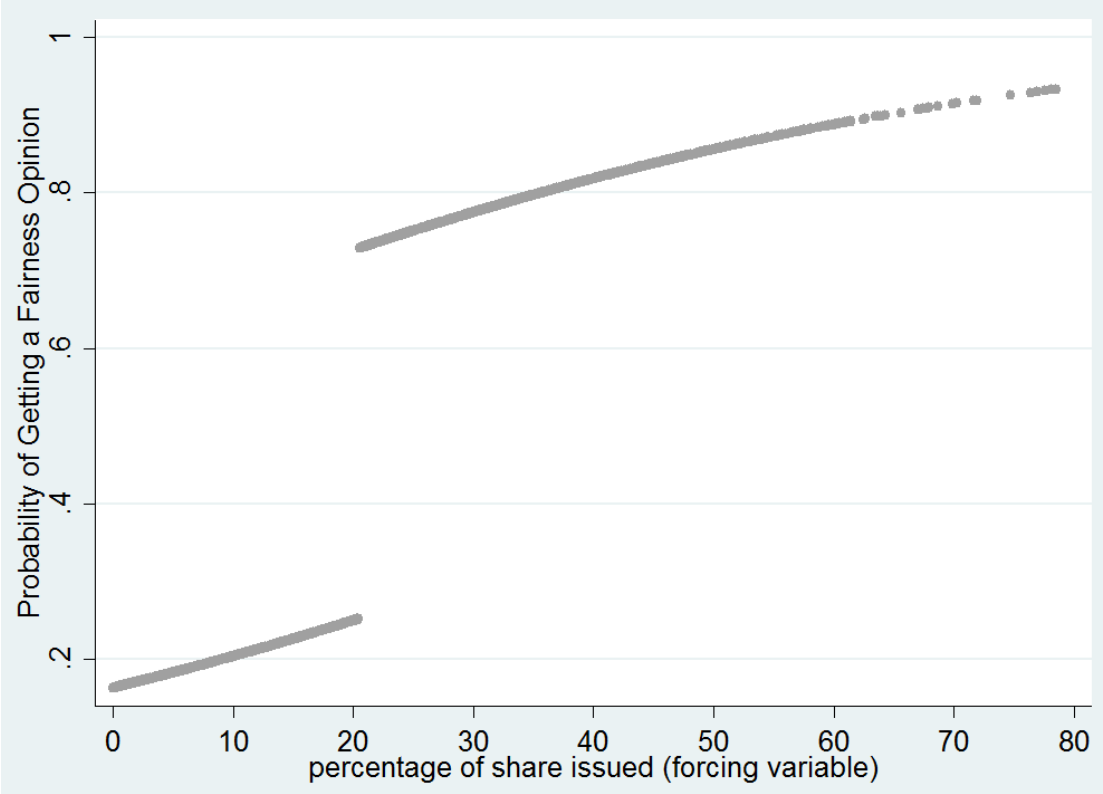


Figure 2.2: Probability of Obtaining a Fairness Opinion by Bidders in M&A Transactions This figure shows the probability of obtaining a fairness opinion by bidders in M&A Transactions. The X-axis presents the forcing variable - percentage of share issued by the bidding firm in the transaction. The predicted probability is the fitted value of the following probit regression:$FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i$, where FO is a dummy variable that equals one if the bidder obtains one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded).

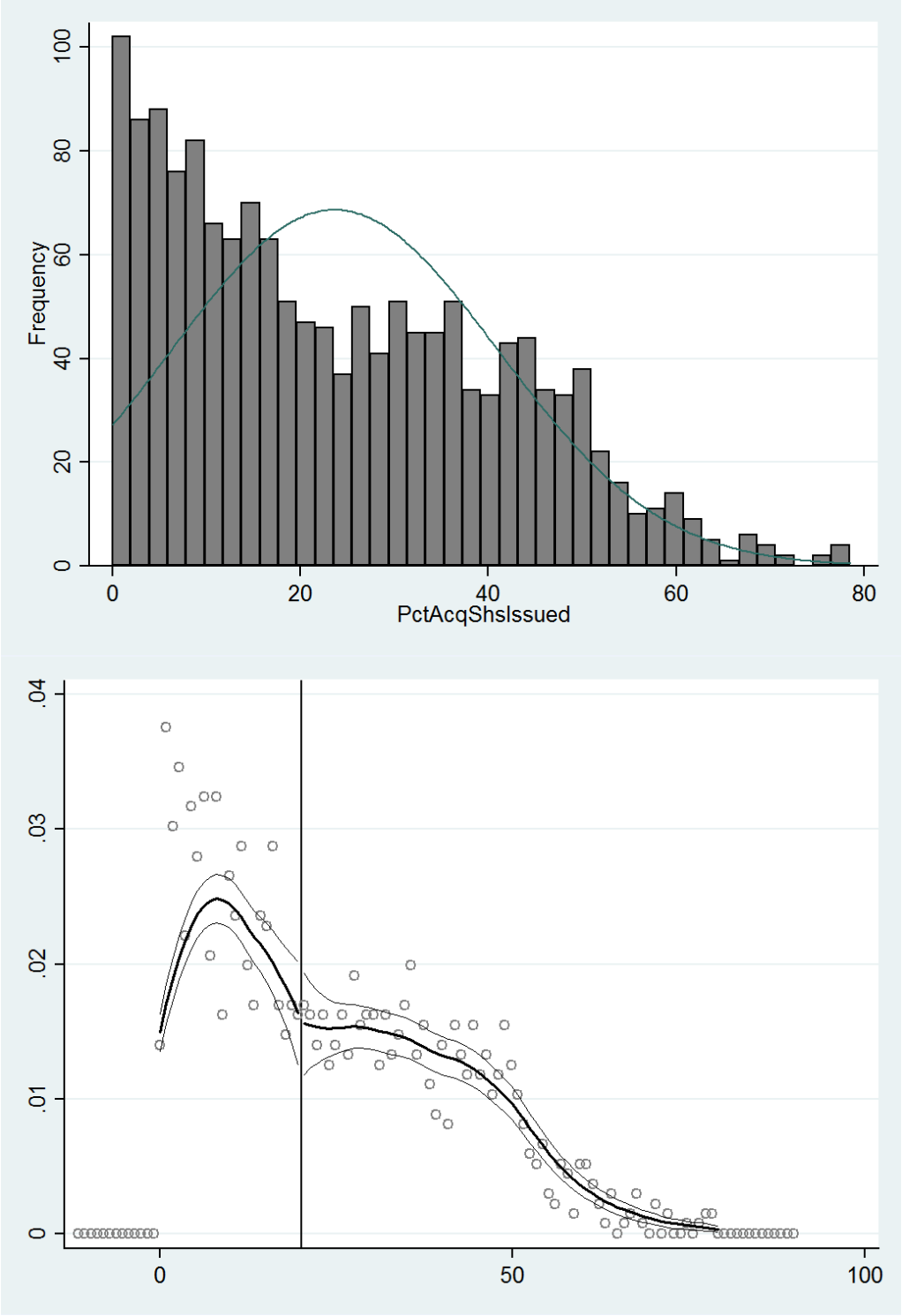
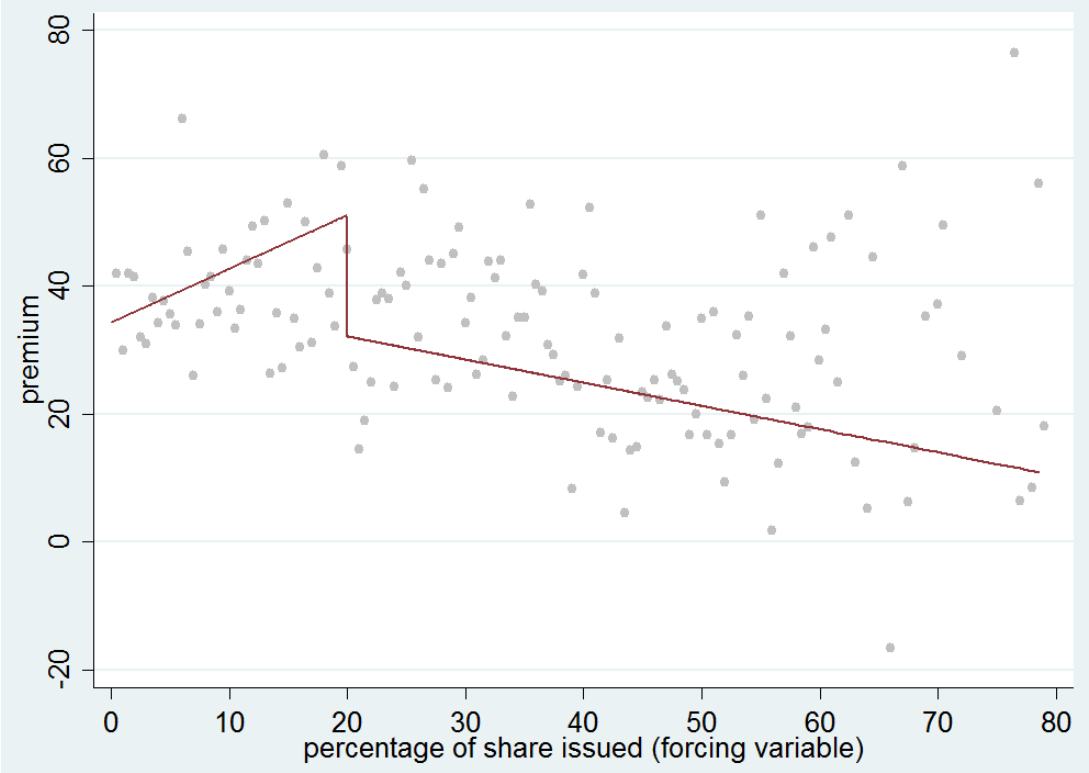
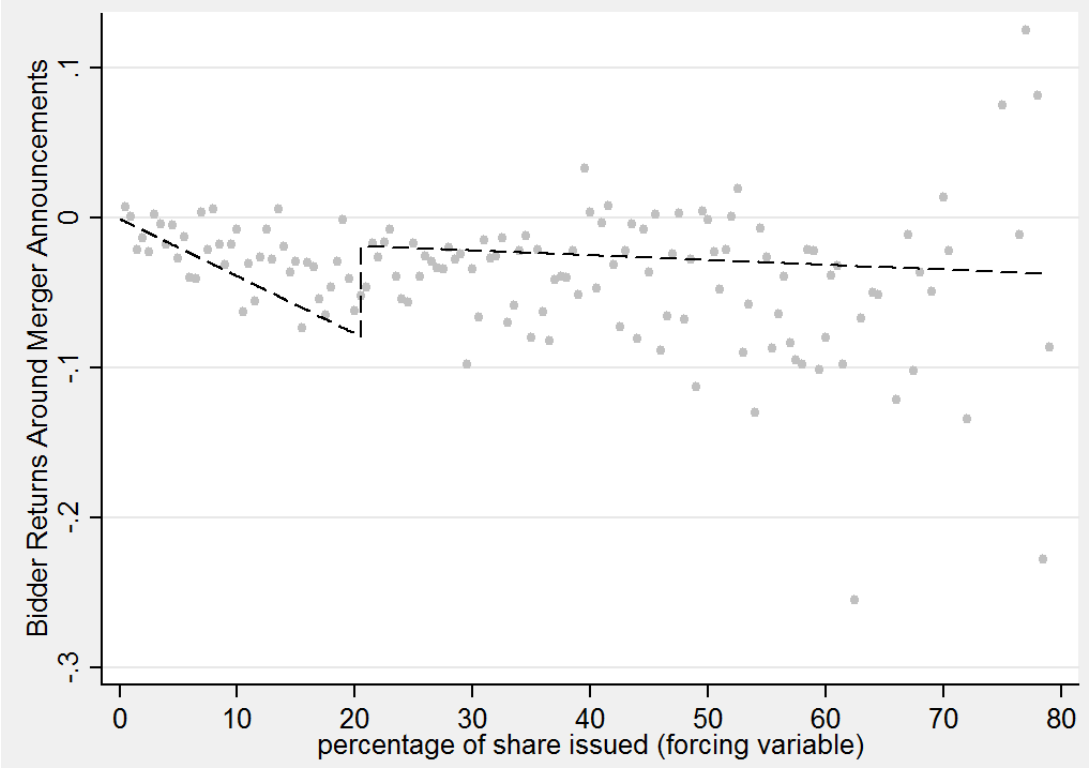


Figure 2.3: Frequency Distribution of Equity Issuance
This figure shows the frequency and density distribution of equity issuance by bidders in M&A transactions. The bin width is 2 percent. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded) .


premium
-20
0
20
40
60
80
0
10
20
30
40
50
60
70
80
percentage of share issued (forcing variable)


Bidder Returns Around Merger Announcements
-.3
-.2
-.1
0
.1
0
10
20
30
40
50
60
70
80
percentage of share issued (forcing variable)

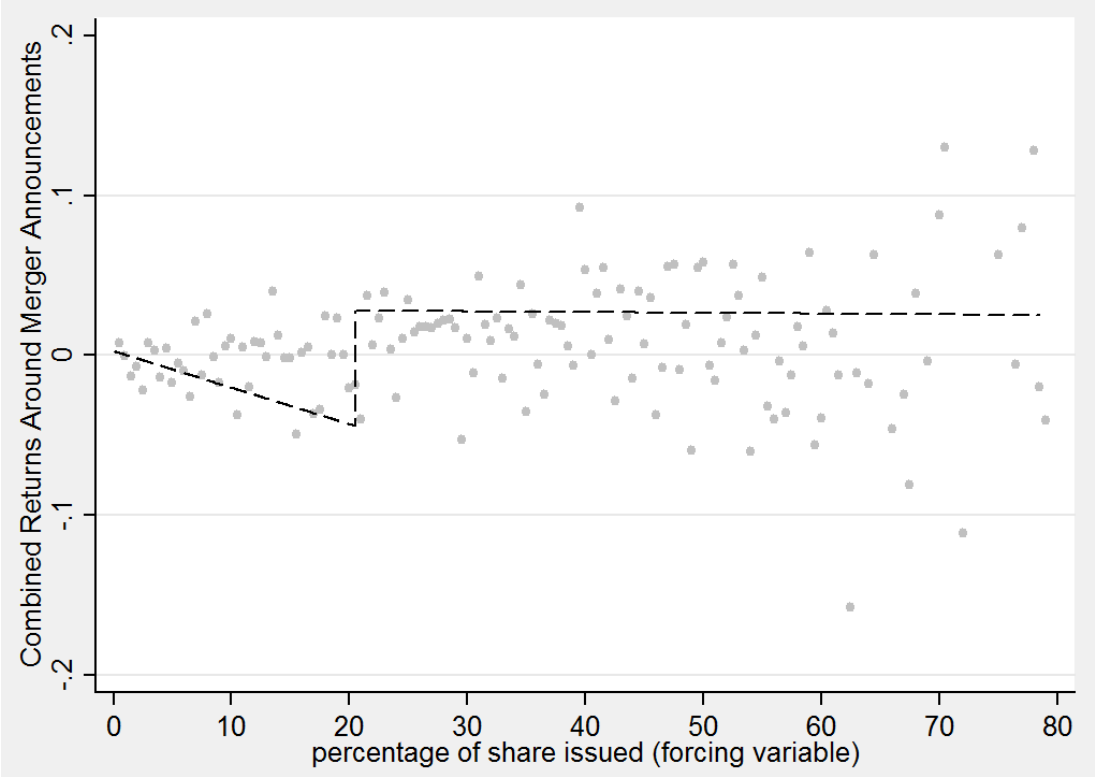


Figure 2.4: RD Graphs for Transaction Outcomes

This figure shows the RD graphs for deal premium, bidder cumulative abnormal returns (Bidder CAR), and the combined firm cumulative abnormal returns (Combined CAR). Premium is the percentage difference between the offer price and target share price four weeks prior to the announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded).

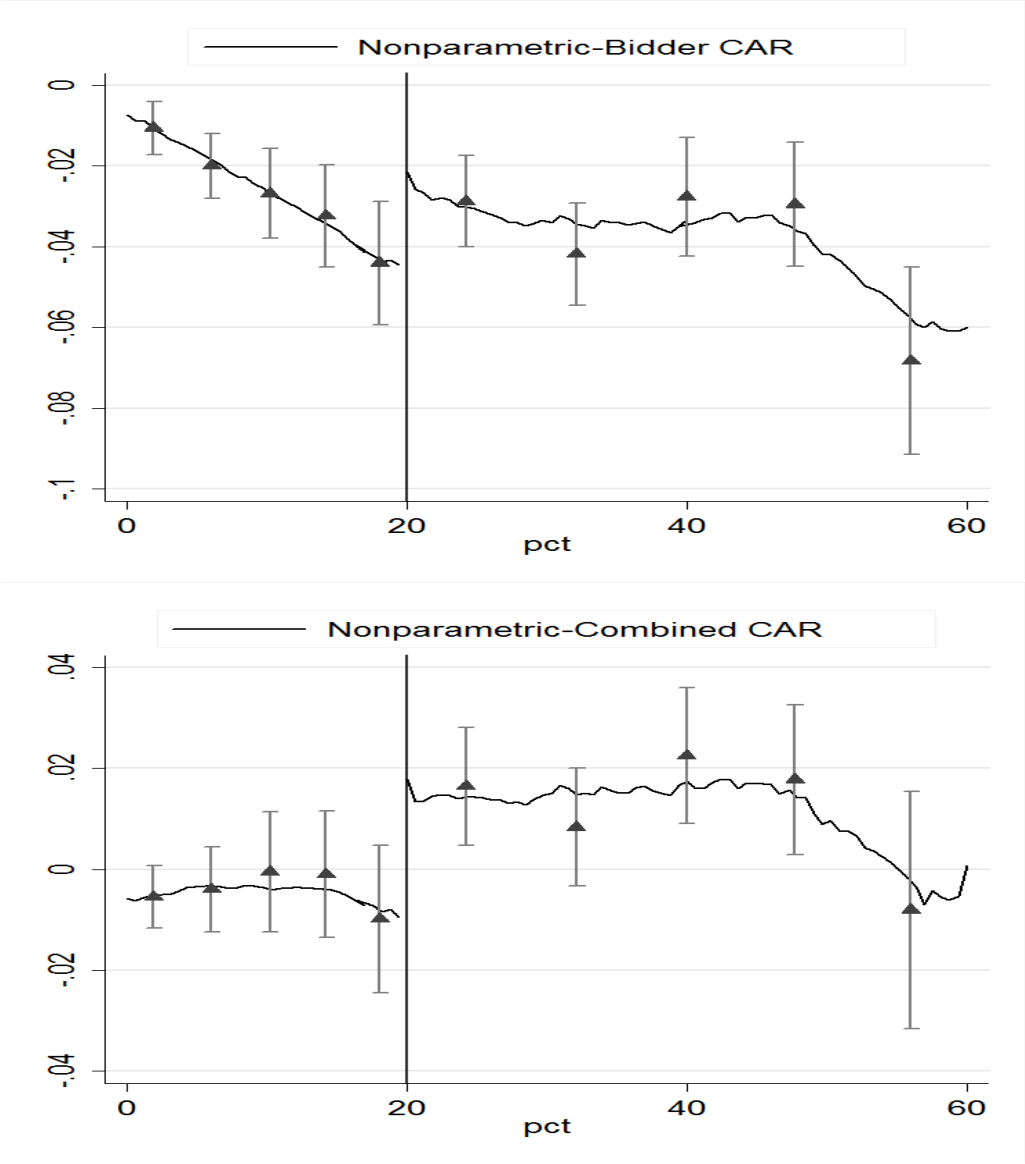


Figure 2.5: RD Graphs for Transaction Outcomes-Nonparametric Approach
This figure shows the RD graphs based on nonparametric estimation for the function relating percent share issued to the outcome variables (BidderCAR and CombinedCAR) using a bandwidth of 10, and raw cell means (triangles) and their 95 percent confidence intervals (bars) from grouping the data into five categories on each side of the cutoff. BidderCAR is cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values one month prior to the merger announcement. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded).

Table 2.1: Implications of Testable Hypotheses

This table details two testable hypotheses as to why bidders choose to obtain fairness opinions in M&A deals: the agency theory hypothesis and the information hypothesis. The agency theory hypothesis predicts that if the bidder obtains a fairness opinion, the premium paid to the target should be higher compared to firms without fairness opinions, and the announcement returns to the bidder and also the combined firm should be negative. The information hypothesis predicts that the premium paid to the target should be lower compared to firms without fairness opinions, and the announcement returns to the bidder and the combined firm should be non-negative.

	Agency Hypothesis	Information Hypothesis
Premium Paid to Target	Higher	Lower
Bidder Announcement Returns	Negative	Non-negative
Combined Firm Announcement Returns	Negative	Non-negative

Table 2.2: Sample Selection and Sample Distribution

This table reports the sample formation process of the sample to be used in the empirical study and sample distribution by year. Panel A describes the sample period, sample selection criteria, the number of observations, and the source of the data. Panel B reports the number of deals per year. Observations are placed in the year of announcement. In Panel B, data are reported for the full sample and for subgroups of the use of fairness opinions. FO means the bidder obtains at least one fairness opinion. Panel B also provides comparisons of the data on the use of fairness opinions hand collected from Securities and Exchange Commission (SEC) merger documents with the fairness opinion data reported on Securities Data Corporation (SDC). Difference is the percent difference of use of fairness opinion between the SEC and SDC data by year.

Panel A: Sample Selection

Data selection criteria	**Data Source**	**N of Observations**
M&A between 1996-2011 & & Deal Value >= 20 millions	SDC	41,999
Deal Status: Complete, Withdrawal	SDC	33,435
Percent of Shares Sought >= 50	SDC	28,920
Public targets	SDC	6,815
Public Acquiror	SDC	4,574
Target Share Price 1 Day Prior to Announcement >=$5	SDC	3,520
Both target and bidder return available on CRSP &Merger files available on EDGAR SEC website	CRSP, SEC filings	2,768

Panel B: Sample Distribution By Year						
Year	**N of Transactions**	**N of FO (Hand Collected)**	**Percent**	**N of FO (SDC)**	**Percent**	**Difference**
1996	213	87	40.8%	63	29.6%	11.3%
1997	349	134	38.4%	94	26.9%	11.5%
1998	303	116	38.3%	47	15.5%	22.8%
1999	369	104	28.2%	77	20.9%	7.3%
2000	289	79	27.3%	25	8.7%	18.7%
2001	180	60	33.3%	31	17.2%	16.1%
2002	82	23	28.0%	6	7.3%	20.7%
2003	111	36	32.4%	28	25.2%	7.2%
2004	144	61	42.4%	50	34.7%	7.6%
2005	134	41	30.6%	38	28.4%	2.2%
2006	147	45	30.6%	44	29.9%	0.7%
2007	157	47	29.9%	45	28.7%	1.3%
2008	89	29	32.6%	28	31.5%	1.1%
2009	62	22	35.5%	21	33.9%	1.6%
2010	78	27	34.6%	25	32.1%	2.6%
2011	61	23	37.7%	22	36.1%	1.6%
Total	2,768	934	33.7%	644	23.3%	10.5%

Table 2.3: Summary Statistics

This table presents summary statistics of the M&A deals between the sample periods 1996-2011. Panel A reports the summary statistics for the full sample. Panel B reports the summary statistics for subgroups of use of fairness opinions. Panel C presents the summary statistics for subgroups of use of financial advisors. BidderSize is bidder's equity values in $ million, measured as stock price*shares outstanding, estimated 30 days prior to announcement. DealSize is the transaction value. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. PctShrIssued is the percent of share issued by the bidder in the transaction. Compete is a dummy variable that equals one if there is more than one public bidder, and zero otherwise. Friendly is a dummy variable that equals one if the deal attitude is friendly, and zero otherwise. SameIndustry is a dummy variable that equals one if the target and bidder are from the same industry (with the same first two-digit of SIC Code), and zero otherwise. The last two columns of Panel B and C report the difference of summary statistics and t-values between the subgroups.

Panel A: Summary Statistics for Full Sample

	Mean	P25	Median	P75	Stand. Dev.
BidderSize	15,516	648	2,513	10,138	40,154
DealSize	2,444	153	454	1,623	7,807
Premium(%)	38.05	16.79	32.74	53.63	32.73
PctShrIssued(%)	13.02	0.00	2.75	23.20	17.45
Compete(%)	7.80	0.00	0.00	0.00	26.83
Friendly(%)	93.86	100.00	100.00	100.00	24.01
SameIndustry(%)	59.10	0.00	100.00	100.00	49.17

Panel B: Summary Statistics for Sub-Samples of Use of Fairness Opinions

	Fairness Opinion=0		Fairness Opinion=1		FO-NoFO	
	N=1834		N=934			
	Mean	Median	Mean	Median	Difference	t-value
BidderSize	19,295	3,576	8,095	1,230	-11,200	7.00
DealSize	1,594	379	4,114	807	2,520	8.12
Premium(%)	40.32	34.97	33.59	27.64	-6.73	-5.14
PctShrIssued(%)	5.73	0.00	27.32	28.32	21.58	37.93
Compete(%)	9.16	0.00	5.14	0.00	-4.02	-3.74
Friendly(%)	91.44	100.00	98.61	100.00	7.17	7.50
SameIndustry(%)	56.11	100.00	64.99	100.00	8.88	4.50

Panel C: Summary Statistics for Sub-Samples of Use of Financial Advisors						
	Financial Advisor=0		Financial Advisor=1		Advisor-NoAdvisor	
	N=603		N=2165			
	Mean	Median	Mean	Median	Difference	t-value
BidderSize	20,249	2,798	14,197	2,429	-6,052	-3.28
DealSize	435	148	3,004	659	2,569	7.21
Premium(%)	40.07	33.33	37.49	32.42	-2.56	-1.71
PctShrIssued(%)	4.02	0.00	15.52	7.69	11.50	14.87
Compete(%)	6.30	0.00	8.22	0.00	1.92	1.55
Friendly(%)	91.87	100.00	94.41	100.00	2.54	2.30
SameIndustry(%)	56.22	100.00	59.91	100.00	3.69	1.63

Table 2.4: Probit Regression Analysis-Determinants of the Use of Fairness Opinions
This table reports Probit regression analysis of the determinants of the use of fairness opinions by bidders. The dependent variable is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise. Model 1 to 3 report the Probit regressions for the full sample and Model 4 to 6 report the Probit regressions for the sub-sample that uses stocks as the only method of payment. T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, zero otherwise. Ln(DealSize) is the natural logarithm of the transaction value. RelativeSize is defined as the ratio of transaction value to bidder size, where bidder size is measured as stock price*shares outstanding, estimated 30 days prior to announcement. Stock is a dummy variable that equals one if the deal uses stocks as the only method of payment, and zero otherwise. Toehold is dummy variable that equals one if the share held by bidder at merger announcement is larger than 5%, and zero otherwise. Compete is a dummy variable that equals one if there is more than one bidder reported by SDC, and zero otherwise. Friendly is a dummy variable if the deal attitude is friendly indicated by SDC, and zero otherwise. SameIndustry is a dummy variable equals one if the target and bidder are from the same industry (with the same first two-digit of SIC Code), and zero otherwise. TenderOffer is a dummy variable that equals one if the deal has a tender offer, and zero otherwise. The sample period is from 1996 to 2011. Standard errors are estimated with clustered errors at the firm level. Marginal effects (rather than coefficients) are reported. Z-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
T	0.656***		0.640***	0.635***		0.657***
	(39.61)		(32.10)	(25.55)		(24.96)
Ln(DealSize)		0.067***	0.035***		0.054***	0.021*
		(10.41)	(4.96)		(4.88)	(1.73)
RelativeSize		0.000	-0.000		0.070	0.023
		(0.26)	(-0.22)		(1.24)	(1.25)
Stock		0.150***	-0.014			
		(6.76)	(-0.62)			
Toehold		-0.052	0.034		0.070	0.122
		(-0.94)	(0.47)		(0.61)	(0.85)
Compete		-0.070*	-0.129***		-0.123	-0.259***
		(-1.90)	(-3.24)		(-1.60)	(-3.57)
Friendly		0.256***	0.279***		0.423***	0.455***
		(9.79)	(11.50)		(10.70)	(18.85)
Sameindustry		0.071***	0.044**		0.068**	0.044
		(3.36)	(2.06)		(1.96)	(1.20)
Tenderoffer		-0.229***	-0.132***		-0.289***	-0.127
		(-10.29)	(-4.59)		(-2.64)	(-0.82)
Pseudo R2	0.30	0.11	0.34	0.32	0.07	0.37
Observations	2,768	2,768	2,768	1,084	1,084	1,084

Table 2.5: Event Study Analysis: Event Window (-1, +1)

This table reports event study returns for bidders and also the combined firms. Panel A reports the results for the full sample and Panel B reports returns for subgroups of use of fairness opinions. BidderCAR (TargetCAR) is bidder (target) cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. Panel B also compares BidderCAR and CombinedCAR for the two subgroups by the use of fairness opinions. The sample period is from 1996 to 2011. T-Value reports the t value for a t-test of the null that the mean difference equals zero.

Panel A: Announcement Returns for the Full Sample: Event Window (-1, +1)

	Mean	P25	Median	P75	t-value	% Positive
Bidder CAR	-1.69%	-5.03%	-1.12%	1.73%	-12.54	39.45%
Target CAR	19.71%	6.34%	16.34%	29.20%	49.77	87.90%
Combined CAR	1.74%	-1.88%	1.00%	4.98%	12.43	58.42%

Panel B: Announcement Returns for the Sub-Sample of Use of Fairness Opinions

Fairness Opinions: No (N=1,834)

	Mean	P25	Median	P75	t-value	% Positive
Bidder CAR	-0.75%	-3.54%	-0.65%	1.99%	-5.25	43.46%
Target CAR	22.28%	8.22%	18.51%	32.29%	43.59	90.19%
Combined CAR	2.00%	-1.47%	1.14%	4.70%	12.54	60.03%

Fairness Opinions: Yes (N=934)

	Mean	P25	Median	P75	t-value	% Positive
Bidder CAR	-3.54%	-8.05%	-2.95%	1.11%	-12.85	31.58%
Target CAR	14.69%	2.92%	12.71%	22.87%	25.53	83.40%
Combined CAR	1.23%	-2.69%	0.73%	5.38%	4.52	55.25%

Tests of Equal mean (FO-NoFO)

	Difference	T-value
Bidder CAR	-2.79%	-9.97
Target CAR	-7.59%	-9.19
Combined CAR	-0.78%	-2.63

Table 2.6: OLS Regression Analysis

This table reports OLS regression analysis. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement. BidderCAR is the bidder cumulative net of market returns over (-1, +1), where day 0 is the announcement date. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. FO is a dummy variable that equals one if the bidder obtains one fairness opinion, and zero otherwise. Ln(DealSize) is the natural logarithm of the transaction value. RelativeSize is the ratio of transaction value to bidder size. Stock is a dummy variable that equals one if the deal only uses stocks, and zero otherwise. Toehold is dummy variable that equals one if the share held by bidder at merger announcement is larger than 5%, and zero otherwise. Compete is a dummy variable that equals one if there is more than one bidder, and zero otherwise. Friendly is a dummy variable that equals one if the deal attitude is friendly, and zero otherwise. SameIndustry is a dummy variable equals one if the target and bidder are from the same industry, and zero otherwise. TenderOffer is a dummy variable that equals one if the deal has a tender offer, and zero otherwise. Standard errors are estimated with clustered errors at the firm level. T-statistics are reported in parentheses.

Dep. Var.	Premium			Bidder CAR			Combined CAR		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FO	-4.565***	-3.976***	-3.463**	-0.021***	-0.023***	-0.023***	0.002	0.000	0.000
	(-3.28)	(-2.88)	(-2.48)	(-6.43)	(-7.02)	(-6.82)	(0.53)	(0.13)	(0.03)
Ln(DealSize)	-0.094	-0.090	-0.315	-0.004***	-0.004***	-0.004***	0.000	0.000	-0.001
	(-0.23)	(-0.23)	(-0.70)	(-4.64)	(-4.28)	(-4.71)	(-0.40)	(-0.49)	(-0.89)
RelativeSize	0.001	-0.023	0.014	0.000	0.000	0.000	0.001***	0.001***	0.001***
	(0.02)	(-0.79)	(0.39)	(0.89)	(1.30)	(1.17)	(3.87)	(3.95)	(4.03)
Stock	2.032	-0.867	-1.217	-0.014***	-0.011***	-0.007**	-0.021***	-0.020***	-0.016***
	(1.43)	(-0.61)	(-0.86)	(-4.41)	(-3.45)	(-2.22)	(-6.94)	(-6.12)	(-4.80)
Toehold	-3.099	-3.359	-3.337	0.007	0.006	0.005	0.003	0.003	0.001
	(-0.85)	(-0.93)	(-0.89)	(1.09)	(1.03)	(0.85)	(0.41)	(0.35)	(0.18)
Compete	6.617**	6.071**	5.252*	0.001	-0.000	-0.002	-0.004	-0.005	-0.007
	(2.34)	(2.18)	(1.85)	(0.20)	(-0.07)	(-0.43)	(-0.69)	(-0.89)	(-1.23)
Friendly	3.098	2.234	1.616	0.002	0.002	0.002	-0.024***	-0.024***	-0.024***
	(1.21)	(0.92)	(0.66)	(0.28)	(0.36)	(0.42)	(-4.13)	(-4.11)	(-4.14)
Sameindustry	-0.156	-0.053	0.139	-0.007***	-0.005*	-0.003	-0.005	-0.003	-0.001
	(-0.12)	(-0.04)	(0.11)	(-2.64)	(-1.81)	(-1.10)	(-1.60)	(-1.10)	(-0.44)
Tenderoffer	14.370***	11.984***	8.860***	0.006	0.008**	0.009**	0.018***	0.019***	0.019***
	(7.94)	(6.80)	(4.73)	(1.65)	(2.14)	(2.42)	(4.51)	(4.60)	(4.39)
Year/Industry Effect	No/No	Yes/No	Yes/Yes	No/No	Yes/No	Yes/Yes	No/No	Yes/No	Yes/Yes
Observations	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768	2,768
R-squared	0.035	0.072	0.117	0.054	0.077	0.109	0.07	0.081	0.11

Table 2.7: Regression Discontinuity Analysis

This table reports Fuzzy RD estimation using the following two stage least squares: $OutComes_i = \alpha + \beta_1 FO_i + \beta_2 PctShrIssued_i + \beta_3 T_i * PctShrIssued_i + \varepsilon_i$ and $FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i$, where FO is the endogenous variable in the outcome equation and the dummy variable T is the instrument. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded). The outcome variables include Premium in Model 1 to 3, BidderCAR in Model 4 to 6, and CombinedCAR in Model 7 to 9. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. FO is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. T*PctShrIssued is an interaction term between T and PctShrIssued. Year fixed effects and industry (at two-digit SIC level) fixed effects are included in some specifications. Standard errors are estimated with clustered errors at the firm level. T-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Premium			Bidder CAR			Combined CAR		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FO	-14.022	-16.347	-13.759	0.058**	0.057**	0.057**	0.070**	0.067**	0.070**
	(-1.17)	(-1.41)	(-1.22)	(2.03)	(2.03)	(2.09)	(2.42)	(2.39)	(2.53)
PctShrIssued	0.609	0.790	0.661	-0.004***	-0.004***	-0.004***	-0.002*	-0.002*	-0.002*
	(1.13)	(1.53)	(1.31)	(-3.11)	(-3.29)	(-3.30)	(-1.78)	(-1.85)	(-1.95)
T_PctShrIssued	-0.992*	-1.186**	-1.035**	0.003***	0.003***	0.003***	0.002*	0.002*	0.002*
	(-1.82)	(-2.26)	(-2.04)	(2.91)	(3.10)	(2.98)	(1.81)	(1.87)	(1.86)
Constant	47.902***	51.232***	54.676***	-0.074***	-0.058***	-0.048	-0.038**	-0.030	0.013
	(5.73)	(5.88)	(5.41)	(-3.90)	(-2.87)	(-1.41)	(-2.00)	(-1.51)	(0.31)
Year Fixed Effect	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525

Table 2.8: Regression Discontinuity Analysis: Using Residuals as Outcome Variables

This table reports Fuzzy RD estimation using the following two stage least squares: $Residual\_OutComes_i = \alpha + \beta_1 FO_i + \beta_2 PctShrIssued_i + \beta_3 T_i * PctShrIssued_i + \varepsilon_i$ and $FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i$, where FO is the endogenous variable in the outcome equation and the dummy variable T is the instrument. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded). The outcome variables include Premium in Model 1 to 3, BidderCAR in Model 4 to 6, and CombinedCAR in Model 7 to 9. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. FO is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. T*PctShrIssued is an interaction term between T and PctShrIssued. Year fixed effects and industry (at two-digit SIC level) fixed effects are included in some specifications. Standard errors are estimated with clustered errors at the firm level. T-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Premium_Residual			Bidder CAR_Residual			Combined CAR_Residual		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FO	-15.833	-18.242	-16.355	0.062**	0.060**	0.063**	0.077***	0.074**	0.079***
	(-1.28)	(-1.51)	(-1.32)	(2.19)	(2.15)	(2.18)	(2.61)	(2.55)	(2.61)
PctShrIssued	0.717	0.896	0.779	-0.004***	-0.004***	-0.004***	-0.003**	-0.003**	-0.003**
	(1.26)	(1.63)	(1.41)	(-2.90)	(-2.99)	(-2.95)	(-2.10)	(-2.12)	(-2.13)
T_PctShrIssued	-1.122**	-1.311**	-1.177**	0.003***	0.003***	0.003***	0.003**	0.002**	0.002**
	(-1.96)	(-2.39)	(-2.15)	(2.72)	(2.82)	(2.66)	(2.09)	(2.08)	(2.04)
Constant	15.682*	18.218*	20.556**	-0.050**	-0.036*	-0.028	-0.053**	-0.042*	-0.009
	(1.67)	(1.94)	(1.98)	(-2.38)	(-1.66)	(-0.86)	(-2.47)	(-1.92)	(-0.27)
Year Fixed Effect	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525

Table 2.9: Regression Discontinuity Analysis: Falsification Tests

This table reports Fuzzy RD estimation for cutoffs of 15 and 25 percent of equity issuance using the following two stage least squares: $OutComes_i = \alpha + \beta_1 FO_i + \beta_2 PctShrIssued_i + \beta_3 T_i * PctShrIssued_i + \varepsilon_i$ and $FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i$, where FO is the endogenous variable in the outcome equation and the dummy variable T is the instrument. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded). The outcome variables include Premium in Model 1 to 3, BidderCAR in Model 4 to 6, and CombinedCAR in Model 7 to 9. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. FO is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. T*PctShrIssued is an interaction term between T and PctShrIssued. Year fixed effects and industry (at two-digit SIC level) fixed effects are included in some specifications. Standard errors are estimated with clustered errors at the firm level. T-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Premium			Bidder CAR			Combined CAR		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cutoff=15									
FO	-5.411	-7.568	-3.804	-0.010	-0.006	-0.006	-0.006	-0.001	0.000
	(-0.68)	(-1.00)	(-0.50)	(-0.62)	(-0.36)	(-0.35)	(-0.34)	(-0.05)	(0.03)
Cutoff=25									
FO	-15.119	-29.499	-13.667	0.176	0.183	0.166	0.152	0.141	0.137
	(-0.34)	(-0.66)	(-0.33)	(1.21)	(1.26)	(1.25)	(1.11)	(1.08)	(1.12)
Year Fixed Effect	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525

Table 2.10: Regression Discontinuity Analysis with Different Bandwidths
This table reports Fuzzy RD estimates of the difference at the cutoff of the regression functions to the left and to the right of the cutoff. The coefficients are estimated via local linear regression with a triangle kernel on each side of the cutoff. The outcome variables include Premium, BidderCAR, and CombinedCAR. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. The sample period is from 1996 to 2011. P values are displayed in the table. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Bandwidth=10 N=550	Bandwidth=15 N=855	Bandwidth=20 N=1198
Outcome Variable=Premium			
Coefficient	-30.38**	-20.096*	-14.621
Std. Err.	13.51	11.48	9.81
P-value	0.02	0.08	0.13
Outcome Variable=Bidder CAR			
Coefficient	0.048	0.047*	0.043*
Std. Err.	0.03	0.03	0.02
P-value	0.16	0.08	0.06
Outcome Variable=Combined CAR			
Coefficient	0.046	0.05*	0.045**
Std. Err.	0.04	0.03	0.02
P-value	0.19	0.079	0.05

Table 2.11: Nonparametric Regression Discontinuity Analysis with Different Bandwidths
This table reports nonparametric RD estimates based on the local kernel regression method to estimate the left and right limits of the discontinuity, where the difference between the two is the estimated treatment impact. The outcome variables include Premium, BidderCAR, and CombinedCAR. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. The sample period is from 1996 to 2011 and only includes deals that issue some equity (with zero equity issuance excluded). Analytic standard errors are reported and percentile-T bootstrapped P values are also displayed. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Bandwidth=10 N=1525	Bandwidth=15 N=1525	Bandwidth=20 N=1525
Outcome Variable=Premium			
Coefficient	-9.185	-4.841	-4.163
Std. Err.	6.68	5.29	4.57
P-value	0.17	0.361	0.363
Outcome Variable=Bidder CAR			
Coefficient	0.026*	0.018	0.017*
Std. Err.	0.015	0.011	0.01
P-value	0.07	0.12	0.091
Outcome Variable=Combined CAR			
Coefficient	0.03**	0.021*	0.017*
Std. Err.	0.014	0.012	0.009
P-value	0.039	0.06	0.08

Table 2.12: Regression Discontinuity Analysis: Subsample with Financial Advisors

This table reports Fuzzy RD estimation for the subsample with financial advisors (deals with zero financial advisor is excluded) using the following two stage least squares: $OutComes_i = \alpha + \beta_1 FO_i + \beta_2 PctShrIssued_i + \beta_3 T_i * PctShrIssued_i + \varepsilon_i$ and $FO_i = \delta + \varphi T_i + yPctShrIssued_i + \omega_i$, where FO is the endogenous variable in the outcome equation and the dummy variable T is the instrument. The sample period is from 1996 to 2011 and the sample only includes deals that issue some equity (with zero equity issuance excluded). The outcome variables include Premium in Model 1 to 3, BidderCAR in Model 4 to 6, and CombinedCAR in Model 7 to 9. Premium is the percentage difference between the offer price and target share price 4 weeks prior to the merger announcement date. BidderCAR is bidder cumulative net of market returns over the event window (-1, +1), where day 0 is the announcement date and the market index is the CRSP value-weighted index. CombinedCAR is the weighted average of BidderCAR and TargetCAR, weighted by equity values measured one month prior to the merger announcement. FO is a dummy variable that equals one if the bidder obtains at least one fairness opinion, and zero otherwise; T is a dummy variable that equals one if the bidder issues more than 20% equity in the transaction, and zero otherwise; PctShrIssued is the percent of share issued by the bidder in the transaction. T*PctShrIssued is an interaction term between T and PctShrIssued. Year fixed effects and industry (at two-digit SIC level) fixed effects are included in some specifications. Standard errors are estimated with clustered errors at the firm level. T-statistics are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Premium			Bidder CAR			Combined CAR		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FO	-16.711	-16.230	-19.350	0.069*	0.069*	0.082*	0.087**	0.084**	0.100**
	(-0.95)	(-0.95)	(-1.09)	(1.70)	(1.68)	(1.91)	(2.09)	(2.03)	(2.25)
PctShrIssued	0.732	0.716	0.946	-0.005**	-0.005**	-0.005***	-0.003*	-0.003*	-0.004**
	(0.82)	(0.84)	(1.08)	(-2.39)	(-2.47)	(-2.69)	(-1.77)	(-1.74)	(-1.98)
T_PctShrIssued	-1.129	-1.126	-1.320	0.004**	0.005**	0.005***	0.004*	0.003*	0.004**
	(-1.25)	(-1.31)	(-1.51)	(2.33)	(2.41)	(2.58)	(1.84)	(1.80)	(2.00)
Constant	51.631***	54.836***	61.086***	-0.092***	-0.078**	-0.070*	-0.062*	-0.054	-0.013
	(3.57)	(3.69)	(5.17)	(-2.84)	(-2.24)	(-1.94)	(-1.87)	(-1.56)	(-0.31)
Year Fixed Effect	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry Fixed Effect	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264

CHAPTER 3

WHY DO SOME TARGET FIRMS CHOOSE TO SEEK A SECOND FAIRNESS OPINION IN M&AS?[22]

[22] Liu, T. To be submitted to *Journal of Finance*.

Abstract

A key question in Mergers and Acquisitions is whether the transactions are fair. A common practice is to ask a financial advisor to evaluate the fair value of a transaction and provide a fairness opinion. However, fairness opinions have been viewed as a "rubber stamp" since almost every target firm obtains one. Using a manually compiled data set over the period 1996-2011, I examine why some target firms choose to obtain a second fairness opinion and the wealth effects of this choice. More specifically, I test two competing hypotheses: the agency theory hypothesis which predicts the use of multiple opinions destroys shareholder value, and the shareholder interests hypothesis which argues that target firms obtain a second fairness opinion for strategic reasons. The results show that after controlling for endogeneity, the use of multiple opinions has a significantly positive impact on announcement returns. Target firms are more likely to obtain a second fairness opinion in management buyout deals, in hostile deals, and in large deals. A second fairness opinion is also more likely to be sought if the target has multiple business segments. Overall, my findings provide new evidence that is consistent with the shareholder interests hypothesis and is inconsistent with the agency theory hypothesis.

3.1 Introduction

During the sample period 1996-2011, the total value of merger transactions is over $5.5 trillion. One of the most important questions is whether the transactions are fair. Although it is a difficult task to evaluate the 'fair value' of a transaction, a common practice in mergers and acquisitions is to seek a fairness opinion provided by a financial advisor who evaluates whether the consideration to be paid or received is "fair from a financial point of view". However, the use of fairness opinion has been criticized in both legal literature and finance literature as a "rubber stamp" because it is argued that fairness opinions are used by management only to reduce potential litigation risk and thus contain no information. However, some target firms choose to obtain more than one fairness opinion and the use of multiple fairness opinions has become popular in more recent years. The increasing trend of using multiple opinions raises several questions: If a fairness opinion is just a rubber stamp, why do some firms have two rubber stamps? Are there other reasons for the target to obtain multiple fairness opinions other than just to remove legal liability? What are the wealth effects associated with the choice of the use of multiple fairness opinions by targets? This study tries to address these questions by examining why target firms choose to obtain a second fairness opinion and the impact of this choice on target shareholders' wealth.

My paper is the first study to jointly examine the choice and wealth impact of obtaining multiple fairness opinions on the target side.[23] I structure my empirical tests by

[23] Kisgen, Qian, and Song (2009) also study the structure of fairness opinions on the target side and report that targets are more likely to use a multi-opinion structure when the deal size is larger and the transaction is hostile. However, they do not examine the wealth impact of the use of multiple fairness opinion. Furthermore, they require both targets and bidders to be publicly treated firms, thus they do not study private bidders.

contrasting two competing hypotheses of the wealth implications of the choice of multiple fairness opinions. The agency theory hypothesis argues that target management may seek a second fairness opinion to certify inefficient deals. The prediction of the agency theory hypothesis is that the use of multiple fairness opinions destroys the target shareholders' wealth and the target returns will be lower.[24]

In contrast, the shareholder interests hypothesis argues that management acts for the best interest of shareholders and obtains multiple fairness opinions for strategic reasons. Under this hypothesis, the use of multiple fairness opinions should have non-negative or positive wealth effects.

To test these hypotheses, I manually collect the data about the use of fairness opinion and also fairness opinion provider from the merger documents obtained from the EDGAR filing system of the SEC. This is crucial because Kisgen, Qian, and Song (2009) point that the Securities Data Corporation (SDC) database reports incomplete data about the use of fairness opinions. By comparing data about target fairness opinions provided by SDC to data collected manually, I show that analyses relying on SDC data to study fairness opinions are largely problematic and conclusions based on SDC data may not be reliable.[25]

To provide a more complete picture about the use of fairness opinions by targets, I include transactions with publicly traded targets and both public and private bidders. Including private bidders is important for several reasons: 1) The participation of private bidders has increased significantly over recent years. Over 2005-2007, 34% of the

[24] Kisgen, Qian, and Song (2009) study the use of fairness opinions on the bidder side and find that the use of fairness opinions is associated with a significantly negative bidder announcement return of 2.3%.
[25] Please see Table 3.1 for more details.

transactions have private bidders and the value of the acquisitions by private bidders accounts for 42.9% of the total value of acquisitions in my sample. 2) The valuation process for transactions with private bidders may be systematically different from those involving public bidders. For example, public bidders are subject to various reporting requirements such as filing requirements, annual reports, and news dissemination. In contrast to public bidder deals, the information is very limited on private bidders. 3) Transactions by private bidders are likely to include management buyout or leverage buyout deals, where conflicts of interest between target management and shareholders can be high. The limited information on private bidders and the high level of conflicts of interest may generate a higher demand for valuation by investment bankers (DeAngelo (1990)). In summary, though deals by private bidders are important and worth examining, especially with the use of fairness opinions, the existing literature has not provided us any evidence to the use of fairness opinions for deals by private bidders. Thus, my analysis on private bidders helps to fill this gap in the literature.

In the empirical analysis, I first use a probit regression to study the determinants of the use of multiple fairness opinions. I find that over the period 1996-2011, the use of multiple opinions has increased significantly over time. Specifically, the percentage of target firms obtaining multiple opinions reaches 25% in the later sample period, compared to only 7% in the earlier period. More importantly, a second fairness opinion is more likely to be observed if the deals are large, if targets have more business segments, and if the deals are classified as hostile deals. Consistent with the expectation that studying private bidders is important in my analysis, the results show that the target firm is more likely to seek a second opinion in deals involving private bidders, especially

in management buyout or leverage buyout deals. These results suggest that multiple fairness opinions are more likely to be used in complex deals and in deals where the level of conflicts of interest between target management and target shareholders is high.

I then study the wealth effects measured by target announcement returns estimated over three different event windows: (-1, +1), (-20, +20), and (-63, +126). Under the assumption that a takeover is not anticipated until the formal announcement, a standard event study usually involves finding the abnormal returns over a short window around the formal announcement because the relatively narrow window has the advantage of offering precision in the estimation of the market reaction to the announcement of a takeover (Fama (1991)).

However, Schwert (1996) finds that over the period 1975-91, 45% of his main sample has prior news events suggesting that the target might be in play.[26] Schwert (1996) shows that the average run-up is 13.3%, with the largest pre-bid rise occurring from days -21 to -1. Moreover, Schwert (1996) also shows that for his sample, the average post-bid markup could be as large as 10%, suggesting that using the narrow window to study target returns around the announcement suffers severe measurement errors. Following Schwert (1996), Schwert (2000), Boone and Mulherin (2007b), and Mulherin and Aziz Simsir (2014), I use longer event windows to capture target run-up and mark up effect. I also report the results over the short window for completion of the analyses.

[26] Schwert (1996) classifies prior news events if it is one of the follows: 1) there is a news story saying that 13D form had been filed with the SEC; 2) there is a news story that is confirmed by either the target or the bidder, saying that a takeover is being actively discussed; 3) there is a news story mentioned by a third party saying that the firm is a potential target.

The univariate tests show that the use of multiple fairness opinions has a significantly negative wealth impact over all three event windows. Over the three day event window (-1, +1), the use of multiple fairness opinions by targets is associated with a significantly lower announcement return of 4.5%. The magnitude increases to 7.8% over the window (-20, +20) and to 7.0% over the window (-63, +126). However, the summary statistics show that the group with multiple fairness opinions is systematically different from the group without multiple opinions. For example, targets with multiple opinions are much larger and are more likely to involve private targets. Both target size and bidder type have been documented to have significant impacts on announcement returns. Thus, without controlling for firm and deal characteristics, simple comparison may lead to inaccurate conclusion.

To correct for the bias introduced by the simple comparison, I then employ OLS regression, a propensity score matching analyses, and a direct matching analysis to test whether the group with multiple opinions experiences lower returns. The OLS regressions show that, after controlling for takeover characteristics, target firms with multiple fairness opinion experience lower returns of 0.9%, 1.9%, and 1.2% over the event window (-1, +1), (-20, +20), and (-63, +126), respectively. More importantly, none of the return is statistically significant. The propensity score matching analyses results further reduce the return differences between the group with multiple opinions and the group without. Interestingly, the direct matching analysis reveals a significantly positive wealth effect of the use of multiple opinions over the longer event window. Specifically, the positive wealth effect ranges between 4.94% and 10.24%, indicating that once we

control for takeover characteristics, the use of multiple opinions may create value for shareholders.

Another challenge for my analysis is the endogeneity of the choice of the use of multiple fairness opinions. Since the choice of obtaining multiple fairness opinions is not a random event and is likely to be related to unobservable factors that may also affect target announcement returns, the Ordinary Least Squares Regression (OLS) might not produce consistent estimators (Roberts and Whited (2012), and Prabhala and Li (2007)). For example, if the agency theory hypothesis is correct, then the target management is more likely to obtain a second fairness opinion when negotiating more generous severance pay, or top positions after the merger by agreeing a lower premium. In this case, the litigation risk is higher because shareholders frequently sue target board of directors for breaching their fiduciary duties to shareholders by agreeing to sell the company for a low price (Louis (2004), and Krishnan, Masulis, Thomas, and Thompson (2012)). On the other hand, if the shareholder interests hypothesis is true, then the use of multiple fairness opinion could be related to deal complexity or the difficulty level of synergy estimation, which are hard to quantify and are likely related to target returns.

To address the endogeneity concern raised by the choice of using multiple fairness opinions, I use two stage least square analysis (2SLS). For the 2SLS analysis, a consistent estimate of the true effect of the use of multiple fairness opinions requires an exogenous source of variation in the choice of multiple fairness opinions. A potential source of such exogenous variation is the geographic differences in the accessibility of fairness opinions.[27] To obtain the information about the geographic locations of

[27] Card (1993) uses college proximity (whether there is a 4-year college in the city where students grow up) to control for the endogeneity of choice of education. Kane and Rouse (1995) use a similar idea to control

investment banks that provide fairness opinions, I hand collect the number of investment bank branch offices located in the same city as the target firm. Intuitively, the number of investment bank branch offices in a city indicates the potential local supply of fairness opinions. It is reasonable to expect that the local supply of fairness opinions is correlated with the use of multiple fairness opinions, and at the same time, it should not directly affect target announcement returns.

The first stage regression shows that the local supply of fairness opinions is indeed significantly positively correlated with the use of multiple fairness opinions by targets. More importantly, the second stage regression results show a significantly positive wealth effect over longer event windows (31% over the window (-20, +20) and 28% over the window (-63, +126)), indicating that the use of multiple fairness opinions increase shareholders wealth once we control for endogeneity.

My analyses provide new, important insights on the incentives of the management of target firms to use fairness opinions. The empirical evidence provided in this study indicates that, on average, target management obtains a second opinion for strategic reasons such as reducing information costs in complex deals or reducing conflicts of interest between target management and target shareholders in management buyout deals. The main evidence provided in this study is consistent with the shareholder interests hypothesis and not consistent with the agency theory hypothesis since the use of multiple fairness opinions has positive impacts on shareholders' wealth.

3.2 The Use of Fairness Opinions and Related Literature

Background of The Use of Fairness Opinions

for the endogeneity of choice between a four-year college and a two-year college. Mallar (1979) uses proximity to a training site to estimate the effect of the Job Corps program.

The recent Dell buyout deal gives a good example about the use of multiple fairness opinions. The takeover of the third-largest PC maker is the biggest leverage buyout since Blackstone Group LP took Hilton Worldwide Inc. private in 2007 (Ricadela (2013, September 12)). The special committee of Dell Inc. obtained J.P Morgan and Evercore as financial advisors and both of them delivered fair opinions one day before the merger announcement.[28] Figure 3.1 summarizes the timeline of this Dell buyout deal. Although this case is not included in my sample, the timeline of obtaining multiple fairness opinions is typical. Cain and Denis (2013) also report that formal written fairness opinions are normally presented to the board of directors just before the merger is publicly announced, normally 1 day before the merger's public announcement.

The use of fairness opinions can be traced back to a Delaware Supreme Court ruling Van Gorkom (1985). The court held that the directors breached their fiduciary duty of making an informed judgment in approving the merger. One of the facts that the court noted is that no outside expert such as an investment banker was ever consulted on the fairness of the merger terms. The court suggested that the target board was obligated to duly inform itself of the firm's value through a well-prepared financial analysis.

Fischel (1985) points out that the court's rebuke of the directors for failing to hire outside experts to acquire valuation information is extremely problematic. His conclusion is that investment banks are the biggest winners and shareholders are the biggest losers. Fischel (1985) argues that firms will have no difficulty finding an "expert" who is willing to state that a price at a significant premium over the market price is "fair." But the cost of obtaining such an opinion is, in effect, a judicially imposed tax on fundamental

[28] For more information about the special committee, see Boone and Mulherin (2014).

corporate changes and the inevitable consequence will be that fewer transactions will occur and that when they do occur, returns to investors will be lower.

A large body of legal literature also criticizes fairness opinions for their lack of established standards and potential conflicts of interest because the fairness opinion usually is rendered by the same financial advisor that arranges the merger and charges fees that are contingent on deal completion.[29] Thus the fairness opinion is just a checkbox requirement and the Delaware court did not made any substantive recognition, between the opinion itself and the valuation forming the basis of such an opinion.

Although courts for the most part are satisfied as long as there is evidence of the process of an fairness opinion having been undertaken (Kisgen, Qian, and Song (2009)), the court emphasized the valuation approach in addition to the mere existence of the fairness opinion in the case of "Pure Resources Inc., Shareholders Litigation (2002)".[30] The court examined the plaintiffs (target shareholders)' contention that the disclosures provided to the minority shareholders were "materially incomplete and misleading" and concluded that the plaintiffs had shown a reasonable probability of success on the merits of this issue.

The court noted that the 14D-9 did not disclose any work done by the investment bankers for the special committee. The court determined that shareholders are entitled to a summary of the work performed by the investment bankers who advise the board of their recommendation. The court reasoned that because the bankers' analysis considers the sufficiency of the consideration being offered to the shareholders - the aspect that is

[29] See, e.g., Bebchuk and Kahan (1989), Elson (1992), Shaw and Gac (1995), Elson, Rosenbloom, and Chapman (2003), Oesterle (1992), and Davidoff (2006).
[30] Much of this case is drawn from the thorough description in Davidoff (2006) and Iacono (2004).

most important to the shareholders - it was necessary to require this disclosure. In In re Pure Resources, Inc., Sholders Litig., Vice Chancellor Strine gave voice to the first Delaware Court of Chancery opinion to recognize that the fairness opinion is merely a lightning rod and fundamentally a function of the underlying analyses. He stated: [C]ourts must be candid in acknowledging that the disclosure of the bankers fairness opinion alone and without more, provides stockholders with nothing other than a conclusion, qualified by a gauze of protective language designed to insulate the banker from liability. The real informative value of the bankers work is not in its bottom-line conclusion, but in the valuation analysis that buttresses that result.

Davidoff (2006) indicates that this case marked the first true recognition by the Delaware courts of the role of the fairness opinion, the underlying analyses as key to the fairness opinions value, and the distinction between the two. He also argues that it is uncertain what this holdings implications are for fairness opinions because on one hand, Vice Chancellor Strine concluded that the valuation information was material to an acquiree stockholders informed investment decision, on the other hand, it shows that the Delaware courts have remained resolutely confident in the worth of the valuation processes underlying a fairness opinion.

Related Empirical Literature

The empirical evidence so far has largely supported Fischel (1985)'s predictions that firms will have no difficulty to find a fairness opinion and the consequence is a lower return to investors. Studies show that, if we use data from SEC merger document, almost every target firm obtains at least one fairness opinion in the aftermath of Van Gorkom and almost all the letters state that the fairness opinion provider considers the pending

deal "fair" from a financial point of view. The natural explanation is that most of the time, financial advisors are paid contingent fees based on the completion of the deal, so financial advisors have incentives to issue favorable fairness opinions and push the deal to go through.

Cain and Denis (2013) report that in their sample, every fairness opinion deems the respective transaction "fair" and conclude that this observation is consistent with the view that targets and bidders continue to 'shop' for favorable opinions until one is obtained. However, it is problematic to conclude that fairness opinions are 'rubber stamps' based on the observed phenomenon that all fairness opinions deem the deal fair for at least the following two reasons. First, Cain and Denis (2013) only examine completed deals in their study. Deals that ultimately went through became eventually friendly deals even if they started as hostile deals. It is not surprising that these deals have final offer prices their financial advisors deem "fair". If fairness opinions contain valuation information and are used by target management to bargain over transaction price in hostile deals, we would expect that deals with "inadequate" opinion are more likely to be withdrawn.

To check this conjecture, I form a subsample that only contains hostile withdrawn deals. Over my sample period, there are 18 hostile withdrawn deals. By reading the merger documents, I find that 14 deals have fairness opinions that deem the offer price "inadequate". The second reason is that the negotiation process has been changed since 1990s. Boone and Mulherin (2007b) show that for most mergers, the takeover negotiation process happens before the merger announcements and the observed price on the announcement day is normally the final price after negotiation between the target and the

bidder. It is natural for financial advisors to conclude that the final price after negotiation is "fair". In tender offers, sometimes the negotiation process could be observed by tracing the documents filed by target firms.[31] Appendix A provides one example of a tender offer where the financial advisors provided their opinion that deems the initial consideration of $75 cash per share to be "inadequate" but then later changed their opinion to "fair" after the bidder increased the offer price to $89.50 cash per share.[32]

Prior literature also examines the effect of the use of fairness opinion on the bidder side because on the bidder side, only about one third of bidders obtain fairness opinions. Kisgen, Qian, and Song (2009) and Chen and Sami (2006) find a negative relation between the use of bidder fairness opinion and bidders' abnormal returns around mergers' announcements. They conclude that bidders purchase fairness opinions to reduce their potential litigation risk associated with bad deals against the shareholders and the use of fairness opinion by bidders destroy bidders' shareholders' wealth.[33][34]

Although the Van Gorkom case is directly related to the target board breaching its fiduciary duty and the legal literature mainly criticizes the use of fairness opinions by targets as a "rubber stamp" since every target firm obtains one, the empirical evidence on the target side is very limited. A few earlier studies try to examine the effect of the use of

[31] If the bidder launches a tender offer, the target firm needs to file SC14D9 and if later on, and if the bidder firm changes the offer, the target needs to file amendment SC14D9/A, so we are able to observe the negotiation process by examining the change of terms offered by the bidder.
[32] This is the merger between Roche Holding Ltd and Ventana Medical Systems. The initial offer price to Ventana Medical Systems was $75.00 per share and their financial advisors, Merrill Lynch and Goldman Sachs delivered their opinions to the effect that, the offer is inadequate to the holders of the company's shares from a financial point of view. After renegotiation, Roche Holding Ltd increased its offer to $89.50 cash per share and this time the financial advisors deemed the offer price as fair from a financial point of view. The initial SC14D9 and the SC14D9/A documents for this deal are attached in Appendices.
[33] Frye and Wang (2010) find that boards of bidding firms with more outside directors are more likely to use a Fairness Opinion.
[34] Cain and Denis (2013) show that fairness opinions do contain information because valuations provided in the fairness opinion by target advisors are significantly related to bidders' stock price reaction to the merger announcement. However, they did not study the wealth effect on the target side.

fairness opinions on the target side. Bowers and Latham (2006) show that when the attitude of the participants in a deal is "friendly", the level of firm-specific litigation risk increases and the expected probability of obtaining a fairness opinion increases as well. Makhija and Narayanan (2007) report that deals with a target fairness opinion earn statistically lower target announcement returns and conclude that investors rationally discount deals certified by fairness opinions.

However, the earlier studies mainly rely on the Securities Data Corporation (SDC) database (Bowers (2002), Bowers and Latham (2006), and Makhija and Narayanan (2007)). Kisgen, Qian, and Song (2009) point out that SDC provides incomplete/inaccurate information on fairness opinion, especially on the target side. Table 3.1 compares data of the use of fairness opinions on the target side obtained from SDC with data obtained from merger documents. The results show that SDC reports only about half of the targets obtain fairness opinions. However, using data from the SEC filings, over 90% targets obtain fairness opinions. For the sample that used in this study, SDC reports about 61% of targets obtain fairness opinions but the actual percentage of targets seeking fairness opinions is 98%, indicating that it is largely problematic to use SDC data to study target fairness opinions and any conclusions based on SDC data may not be reliable.[35]

The unified action of obtaining fairness opinions by targets makes it difficult to empirically test the largely debated question whether the use of fairness opinions by targets destroys shareholders' wealth. Interestingly, some target firms choose to obtain a

[35] Table F.1 of Appendix F shows that in my sample, SDC report that 1045 deals do not have fairness opinions. Further investigation indicates that SDC tend to miss the fairness opinion data for smaller targets and for deals where merger files are more difficult to locate.

second fairness opinion and the use of multiple opinions becomes popular in more recent years. Figure 3.2 presents the percentage of the use of multiple fairness opinions by targets over time. In the more recent years, about 25% of targets choose to obtain multiple fairness opinions, compared to only about 7% in the earlier periods. Figure 3.2 shows that the percentage of the use of multiple fairness opinions has more than tripled over time. The observed popularity of the use of the second fairness opinion provides us a unique opportunity to conduct tests on the effect of multiple fairness opinions, which could shed light on the usefulness of fairness opinions that are otherwise hard to test.

3.3 Hypotheses Development and Empirical Implications

I contrast two possible explanations to the observed upward trend of using multiple opinions by targets: 1) multiple fairness opinions may be used by target management to certify bad deals; 2) multiple fairness opinions could be used for strategic reasons. The two different incentives for the use of multiple fairness opinions - whether the valuation processes generate a good faith estimate of fair value or simply remove legal risk associated with bad deals against the shareholders yield two testable hypotheses. I discuss the two competing hypotheses and their implications to target shareholders' wealth in the following sections.

Testable Hypotheses

Jensen and Meckling (1976) point out the incentive problems that arise when the security ownership and control is separated. They argue that since the relationship between the stockholders and manager of a corporation fit in a pure agency relationship we should expect to discover that the issues associated with the separation of ownership and control are associated with the general problem of agency.

The agency theory hypothesis suggests that management may pick a most favorable bidder, negotiate private benefits at the expense of shareholders.[36] The legal literature argues that fairness opinions are "rubber stamps" and contain no useful information. However, the agency theory hypothesis implies that the use of fairness opinions could be worse than just a "rubber stamp", since it can be used to certify bad deals and effectively reduce target management's litigation risk. Kisgen, Qian, and Song (2009) and Chen and Sami (2006) find evidence on the bidder side to support this argument. Specifically, Kisgen, Qian, and Song (2009) report that the acquirer's announcement return is 2.3% lower if the acquirer has a fairness opinion; Chen and Sami (2006) find a 3.9% lower return for acquirers that purchase fairness opinions. The agency theory hypothesis suggests that the use of multiple fairness opinions harm target shareholders' wealth.

H1: Target management uses multiple fairness opinions to remove potential litigation risk associated with bad deals against the shareholders.

The shareholder interests hypothesis, on the other hand, suggests that management makes decisions to maximize shareholders' interest. They obtain multiple fairness opinions for strategic reasons such as reducing information cost in complex deals, or reducing conflicts of interest when such level is high.

DeAngelo (1990) finds that conflicts between target management and shareholders generate a demand for independent assessments of equity values by

[36] The nature of the agency theory hypothesis is similar to the management entrenchment hypothesis and agency costs hypothesis in DeAngelo and Rice (1983), Dann and DeAngelo (1983), and Boone and Mulherin (2007b). Dann and DeAngelo (1983) develop and test competing theoretical explanations for the passage of antitakeover amendments. The management entrenchment hypothesis suggests that antitakeover provisions are adopted because incumbent management seeks job protection at stockholders' expense.

investment bankers who specialize in these appraisals. Specifically, management buyouts and leverage buyouts could engender potentially severe manager-stockholder conflicts, because managers have a fiduciary duty to negotiate the best possible terms for stockholders, offset by incentives as purchasers to pay the lowest possible price.[37] DeAngelo (1990) argues that managerial conflicts of interest in corporate control transactions generate a demand for an independent valuation by investment bankers who have economic incentives to maintain a reputation for independence and quality work (DeAngelo (1981)). The economic benefits from that reputation give investment bankers incentives to avoid "rubber stamp" approvals of managerial representations. On the other hand, Fama (1980) shows that managerial incentive problems attributed to the separation of security ownership and control are resolved because managers care about the value of their human capital.

Song, Wei, and Zhou (2012) find that in more complex deals, such as large deals or cross-industry deals, firms are more likely to hire a mixed team of both full-service and boutique advisors. Although Song, Wei, and Zhou (2012) do not study the use of fairness opinions, a second fairness opinion could be provided by the boutique advisor who often specializes in certain industries. In these cases, a second fairness opinion is expected to reduce the information cost.[38]

[37] One example is the leveraged buyout transaction between V.S.M.Acquisition Corp (The acquiror) and Sunrise Medical Inc., (The target). In the transaction, Mr. Hammes, as a member of senior management of the target, was likely to have a continuing financial interest after the transaction, so the Board determined to establish a special committee and the special committee obtained two fairness opinions from Deutsche Banc Alex. Brown and Batchelder.

[38] One example is the deal between Western Gas Resources (The target) and Anadarko Petroleum Corporation (The acquirer) (the announcement date is June 22, 2006), Western Gas Resources obtained one fairness opinion from Morgan Stanley which is an internationally recognized investment banking and a second opinion from Petrie Parkman which is a provider of energy-related investment banking and capital market advisory services.

The shareholder interests hypothesis concludes that target management chooses to obtain multiple opinions for strategic reasons. It also predicts that the use of multiple opinions will not harm shareholders' wealth.

H2: Target management uses multiple fairness opinions for strategic reasons and the use of multiple opinions does not harm shareholders' wealth.

Empirical Implications

The two hypotheses give different implications regarding the use of multiple opinions. The shareholder interests hypothesis predicts that the target will be more likely to seek a second fairness opinion when the deal is complex or when the level of conflicts between target management and shareholders is high. I use six different variables to proxy for deal complexity. Specifically, I use target size, cross-industry, hostile deal, competing bid, the public status, and number of business segments to proxy for deal complexity.[39] Intuitively, the valuation difficulty or information cost is expected to be higher for large deals, for hostile deals, for deals with competing bids, for deals with private bidders, for deals with unrelated targets and bidders (target and bidder from different industry) and in deals that are more diversified (number of business segments is large). DeAngelo (1990) suggests that the conflicts between target management and shareholders are high in management buyout and leverage buyout deals and the demand for independent valuation becomes more important in those cases. Thus, the shareholder interests hypothesis predicts the use of multiple opinions is more likely in buyout deals.

While the shareholder interests hypothesis predicts that targets are more likely to obtain a second opinion in hostile deals, the agency theory hypothesis, by contrast

[39] Please see Section 3.4 for more detail description about the variables.

predicts that targets are more likely to obtain a second opinion when the deal is friendly. In a friendly merger, managers have incentives and opportunities to find the most favorite bidder that could promise them personal benefits or future employment opportunities. Thus, the potential litigation risk is higher in friendly transactions. The agency theory hypothesis also predicts that targets are less likely to obtain a second fairness opinion if there is a competing bid. The offer price is more likely to be set by the market force if there are bidders competing with each other. In the Van Gorkom (1985) case, one of the facts cited by the court is that the terms of the merger discouraged other bidders who might have been willing to pay a higher price. That implies the potential litigation risk is lower in the existence of multiple bidders. The agency theory hypothesis gives the same prediction to deal size and buyout transactions because the litigation risk is also higher in large deals and buyout deals. With respect to the level of target diversification and public status of the bidder, the agency theory hypothesis does not give clear prediction about the use of multiple opinions. Panel A of Table 3.2 summarizes the implications in terms of the predicted signs of variable effects for the two hypotheses.

In addition to the implications for the use of multiple fairness opinions, the two hypotheses also have different testable empirical implications regarding the deal outcome, as measured by target abnormal returns around merger announcements. The agency theory hypothesis predicts that fairness opinions contain no valuable information and the use of multiple fairness opinions destroys shareholders' wealth. Thus, wealth effects for using multiple fairness opinions should be significantly lower than the wealth effects of group without multiple opinions.

By contrast, the shareholder interests hypothesis argues that, on an average, there will be no negative or positive effects associated with the use of multiple fairness opinions. Under the shareholder interests hypothesis, management obtains multiple fairness opinions for strategic reasons. Thus, target firms would seek a second fairness opinion only if the benefit of the second opinion outweighs the cost.[40] As a result, the use of a second opinion deals should have a non-negative returns. Panel B of Table 3.2 presents the value effects of the use of multiple fairness opinions on target returns around merger announcements.

3.4 Data and Descriptive Statistics

Sample Formation and Variable Definition

To construct the sample, I start with the mergers and acquisitions database of the Securities Data Corporation (SDC). I begin with all M&A deals announced between January 1st, 1996 and December 31st, 2011, since as of May 6, 1996, all public domestic companies were required to make their filings on EDGAR. I require that the deal be completed or withdrawn by the end of 2011 and the deal value to be at least $20 million. I also require a public status for the target, and that bidders seek more than 50% of target shares.

The initial screens provide a sample of 6,815 observations. From this set of 6,815 deals, I eliminate deals where the price of the target on the day prior to the takeover announcement is less than $5. I also exclude deals where target returns are not included

[40] Kisgen, Qian, and Song (2009) show that the median direct cash cost of one fairness opinion is $300,000. The indirect cost can be much higher. For example, the process of producing a fairness opinion involves significant interaction between the advisor and the firm, which takes a significant amount of management time. Another indirect cost is the potential disclosure of competitive secrets in the process to produce a fairness opinion.

in the Center for Research and Security Prices (CRSP) database and deals in which I was not able to find the merger document from the EDGAR filing system of the SEC. Those procedures reduce my sample to 2,849 deals.[41] Finally, I exclude deals that did not obtain any fairness opinions. My final sample has 2,777 observations. To ensure accuracy, for each takeover observation in my sample, I manually verify the information of financial advisors hired by targets, fairness opinions advisors of targets by reading merger documents from the EDGAR filing system of the SEC.[42] Table 3.3 describes the formation procedure of my sample.

Return data are from CRSP and the number of business segments is from Compustat. Target announcement returns are net of market returns and market index is the CRSP value-weighted index. 'Target size' is the target market value 30 days prior to the merger announcement. 'Unrelated' is a dummy variable equals 1 if the target and bidder are not from the same industry. 'Compete' is a dummy variable that equals 1 if there is more than one bidder. I use two measures for hostile deal: 'Hostile' is a dummy variable if the deal attitude is hostile indicated in SDC. Following Schwert (2000), 'Hostile(Pre)' is a dummy variable that equals 1 if there is a rumor (pre-activity) before the formal merger announcement. Schwert (2000) suggests that significant merger rumors about target firm implies an effort to put the firm in play.

Summary Statistics

[41] Only 72 out of 2,849 deals did not obtain a fairness opinion. I exclude deals without fairness opinions because the main analysis focuses on the difference between firms with single fairness opinions and firms with multiple fairness opinions. In untabulated results, I find that deals with zero fair opinion are in general smaller than the rest of the sample. Including the 72 deals does not affect the results.

[42] I search through merger filings including S-4, S-4/A (for stock mergers), DEFM14, DEFM14/A (for cash mergers), and SC14D9 (for tender offers). Other files also containing the fairness opinion information include F-4, DEFA14A, PREM14A, and 8-K.

Panel A of Table 3.4 reports the deals by announcement year. The years after the internet bubble (2002) and financial crisis (2008, 2009, 2010, and 2011) have fewer transactions, compared to other years. 1999 has the most transactions. In general, transactions cluster in the first half of the sample period, with two-thirds of the transactions in the sample announced over the 1996-2003 period. The last column of Panel A reports the percentage of multiple fairness opinions by year. Very interestingly, the percentage of transactions with multiple fairness opinions on the target side has increased over time. In 1996, only about 7% of target firms obtain multiple fairness opinions. The percentage increased to about 25% in 2011.

Panel B of Table 3.4 reports the sample distribution by different types of bidders. It is worth noting that the percentage of private bidders has also increased over time. In the earlier period, only 10-15% of deals have private bidders. In the later sample, private bidders are observed in about 30% of the deals, with the highest percentage observed in the year 2005, 2006, and 2007. Figure 3.3 shows the increasing trend of private bidders over time.

Table 3.5 reports the structure of financial advisors and fairness opinions in M&A deals during 1996-2011 on the target side. Panel A of Table 3.5 reports the results for the full sample. During this sample period, 78.1% of targets hire one financial advisor and 21.9% hire multiple advisors. In terms of the use of fairness opinions, 89.5% of the targets obtain at least 1 fairness opinion and 10.5% of the targets obtain multiple fairness opinions.

Panel B of Table 3.5 reports the results for different types of bidders. The results show that about 31% of the targets hire multiple financial advisors in deals involve

private bidders and about 20% of the targets hire multiple advisors in deals involve public bidders. Similarly, a higher percentage of multiple fairness opinions by targets is observed when the bidders are private. Specifically, 16.5% of deals have multiple fairness opinions when the bidder is private, compared to 9% deals with public bidders. The difference is 7.33% and highly significant. These distributions suggest that private bidder could be one of the factors for targets to seek a second fairness opinion.

Table 3.6 reports attributes of the sample firms. Panel A presents summary statistics for the full sample. The mean (median) equity value of the target firms is $1.38 (0.26) billion. The mean (median) percentage difference between the offer price and target share price 1 week prior to the announcement date is 32% (28%). The mean (median) percentage difference between the offer price and target share price 4 weeks prior to the announcement date is 37% (31%). Consistent with Schwert (1996), run-ups in stock prices can happen as far back as one month before a merger announcement. The results show that only 1.3% of the deals are classified as hostile deals and 5.3% deals face competitive bidders, consistent with Moeller (2005) who find that less than 4% deals are classified as hostile deals in SDC and less than 6% deals have multiple bidders during their sample period.[43] The average number of business segments is 3.6 and about 40% of the transactions have targets and bidders from different industries.[44]

Panel B of Table 3.6 reports the summary statistics for different fairness opinion structures. The results show that on average, target size is much larger for deals with

[43] The small percentage of multiple bidders is also consistent with Boone and Mulherin (2007b) who report the existence of an active takeover market that takes place prior to the public announcement, thus the observed number of public competing bids is quite small.
[44] The average number of business segments is computed based on a sample of 2,065, because it requires data be available on the Compustat.

multiple fairness opinions. Specifically, the average target size is $4.11 billion in deals with multiple fairness opinions, more than three times the size of deals with only one fairness opinion (average target size = $1.05 billion). The group with multiple fairness opinions has more hostile deals in both measures. The multiple fairness opinion group also has a higher percentage of deals facing multiple bidders. The number of business segments is much higher in the group with multiple fairness opinions (average business segments=3.4 in the non-multiple group versus average business segments=5.4 in the multiple opinion group), indicating that more diversified firms are more likely to obtain a second fairness opinion. The differences between these two groups are highly significant. Lower premium is also observed in the group with multiple fairness opinions.

3.5 Empirical Analysis

In this section I perform empirical tests of the two hypotheses on the use of multiple fairness opinions. I first study why targets choose to obtain a second fairness opinion. I then examine the wealth effects of the use of multiple fairness opinions. I use abnormal returns of targets over various event windows around merger announcement to measure the wealth effect. I also use an IV Two Stage Least square approach to control for endogeneity since the use of multiple fairness opinions is endogenously determined by target management.

Determinants of the Use of Multiple Fairness Opinions by Targets

In this section, I examine the determinants of the use of multiple fairness opinions by targets. Table 3.7 reports the correlation coefficient matrix. Consistent with the summary statistics, the correlation matrix shows that the use of multiple fairness opinions is highly related to target size, the public status of the bidder, whether there is a

competing bid, whether the target and bidder are from the same industry, whether the deal is classified as hostile deal and the number of target business segments. The results also show that compete and hostile (both SDC measure and the pre-event measure) are positively correlated and highly significant.

Table 3.8 presents results from probit regressions in which the dependent variable indicates whether the target firm has at least two fairness opinions. Marginal effects are reported instead of coefficients. Thus, the reported coefficients represent the change in the probability per unit change in the relevant explanatory variables; for indicator variables, the coefficient represents the change in the probability associated with moving the indicator from 0 to 1.

All coefficients of univariate regressions (Model 1-8) have the predicted signs of the shareholder interests hypothesis. The positive coefficients of 'Compete' and 'Hostile' are inconsistent with the agency theory hypothesis. The coefficient of 'Compete' becomes insignificant in the multivariate regression (Model 9-11). One possible explanation is that 'Competition' is correlated with other independent variables (as reported in Table 3.7).

The multivariate probit regression results (Model 9-11) show that one standard deviation increase in target size increases the probability of multiple opinions by 7%. The probability of obtaining a second opinion increase by about 5% if the deal involves a private bidder. The results from the whole sample (Model 9 and Model 10 show that probability increases by another 5% if the deal is a management buyout deal. Model 9 shows that the coefficient of the hostile deal reported by SDC and compete are not significant once we include both variables in the regression. This could be due to the fact

that those two variables are positively correlated. Model 10 shows that the hostile dummy measured by pre-event activity remains significant after controlling for other variables, indicating the pre-event activity measure advocated in Schwert (2000) is a better measure of hostile deal. Thus, in the rest of the paper, I use the pre-activity dummy variable to classify hostile deals in the analyses. Model 10 shows that if the deal is classified as hostile, the probability of multiple opinions increases by 7%. Finally, if the number of business segments increases by one standard deviation, the probability of multiple opinion increases by 2%. These results are not only statistically significant, but also economically large, given that the average percentage of multiple fairness opinion is about 10%.

In summary, the results from multivariate probit regression are mainly consistent with the deal efficiency hypotheses, because the signs of the variable "Hostile" and "Number of business segments" are consistent with shareholder interests hypothesis and inconsistent with the agency theory hypothesis. To further distinguish the two competing hypotheses, I examine the wealth effects of the use of multiple fairness opinions in the next section.

Wealth Effects of the Use of Multiple Fairness Opinions

Table 3.9 reports estimates of the wealth effects for the target firms. The estimates are net of market returns for the (-1, +1), (-20, +20), and (-63, +126) windows, where day 0 is the announcement date and the market index is the CRSP value-weighted index.[45] The relatively narrow (-1, +1) event window has the advantage of offering precision in the estimation of the market reaction to the announcement of a takeover (Fama (1991)).

[45] As robustness check, I also computed abnormal returns adjusted by one factor market model. The results are essentially the same.

However, the narrow window may not necessarily capture all of the information that is revealed over the course of a particular takeover.

Schwert (1996) shows run-ups in stock prices can happen as far back as one month before a merger announcement. A recent study by Mulherin and Aziz Simsir (2014) points out that the conventional estimation of the target wealth effect around the formal merger announcement such as 3 day return is underestimated if the deal has an early announcement date. Using hand collected data, Mulherin and Aziz Simsir (2014) show that almost 40% of the targets with private bidders have early announcement dates. Table 3.8 shows a strong positive relation between private bidders and the use of multiple fairness opinions, indicating that the underestimate effect may be more severe among the groups with multiple opinions. Thus, the longer event window which could capture the early announcement effect are more accurate measures of wealth effect. Indeed, Mulherin and Aziz Simsir (2014) show that accumulates abnormal returns over (-63, +126) and the sum of the individual target accumulates abnormal returns estimated around the early announcement date and the formal announcement date are very similar. Following Schwert (1996), Schwert (2000), Boone and Mulherin (2007b), and Mulherin and Aziz Simsir (2014), I use longer event windows to capture target run-up and mark up effect. I also report the results over the 3 day window for completion of the analyses.

Panel A of Table 3.9 suggests that the mean (median) return for the whole sample is about 20% (17%) and is statistically significant. The results for target returns resemble those in prior research such as Boone and Mulherin (2007b) and Andrade, Mitchell, and Stafford (2001). The mean (median) target return is 26% (23%) over the event window (-20, +20) and 32% (28.8%) over the event window (-63, +126), respectively. As expected,

the estimates over longer event windows are higher than the estimates over the 3 day window.

Panel B of Table 3.9 stratifies the results for target firms with and without multiple fairness opinions. Over event window (-1, +1), the mean return for targets without multiple fairness opinions is 20.2% and the mean return for targets with multiple fairness opinions is 15.7%. The results show that the targets with multiple fairness opinions on average experience 4.5% less in returns and the mean test indicates a significant difference between the average returns for the two groups over the 3 day event window. The average return for targets with multiple opinions is 7.79% lower over the window (-20, +20) and 7.04% lower over the window (-63, +126). The P-value in a paired t-test is 0.00, indicating a highly significant difference between these two groups over the longer windows.

While the mean tests in Table 3.9 offer an initial comparison, it is important to note that the average returns do not consider deal characteristics that could also affect target announcement returns. In the next section, I employ multivariate regression to control for other factors.

The results of the multiple regression analysis are reported in Table 3.10. The dependent variable in Model 1 to 3 is the cumulative net of market returns around the (-1, +1) window; the dependent variable in Model 4 to 6 is the cumulative net of market returns around the (-20, +20) window and the dependent variable in Model 7 to 9 is the cumulative returns around the (-63, +126) window, where day 0 is the announcement date. For comparison with the mean test in Table 3.9, Model 1, 4, 7 simply employs an intercept and a use of multiple opinion dummy variable. Model 2, 5, and 8 control for

target size and bidder type. Model 3, 6, and 9 provide the complete specification with the use of multiple opinion dummy and the other takeover characteristics reported in prior research that could also affect target announcement returns.

Consistent with the mean tests, the coefficient for the use of multiple fairness opinion dummy is negative and statistically significant in Model 1, 4 and 7. However, once we control for target size and bidder type, Model 2, 5, and 8 show that the coefficients for the use of multiple fairness opinion dummy are still negative but with much smaller magnitudes (Coefficient reduces to -1.8% from -4.4% over (-1,+1) window; coefficient reduces to -2.8% from -7.8% over (-20, +20) window, and the coefficient reduces to -1.7% from -7.0% over (-63, +126) window). More importantly, the coefficients become marginally significant over the window (-20, +20) and become insignificant over the window (-1, +1) and (-63, +126). Model 3, 6, and 9 further show that once other factors are controlled for, the coefficient of multiple fairness opinions becomes insignificant over all event windows, indicating the group with multiple fairness opinions does not earn a statistically lower abnormal returns around the merger announcement.

Prior research has reported the following factors that could affect target announcement returns: (1) whether the market value of the target firm is large (Officer (2003)), whether the deal used (2) cash or was a (3) tender offer (Huang and Walkling (1987)), whether the bidder has a (4) toehold (Eckbo and Langohr (1989)), (Jarrell and Poulsen (1989)), (Betton and Eckbo (2000)), (Goldman and Qian (2005)) and whether the bidder is a (5) private acquirer (Bargeron, Schlingemann, Stulz, and Zutter (2008)). A dummy variable (Finance) indicating if the target firm is in the financial industry

according to Fama-French 12 industry codes is also included in the regression because Becher (2000) reports that target returns in financial industry is lower than the typical target returns.

All control variables are significant with the predicted sign in the regression with the complete specification. Specifically, Officer (2003) reports a negative relation for target returns and the market value of target firm. Huang and Walkling (1987) report a positive and significant coefficient for cash and for tender offers. Eckbo and Langohr (1989), Betton and Eckbo (2000), Goldman and Qian (2005) and Jarrell and Poulsen (1989) report that target returns decrease with toeholds and Bargeron, Schlingemann, Stulz, and Zutter (2008) find that target returns are significantly lower for deals with private acquirers. The coefficient of "Hostile(Pre)" is -7.3% and also highly significant over the 3 day event window, consistent with the expectation that deals with pre-bid events experiences lower returns around the short event window. Note that the coefficient becomes insignificant over the window (-63, +126), consistent with Schwert (1996) and Mulherin and Aziz Simsir (2014) that longer event windows better capture target price run-up effects.

In summary, the results indicate that although the mean test and univariate regression show that the use of multiple fairness opinions has a negative wealth impact, the multivariate regression shows no difference in the wealth effects for targets with multiple fairness opinions and the other group after controlling for other takeover characteristics. These results are not consistent with agency theory hypothesis that argues the use of multiple opinions should be associated with significantly lower returns.[46]

[46] In untabulated results, I find that obtaining multiple fairness opinions provided by top fairness opinion advisors does not have significantly marginal effect on the target shareholders' wealth. Following Kisgen,

The results reported in Table 3.8 indicate that some of the explanatory variables in the regressions of target returns in Table 3.10 are also related to the use of multiple opinions. Furthermore, there could be a sample selection bias since firms with multiple opinions could be systematically different from firms without multiple opinions. To show that the difference in outcome is attributable to difference in treatment (the use of multiple opinions), I use propensity score matching to control for covariates that affect the probability of treatment. I first use the full regression specification in Table 3.10 to estimate a propensity score which is the probability that a given sample firm would use multiple opinions. I then match the firm that did use multiple opinions (the treated group) with a sample firm that did not use multiple opinions (the control group) using the nearest neighbor method. I match with replacement for those matched firms are in the region of common support, which ensures that the matches do not fall outside of the range of propensity values given by the treated group.

The results of the propensity score matching are reported in Table 3.11 Panel A. The first row of results, labeled Unmatched, confirms the result from Table 3.10 that for the full sample, deals with multiple opinions (Treated) have significantly lower target returns than the rest of the sample over all event windows. The second row shows the average returns of firms with multiple fairness opinions against the matched firms selected by the nearest neighbor approach. After accounting for the attributes that drive

---

Qian, and Song (2009) Cain and Denis (2013), I rank fairness opinion advisors based on the total number of fairness opinions provided for the target side during the sample period. The market share of a fairness opinion advisor is the number of fairness opinions provided by this advisor divided by the total number of fairness opinions. The top 10 advisors are ranked as 'top fairness opinion advisors'. The deals with multiple fairness opinions are classified as 'deals with top fairness opinion advisor' as long as at least one fairness opinion provider is ranked 'top fairness opinion advisor'. One potential explanation to the results that reputation of fairness opinion advisor does not significantly affect target returns is that 80% of the deals with multiple fairness opinions have top advisors providing fairness opinions. The lack of variation may reduce the power of tests.

the use of multiple fairness opinions, the difference between treated firms and control firms is essentially zero (with t-statistics very close to zero). These results again indicate that even the simple comparison show a significantly lower returns for the group with multiple opinions, there is no difference once we control for covariates that affect the probability of using multiple opinions.

Although propensity score matching better controls for covariates that affect the probability of treatment, compared to simple comparison and OLS regression, it does not require an explicit match on some important independent variables that affect both the likelihood of getting multiple opinions and target announcement returns. For example, firm size is well known to be negatively related to target return and Table3.8 shows that it is also the most important determinant of the use of multiple opinions. Similarly, Table3.8 shows that bidder type (private bidder versus public bidder) is significantly related to the use of multiple opinions and prior literature shows that it also affects target announcement returns. Thus, a more refined match is to explicitly match the treated group (firms with multiple opinions) with the control group (firms without multiple opinions) on some important aspects that affect both the likelihood of getting multiple opinions and target announcement returns.

Table 3.11 Panel B reports the results of the direct matching analysis. I require (1) the control firm and the treated firm to be in the same industry based on Fama-French 12 industry classification; (2) the control firm and the treated firm have the same bidder type (public bidder versus private bidder) and (3) the same deal type (friendly or hostile). Lastly, I require the firm size of the potential control firm to be within a certain range of the treated firm and choose the one with closest size as the control firm. Ideally, a more

precise match on firm size would make it more comparable between the treated group and the control group. However, I may not able to find a control firm that satisfy the matching criteria.

Panel B.1 of Table3.11 shows that if I restrict the size range of the control firm to be 80% to 120% of the treated firm, I am able to match 77% of the firms with multiple opinions (224 out of 292). The direct matching reveals some interesting results. The announcement return difference between the multiple opinion group and control group is positive for all three event windows. Specifically, the return difference over the longest event window is positive (4.94%) and statistically significant (t=1.73), indicating a positive wealth effect. Panel B.2 and Panel B.3 report the results for a more precise match on size. Panel B.2 shows that if we restrict the size range of the control group to be within 98% and 102%, the number of matched firms is reduced to 123, which is not surprising. However, the positive effect wealth over the event window (-63, +126) becomes even stronger. The return difference increases to 7.19% and is statistically significant. Finally, if we restrict the size range to be 99% to 101%, although there are only 90 matched firms, the wealth effect increases to 10.24% and the t-statistic is 2.18.

In summary, although the simple comparison shows a significantly negative wealth effect of the use of multiple opinions, the propensity score matching results show no difference. More importantly, the direct matching analysis reveals a significantly positive wealth effect over the longer event window.

Another challenge faced by this study is endogeneity issue of the choice of multiple opinions. Admittedly, the use of multiple fairness opinions is endogenously determined by target management. The analysis in previous sections has already show

that the use of multiple fairness opinions is related to many factors such as firm size and other deal characteristic. Yet, these variables may not completely explain why management choose to obtain multiple fairness opinions. There are likely other unobservable factors that could affect the decision of obtaining multiple fairness opinions and could also be related to target returns. For example, if shareholder interests hypothesis is correct, then the use of multiple fairness opinion could be related to the difficulty level of synergy estimation, which is difficult to quantify and could be related to target returns. If the legal protection is correct, then the use of fairness opinion could also be related to the potential litigation risk, which is also likely to be related to target returns. The omitted variable problem has the potential to bias estimates in OLS regressions (Roberts and Whited (2012)). Furthermore, if we do have omitted variable problem, the propensity score matching analysis is as biased as the OLS regression, since a crucial assumption is made on the contents of covariates, which should include all variables that can influence the probability of treatment. In this section, I use a two-stage least squares approach to address the endogeneity issue (Wooldridge (2002)).

Although the IV approach could provide a general solution to the problem of an endogenous explanatory variable, it is quiet challenging to find a clean instrument that meets both the relevance condition and the exclusion condition. A convincing analysis of the causal link between the use of multiple fairness opinions and target returns requires an exogenous source of variation in the choice of obtaining multiple fairness opinions. Ideally, I would like to find a variable that affects the use of multiple fairness opinions but not directly affect the deal outcome. As pointed in Roberts and Whited (2012), "The question one should always ask of a potential instrument is, "Does the instrument affect

the outcome only via its effect on the endogenous regressor?" However, the factors that have been identified to be correlated with the use of multiple fairness opinions (such as firm size, the public status of bidder, the attitude of the deal, etc.,) are also correlated with the deal characteristics, thus are likely to directly affect the deal outcome.

If the use of multiple fairness opinions is randomly assigned, then the realization of the randomizing process could be used to estimate the two stage regressions. In the absence of "pure" random assignment, I need to identify a causal determinant of obtaining multiple fairness opinions that can be legitimately excluded from the target return equation. The supply of fairness opinions in the same city with the target firm may be such a variable. Intuitively, the supply of fairness opinion should be positively related to the use of multiple opinion, and not directed affect the deal outcome. If the supply of fairness opinions is high in the city where the target firm is located, it would be more convenient or cost effective for the target to obtain a second fair opinion. Moreover, local investment banks may also have local information advantage.

The location advantage is not new to the literature. Smith (1991) finds that a stockholder who lives near a significant component of a firm's productive activities has a comparative advantage in monitoring over a shareholder at a more remote location. Alam, Chen, Ciccotello, and Ryan (2014) show that geographic distance between directors and corporate headquarters is related to information acquisition. Alam, Chen, Ciccotello, and Ryan (2014) conclude that geographic location is an important dimension of board structure that influences directors costs of gathering information.

In the two stage regression analysis, I use the number of investment bank branch offices located in the target city as the instrumental variable. The number of branch

offices of investment banks located in each target city captures the location advantage of the target, and is also a reasonable proxy for the supply of fairness opinions in that city. Unfortunately, Neither SDC nor WRDS provides information about the locations of investment banks at branch level. WRDS has information about headquarters of investment banks. However, majority of investment banks have headquarters located in New York, which makes the analysis difficult. To get the number of branch offices in each city, I manually search the website of each investment bank that provided at least one fairness opinion during my sample period, and hand collected the location of each branch office for each investment bank. I scale the total number of branch offices in each city by the number of merger transactions in each year to capture the supply relative to the demand.[47] The instrument variable is an indicator for whether the local fairness opinion supply is 2 or more.[48] For target cities that have zero branch offices, I replace the target city with the closest city that has at least one branch office.[49]

The two-stage least squares (2SLS) procedure is implemented as follows: 1) Obtain the fitted values of the endogenous variable (the use of multiple opinions) from the first stage regression; 2) OLS regression of the deal outcomes on the fitted values obtained from first-stage regression and other explanatory variables.

[47] Ideally, I would like to use the exact number of branch offices in each city at the time the merger happened, however, this information is not available on the investment banks' websites. Thus, to the extent that I measure the local supply of investment banks with error, because investment banks may open new branch offices overtime and the opposite may also be true (investment banks may close branch offices), I introduce noise in this measure thereby undermining my ability to identify the relation between local supply of investment banks and the use of multiple fairness opinions by targets.

[48] The indicator serves as a better instrument because the relation between the likelihood of obtaining a second fairness opinion and the number of local fairness opinion supply may not be linear.

[49] If there is no branch office located in the target city, I compute the geographical distances between the target city and all other cities with branch offices and choose the closest one. I thank Jiekun Huang for proving me a translation file from zip code to latitude and longitude.

Table 3.12 reports the results of the first-stage regressions. Model (1) shows that the use of multiple opinion is indeed positively correlated with the local supply of fairness opinions. Model (3) shows that after controlling for all other explanatory variables, the relation between the use of multiple opinions and the local supply of fairness opinions is still significantly positive.[50]

Table 3.13 reports the results of the second-stage regressions over the short event window and longer event windows. Model 1 to 3 report the results for window (-1,

+1); Model 4 to 6 report the results for window (-20, +20), and Model 7-9 report the results for window (-63, +126). One potential concern regarding the instrument variable is that targets may not completely randomly choose cities to locate. The choice may be related to which specific industry the target is in. To alleviate this concern, I conduct 2SLS controlling for industry effects. As a robustness check, I also control for year effects.

The results show that after controlling for endogeneity, the use of multiple fairness opinions has an insignificantly positive wealth impact over the short even window and has significantly positive wealth impact over both longer event windows. The results are also economically significant: there is an increase of 28% to 31% target returns over the longer event windows if the target firm obtains multiple fairness opinions. Controlling for industry effect and year effect provide statistically similar results.

In summary, the results show that once we address the endogeneity issue caused by the endogenous choice of the use of multiple opinions, we observe a positive wealth

[50] I lost 201 observations due to missing information on target city.

effects associated with the use of multiple opinions. These results again are consistent with the shareholder interests hypothesis and inconsistent with the agency theory hypothesis.

In this section, I employ difference in differences (DD) estimations to provide additional evidence about the use of multiple opinions by targets. The difference in differences estimation can be used to measure the treatment effects stemming from changes in the economic environment or government policy (Roberts and Whited (2012)). The DD estimator represents the difference between the pre-post and the difference of the treatment and control groups. As discussed in Section 3.2, the Pure Resources case (2002) marked the first true recognition by the Delaware courts of the role of the fairness opinion, the underlying analyses as key to the fairness opinions value, and the distinction between the two (Davidoff (2006). If the court is satisfied as long as there is evidence of the existence of fairness opinion before the Pure Resources case, but focuses more on the valuation process after the case, then we would expect fairness opinions to be more informative after the Pure Resources case in 2002.[51]

To conduct a difference in differences estimation, I need to identify a group that is affected more by the treatment, and compare it with the other group. DeAngelo (1990) finds that management buyouts and leverage buyouts have a high level of conflicts of interest between target management and shareholders. This indicates that target shareholders are more likely to demand for independent assessments by investment bankers. Based on this argument, I form a subsample that only contains private bidders

[51] The Sarbanes-Oxley Act of 2002 also increases the scrutiny of fairness opinions. The disclosure requirements include the disclosure regarding whether the firm obtains a fairness opinion, the methods used in reaching the opinion, and any potential conflicts of interest in providing such opinion. Section 201 of the Sarbanes-Oxley Act prohibits a firm's auditors from issuing a fairness opinion.

because management buyout and leverage buyout deals are normally observed in transactions with private bidders.

To make the treatment group comparable to the control group, I exclude the transactions with public bidders, since deals involving public bidders may systematically different from deals involving private bidders. I then separate the subsample into two groups: one includes buyout deals and the other group includes non-buyout deals. If the buyout group is affected more, then we would expect the difference of the percentage use of multiple fairness opinions between the buyout group and non-buyout group to increase after the treatment.

Table 3.14 Panel A shows that before the treatment, 7.5% of the non-buyout group obtain multiple fairness opinions and 13.5% of the buyout group obtain multiple opinions. The difference is 6%. After the treatment, the difference increases to 22% (33.6% - 11.7%). In other words, the percentage increase of multiple opinion for the control group is 4% (11.7% - 7.5%) and the percentage increase of the treated group is 20% (33.6%-13.5%). The results suggest that the information content is one of the driving factor of the use of multiple opinions.

Panel B of Table 3.14 reports the results of the regression model in levels for the DD estimator. If the agency theory hypothesis is correct (the use of multiple fairness opinions destroys shareholders' wealth), then I would expect a significantly negative coefficient for $\beta 1$, the DD estimate. The results reported in Panel B of Table 3.14 show that the use of multiple opinions has an insignificantly positive impact over the (-1, +1) and (-20, +20) window. The coefficient over the longest window is very close to zero (t

value= 0.3). Thus, the difference in difference estimation provides further evidence that the use of multiple opinions does not harm shareholders' wealth.

3.6 Conclusion

This study is the first to examine the wealth effect associated with the use of multiple fairness opinions. Using a manually compiled dataset on a large sample over the period 1996-2011, I show that the use of multiple opinions by targets has increased over time, especially after the year 2002. My results show that the use of multiple fairness opinions is highly related to target size, the public status of the bidder, whether the deal is classified as a hostile deal and also the number of business segments of the target firm. The analyses of wealth effects of the use of multiple fairness opinions show no difference in the wealth effects for targets with multiple fairness opinions and the other group after controlling for other takeover characteristics.

To address the problem caused by sample selection bias, I employ a propensity score matching analysis and a direct matching analysis. Although the propensity score matching shows no return difference between the matched group and the control group, the direct matching analysis shows a significantly positive wealth effect of the use of multiple opinions over the longer event window.

To alleviate the concern of endogeneity, I rely on Two Stage Least Square analysis. Specifically, I use the local supply of fairness opinions as an instrument. The two stage least square results show significantly positive wealth effects over longer event windows and no negative wealth effects over the short event window.

In summary, my results are consistent with shareholder interests hypothesis that predicts target firms choose to obtain multiple fairness opinions for strategic reasons. The

results are not consistent to the agency theory hypothesis which predicts that the group with multiple fairness opinions would have significantly lower returns. There are probably some transactions that target management may use multiple fairness opinions to entrench themselves, but they are dominated by cases where strategic reasons are the main motivation for the target management to seek multiple fairness opinions.

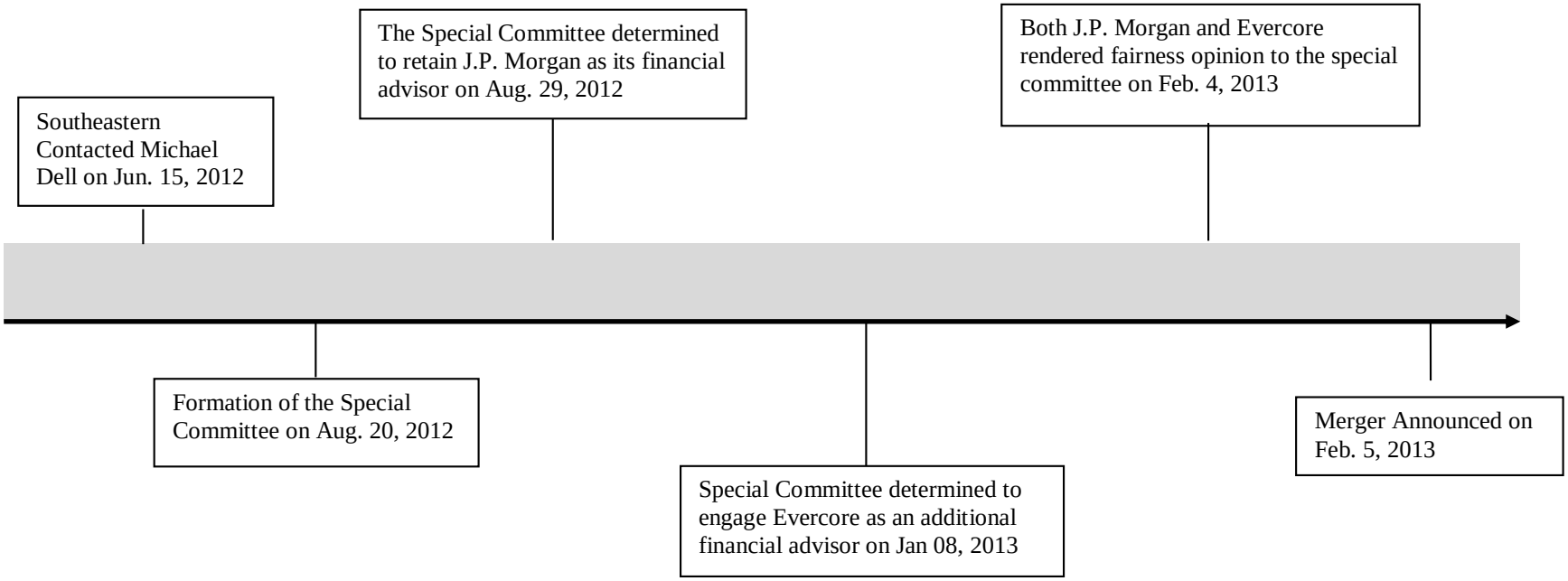


Figure 3.1: The Timeline of Dell Buyout Deal
This figure displays the negotiation process of the Dell buyout deal. This timeline indicates the date when the deal was initiated, dates when financial advisors were hired, the date when fairness opinions were delivered and the date of the merger announcement. The information is from the archive of historical EDGAR documents, PREM14A file, background of the merger section.

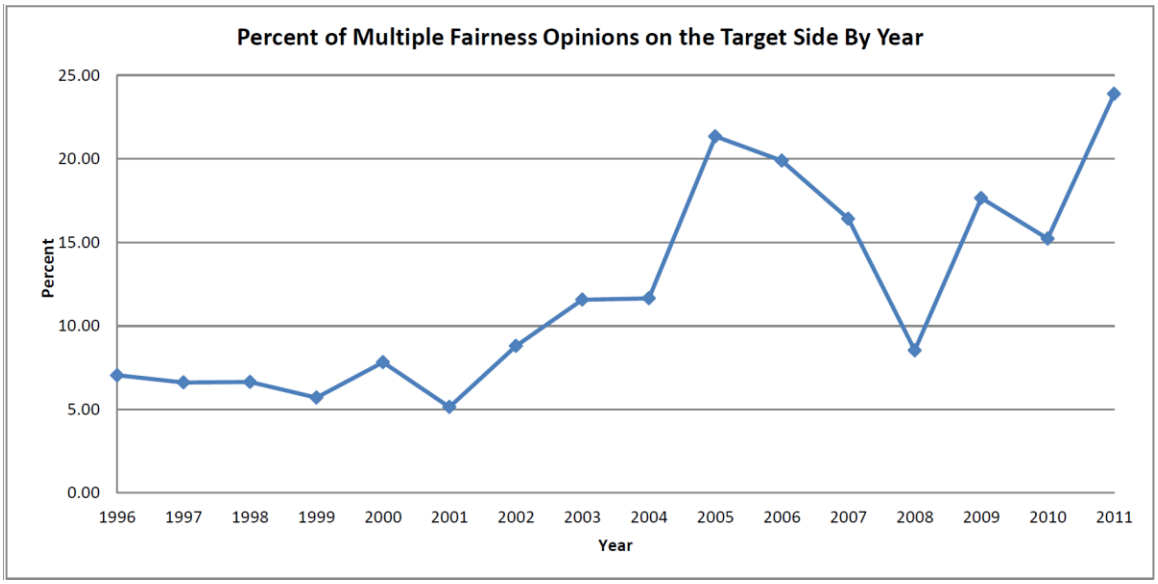


Figure 3.2: Targets' Use of Multiple Fairness Opinions over Time
This figure displays the percentage of the use of multiple fairness opinions on the target side by year over the sample period of 1996 to 2011. Each year, the percentage is computed by using the number of deals with multiple fairness opinions on the target side divided by the total number of deals in that year. Observations are placed in the year of announcement.

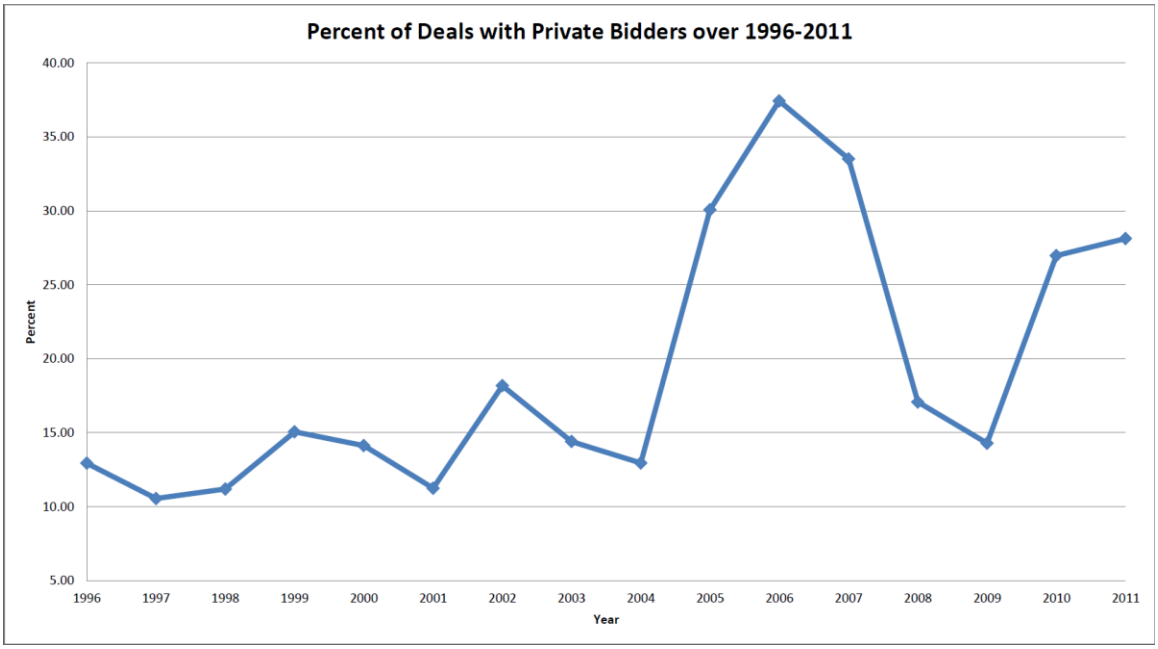


Figure 3.3: The Percent of Private Bidders over Time
This figure displays the percentage of private bidder involved deals over the sample period of 1996 to 2011. Each year, the percentage is computed by using the number of deals that have private bidders divided by the total number of deals in that year. Observations are placed in the year of announcement.

Table 3.1: Comparison between data from SDC and data from Merger Documents
This table compares data of the use of fairness opinions on the target side obtained from SDC with data obtained from merger documents. Panel A reports selected studies that use SDC data to compute the percentage use of fairness opinion by targets over different sample periods. Panel B reports the percentage of the use of fairness opinion using data from merger documents.

Panel A: Data From SDC

	Sample Period	% Target FO
Bowers (2002)	1980-1999	59%
Bowers and Latham (2006)	1980-2002	44%
Makhija and Narayanan (2007)	1980-2004	53%
This study	1996-2011	**61%**

Panel B: Data From Merger Documents

	Sample Period	% Target FO
Kisgen, Qian, and Song (2009)	1994-2003	80%
Chen and Sami (2007)	1997-2003	98%
Cain and Denis (2013)	1998-2005	96%
This study	1996-2011	**98%**

Table 3.2: Summary of Implications of Competing Hypotheses

This table details two testable hypotheses as to why targets choose to obtain multiple fairness opinions in M&A deals: the agency theory hypothesis and the shareholder interests hypothesis. Panel A summarizes the implication in terms of the predicted signs of variable effects in regressions based on the two competing hypotheses. Panel B reports the expected effects for target returns under each hypothesis.

Panel A: Implications for the Use of Multiple Opinions by Targets

	Deal Efficiency Hypothesis	Legal Protection Hypothesis
Dependent Variable: Multiple Use of Fairness Opinions by Targets		
Explanatory Variables:		
Target Size	+	+
Different Industry	+	N/A
Compete	+	-
Hostile	+	-
Number of Business Segments	+	N/A
Private Bidder	+	N/A
Management buyout/Leverage buyout	+	+

Panel B: Implications for the Deal Outcome

	Deal Efficiency Hypothesis	Legal Protection Hypothesis
Target Announcement Returns	0/+	-

Table 3.3: Sample Selection

This table reports the formation process of the sample to be used in the empirical study. The table describes the sample period, sample selection criteria, the number of observations under each selection criterion, and the source of the data.

Data Selection Criteria	Data Source	Number of Observations
M&A between 1996-2011 & Deal Value >= 20 million	SDC	41,999
Deal Status: Complete, Withdrawal	SDC	33,435
Percent of Shares Sought >= 50	SDC	28,920
Public targets	SDC	6,815
Target Share Price 1 Day Prior to Announcement >=$5	SDC	4,328
Target returns available on CRSP	CRSP	3,439
Delete deals without SEC filings	SEC filings	2,849
At least one fairness opinion on the target side	SEC filings	2,777

Table 3.4: Sample Distribution

This table reports the number of deals per year for the sample period of 1996 to 2011. Observations are placed in the year of announcement. In Panel A, data are reported for the full sample and for different structure of fairness opinion: "FO1" which means the target side obtains only one fairness opinion and "FO2" which means the target side obtains at least two fairness opinions. In Panel B, data are reported by different types of bidders: public and private.

Panel A: Sample Distribution By Year and Structure of Target Fairness Opinions						
Year	**Frequency**	**%**	**FO1**	**%_1FO**	**FO2**	**%_2FO**
1996	201	7.24	187	93.03	14	6.97
1997	313	11.27	291	92.97	22	7.03
1998	286	10.30	267	93.36	19	6.64
1999	372	13.40	350	94.09	22	5.91
2000	276	9.94	254	92.03	22	7.97
2001	169	6.09	160	94.67	9	5.33
2002	88	3.17	80	90.91	8	9.09
2003	118	4.25	104	88.14	14	11.86
2004	139	5.01	123	88.49	16	11.51
2005	153	5.51	121	79.08	32	20.92
2006	179	6.45	143	79.89	36	20.11
2007	185	6.66	156	84.32	29	15.68
2008	82	2.95	75	91.46	7	8.54
2009	63	2.27	51	80.95	12	19.05
2010	89	3.20	75	84.27	14	15.73
2011	64	2.30	48	75.00	16	25.00
Total	2777	100	2485	89.49	292	10.51

Panel B: Sample Distribution By Year and Type of Bidder						
Year	**Frequency**	**%**	**Public Bidder**	**%**	**Private Bidder**	**%**
1996	201	7.24	175	87.06	26	12.94
1997	313	11.27	280	89.46	33	10.54
1998	286	10.3	254	88.81	32	11.19
1999	372	13.4	316	84.95	56	15.05
2000	276	9.94	237	85.87	39	14.13
2001	169	6.09	150	88.76	19	11.24
2002	88	3.17	72	81.82	16	18.18
2003	118	4.25	101	85.59	17	14.41
2004	139	5.01	121	87.05	18	12.95
2005	153	5.51	107	69.93	46	30.07
2006	179	6.45	112	62.57	67	37.43
2007	185	6.66	123	66.49	62	33.51
2008	82	2.95	68	82.93	14	17.07
2009	63	2.27	54	85.71	9	14.29
2010	89	3.2	65	73.03	24	26.97
2011	64	2.3	46	71.88	18	28.13
Total	2777	100	2281	82.14	496	17.86

Table 3.5: The Structure of Financial Advisors and Fairness Opinions

This table presents the structure of financial advisors and fairness opinions in M&A deals during 1996-2011. Panel A reports the structure of financial advisors/fairness opinions for the full sample and panel B separates the sample by types of bidders. For the category "Structure of financial advisors/fairness opinions", "one" means a transaction has 1 financial advisors/fairness opinions for the target; "multiple" means there are at least two financial advisors/fairness opinions for the target.

Panel A: Full Sample

	Number	Percentage
Structure of Financial Advisors		
One	2,170	78.1%
Multiple	607	21.9%
Structure of Fairness Opinions		
One	2,485	89.5%
Multiple	292	10.5%

Panel B: By Different Types of Bidder

Public Bidders	Number	Percent		Private Bidders	Number	Percent
Structure of Financial Advisors						
One	1,826	80.1%		One	344	69.4%
Multiple	455	19.9%		Multiple	152	30.6%
Structure of Fairness Opinions						
One	2,071	91%		One	414	83%
Multiple	210	9.2%		Multiple	82	16.5%
Difference	Private-Public		7.33%	P value	0.000	

Table 3.6: Summary Statistics

This table presents summary statistics of the M&A deals between the sample periods 1996-2011. Panel A reports the summary statistics for the full sample. Panel B reports the summary statistics for different fairness opinion structures. "Tsize" is mean (median) equity values in $ million, measured as (stock price * shares outstanding), estimated 30 days prior to announcement. "Premium 1 week (4 weeks) prior" is the percentage difference between the offer price and target share price 1 week (4 weeks) prior to the announcement date. "Hostile" is a dummy variable if the deal attitude is hostile indicated in SDC. "Host(Pre)" is a dummy variable that equals 1 if there is a rumor (pre-activity) before the formal merger announcement. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Number of Segments" is the number of business segments obtained from Compustat. "Unrelated" is a dummy variable equals 1 if the target and bidder are not from the same industry (with different the first two-digit of SIC). The total number of observations is 2,065 for the variable "Number of Segments" because it requires data from Compustat and the total number of observations for other variables is 2,777. "P-value" is the p-value of paired t-tests that test the null that the mean of the two samples are equal.

Panel A: Summary Statistics for Full Sample

	Mean	Median	Std
Target Size	1381.44	262.30	4583.43
Private Bidder	0.18	0.00	0.38
Premium1weekprior	32.40	27.79	33.95
Premium4weeksprior	37.43	31.51	34.02
Hostile	0.013	0.00	0.11
Host(Pre)	0.089	0.00	0.28
Compete	0.05	0.00	0.22
Number of Segments	3.63	3.00	3.64
Unrelated	0.40	0.00	0.49

Panel B: Summary Statistics for Different Fairness Opinion Structures

	One FO		Multiple FOs		Difference	P-value
	Mean	Median	Mean	Median	Multiple-One	
Target Size	1,059.84	226.90	4,117.22	1,210.27	3,057.40	0.00
Private Bidder	0.17	0.00	0.28	0.00	0.11	0.00
Premium1weekprior	32.72	27.91	29.69	25.72	-3.03	0.15
Premium4weeksprior	38.06	32.22	32.07	25.98	-5.98	0.01
Hostile	0.01	0.00	0.03	0.00	0.02	0.00
Host(Pre)	0.07	0.00	0.24	0.00	0.17	0.00
Compete	0.05	0.00	0.10	0.00	0.06	0.00
Number of Segments	3.41	3.00	5.40	3.00	2.00	0.00
Unrelated	0.39	1.00	0.47	1.00	0.08	0.01

Table 3.7: Correlation Coefficient Matrix

This table reports the correlation coefficient matrix between the explanatory variables used in the regression analysis. "MuseFO" stands for multiple use of target fairness opinions, which is a dummy variable that equals 1 if the target side obtains at least two fairness opinions. "lntsize" is the log value of the target size which is measured as (stock price * shares outstanding), estimated 30 days prior to merger announcement. "Private" is a dummy that equals 1 if the bidder's public status is 'private'. "Hostile" is a dummy variable if the deal attitude is hostile indicated in SDC. "Host(Pre)" is a dummy variable that equals 1 if there is a rumor (pre-activity) before the formal merger announcement. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Number of Segments" is the number of business segments obtained from Compustat. "Unrelated" is a dummy variable equals 1 if the target and bidder are not from the same industry (with different the first two-digit of SIC). The coefficients between "N Segment" and other variables are based on sample size of 2,065. The coefficients between other variables are based on sample size of 2,777. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively.

	MuseFO	lntsize	Private	Compete	Hostsdc	Hostpre	Unrelated	N_Segment
MuseFO	1	0.30***	0.09***	0.08***	0.05***	0.19***	0.05***	0.17***
lntsize		1	-0.09***	0.08***	0.03*	0.23***	0.00	0.26***
Private			1	0.1***	-0.01	0.07***	0.34***	0.10***
Compete				1	0.17***	0.12***	0.04**	0.01
Hostsdc					1	0.05***	0.01	0.03
Hostpre						1	0.03	0.03
Unrelated							1	0.04**
N_Segment								1

Table 3.8: Probit Regression Analysis-Determinants of the Use of Multiple Fairness Opinions

This table reports probit regressions of the determinants of the use of multiple opinions. The dependent variable is "MuseFO" that equals 1 if the target obtains at least two fairness opinions. "lntsize" is the log value of the target size, measured 30 days prior to merger announcement. "Private" is a dummy that equals 1 if the bidder's public status is 'private'. "Hostile" is a dummy variable if the deal attitude is hostile indicated in SDC. "Host(Pre)" is a dummy variable that equals 1 if there is a rumor (pre-activity) before the formal merger announcement. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Number of Segments" is the number of business segments obtained from Compustat. "Unrelated" is a dummy variable equals 1 if the target and bidder are not from the same industry (with different the first two-digit of SIC). "Private_Buyout" is an interaction term between "private" dummy and "Buyout" dummy which equals 1 if the deal is a buyout transaction. Marginal effects are reported. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. Z-statistics are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Private	0.073***	0.003							0.056**	0.051**	0.055**
	(4.13)	(0.16)							(2.45)	(2.25)	(2.14)
Priv_buyout		0.162***							0.053*	0.050*	0.035
		(3.80)							(1.75)	(1.66)	(1.14)
Lntsize			0.047***						0.046***	0.043***	0.045***
			(15.34)						(14.91)	(13.71)	(10.81)
Unrelated				0.033***					0.003	0.004	-0.000
				(2.69)					(0.28)	(0.37)	(-0.03)
Compete					0.103***				0.024	0.024	0.018
					(3.07)				(1.07)	(1.07)	(0.70)
Hostile(SDC)						0.140**			0.094		
						(1.98)			(1.56)		
Hostile(Pre)							0.201***			0.069***	0.079***
							(6.84)			(3.17)	(3.09)
N_Segment								0.012***			0.005***
								(7.41)			(3.40)
Observations	2,777	2,777	2,777	2,777	2,777	2,777	2,777	2,065	2,777	2,777	2,065
Pseudo R2	0.013	0.025	0.133	0.004	0.011	0.0031	0.0386	0.036	0.1556	0.162	0.1639

Table 3.9: Event Study Analysis

This table reports target event study returns for the full sample of 2777 target firms. Panel A reports the event study returns for the full sample and Panel B reports target returns for different structures of the fairness opinion. Target returns are cumulative net of market returns for window (-1, +1), (-20, +20), and (-63, +126), where day 0 is the announcement date and the market index is the CRSP value-weighted index. "Multiple Fairness Opinions = No" means that the target firm obtains at most one fairness opinion. "Multiple Fairness Opinions = Yes" means that the target firm obtains at least two fairness opinions. "T-value" reports the t value for a t-test of the null that the mean return equals zero. "P-value" is the p-value of paired t-tests that test the null that the mean of the two samples are equal.

Panel A: Target Announcement Returns for the Full Sample

Event Window:			(-1, +1)			(-20, +20)			(-63, +126)
N	Mean	Median	T	Mean	Median	T	Mean	Median	T
2,777	19.73%	16.54%	50.36	26.23%	23.06%	56.71	32.26%	28.84%	50.25

Panel B: Target Announcement Returns for Different Fairness Opinion Structures

Event Window:			(-1, +1)			(-20, +20)			(-63, +126)
Multiple Fairness Opinions = No									
N	Mean	Median	T	Mean	Median	T	Mean	Median	T
2,485	20.20%	17.06%	48.48	27.05%	23.66%	54.90	33.00%	29.94%	48.40
Multiple Fairness Opinions = Yes									
N	Mean	Median	T	Mean	Median	T	Mean	Median	T
292	15.73%	12.75%	14.06	19.26%	17.07%	15.30	25.96%	21.94%	13.95
Tests of Equal mean									
Difference	4.47%	P-value	0.00	7.79%	P-value	0.00	7.04%	P-value	0.00

Table 3.10: OLS Regression Analysis

This table reports OLS analysis of target returns on the use of multiple opinions. The dependent variables are cumulative net of market returns around the short and long windows. "MuseFO" is a dummy variable that equals 1 if the target obtains at least two opinions. "lntsize" is the log value of target size estimated 30 days prior to merger announcement. "Private" is a dummy that equals 1 if the bidder's public status is 'private'. "Toehold" is dummy variable that equals 1 if the share held by bidder at announcement is larger than 5%. "Tenderoffer" is a dummy that equals 1 if a tender offer is used. "Cash" is a dummy variable that equals 1 if the deal is paid by cash. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Host(Pre)" is a dummy variable that equals 1 if there is a pre-activity before the merger announcement. "Finance" is a dummy that equals 1 if the target firm is in the financial industry. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. T-statistics are reported in parentheses.

	Event Window: (-1, +1)			Event Window: (-20, +20)			Event Window : (-63, +126)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MuseFO	-0.044***	-0.018	-0.009	-0.078***	-0.028*	-0.019	-0.070***	-0.017	-0.012
	(-3.69)	(-1.46)	(-0.73)	(-5.19)	(-1.78)	(-1.28)	(-3.37)	(-0.77)	(-0.54)
Lntsize		-0.015***	-0.010***		-0.027***	-0.025***		-0.027***	-0.028***
		(-6.18)	(-3.97)		(-9.20)	(-8.15)		(-6.38)	(-6.53)
Private		-0.020**	-0.040***		-0.060***	-0.078***		-0.102***	-0.129***
		(-2.07)	(-3.87)		(-5.01)	(-6.10)		(-6.08)	(-7.04)
Toehold			-0.034*			-0.058**			-0.073**
			(-1.79)			(-2.48)			(-2.19)
Tenderoffer			0.081***			0.118***			0.084***
			(7.85)			(9.17)			(4.55)
Cash			0.054***			0.041***			0.038**
			(6.25)			(3.77)			(2.48)
Compete			-0.030*			-0.014			0.047*
			(-1.87)			(-0.72)			(1.66)
Hostile(Pre)			-0.073***			-0.049***			-0.024
			(-5.64)			(-3.05)			(-1.03)
Finance			-0.017**			-0.045***			-0.079***
			(-2.02)			(-4.39)			(-5.40)
Observations	2,777	2,777	2,777	2,777	2,777	2,777	2,777	2,777	2,777
R-squared	0.005	0.019	0.088	0.010	0.044	0.111	0.004	0.028	0.062

Table 3.11: Matching Analysis

This table presents the results of matching analysis of target returns. Panel A reports propensity score matching and Panel B reports the direct matching. Target abnormal returns are cumulative market adjusted returns over (-1, +1), (-20, +20), and (-63, +126) windows, where day 0 is the announcement date and the market index is the CRSP value-weighted index. The first stage in the propensity score matching computes a propensity score which is the probability that a given sample firm would use multiple opinions. The second stage matches the firm that did use multiple opinions (the treated group) with a sample firm that did not use multiple opinions (the control group). This process is followed for every firm with replacement to ensure the closest possible characteristic match. In the results below, the unmatched sample computes the simple average of returns for the multiple fairness opinion sample versus all other firms. The Matched sample compares the multiple fairness opinion firms to their counterparts based on the nearest matched non-multiple opinion firms who are in the region of common support. The direct matching process matches the firm with multiple opinions (the treated group) with a firm without multiple opinions (control group) explicitly on the following criteria: (1) the treated and matched firm are from the same industry; (2) the treated and control firm have the same bidder type, and (3) the treated and control firm have the same deal type (friendly or hostile) and (4) the control firm size is the closest compared to the treated firm size and has to be within a certain range based on the size of the treated firm. Panel B.1 reports the results based on the control firm size ranging from 80% to 120% of the treated size. Panel B.2 reports the results based on a size range of 98% to 102%. Panel B.3 reports the results based on a size range of 99% to 101%.

Panel A: Propensity Score Matching						
Event Window	Sample	Treated	Controls	Difference	S.E.	T-Value
(-1, +1)	Unmatched	15.66%	19.97%	-4.31%	0.01	-3.60
	Matched	15.66%	15.55%	0.11%	0.02	0.06
(-20, +20)	Unmatched	19.28%	27.01%	-7.73%	0.02	-5.13
	Matched	19.28%	20.42%	-1.13%	0.02	-0.57
(-63, +126)	Unmatched	25.99%	32.98%	-6.99%	0.02	-3.31
	Matched	25.99%	26.06%	-0.07%	0.03	-0.02
Panel B.1: Direct Matching (Size range: from 80% to 120%)						
Event Window	N	Treated	Controls	Difference	T-Value	P-Value
(-1, +1)	224	17.21%	15.50%	1.71%	1.21	0.23
(-20, +20)	224	21.46%	21.33%	0.12%	0.07	0.94
(-63, +126)	224	28.86%	23.93%	4.94%	1.73	0.08
Panel B.2: Direct Matching (Size range: from 98% to 102%)						
Event Window	N	Treated	Controls	Difference	T-Value	P-Value
(-1, +1)	123	16.07%	17.05%	-0.99%	-0.49	0.63
(-20, +20)	123	22.76%	22.38%	0.38%	0.15	0.88
(-63, +126)	123	30.19%	22.99%	7.19%	1.87	0.06
Panel B.3: Direct Matching (Size range: from 99% to 101%)						
Event Window	N	Treated	Controls	Difference	T-Value	P-Value
(-1, +1)	90	16.59%	18.55%	-1.96%	-0.8	0.43
(-20, +20)	90	25.04%	23.96%	1.07%	0.33	0.74
(-63, +126)	90	33.26%	23.01%	10.24%	2.18	0.03

Table 3.12: Supply of Fairness Opinions and the Use of Multiple Opinions
This table reports the results of the first stage regressions. The dependent variable is "MuseFO" that equals 1 if the target obtains at least two fairness opinions. "lntsize" is the log value of the target size which is measured as (stock price*shares outstanding), estimated 30 days prior to merger announcement. "Private" is a dummy that equals 1 if the bidder's public status is 'private'. "Toehold" is dummy variable that equals 1 if the share held by bidder at announcement is larger than 5%. "Tenderoffer" is a dummy that equals 1 if a tender offer is used. "Cash" is a dummy variable that equals 1 if the deal is paid by cash. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Host(Pre)" is a dummy variable that equals 1 if there is a rumor (pre-activity) before the formal merger announcement. "Finance" is a dummy that equals 1 if the target firm is in the financial industry according to Fama-French 12 industry codes. The instrument variable "IBSupply" is an indicator for whether the local fairness opinion supply is 2 or more, where the local fairness opinion supply is measured by the number of local IB branch offices, scaled by the number of merger transactions each year. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. Z-statistics are reported in parentheses.

	(1)	(2)	(3)
IBSupply	0.255***	0.165**	0.160**
	(3.81)	(2.25)	(2.14)
Lntsize		0.335***	0.320***
		(14.39)	(12.90)
Private		0.563***	0.467***
		(6.41)	(4.69)
Toehold		0.173	0.183
		(1.02)	(1.08)
Tenderoffer			-0.031
			(-0.28)
Cash			0.136
			(1.49)
Compete			0.163
			(1.17)
Hostile(Pre)			0.386***
			(3.62)
Finance			0.078
			(0.88)
Constant	-1.386***	-3.567***	-3.572***
	(-28.85)	(-21.75)	(-19.62)
Observations	2,576	2,576	2,576

Table 3.13: Two-Stage Regression Analysis

This table reports 2SLS analysis. In the first stage, coefficients are obtained using a probit regression. The predicted values of the "MuseFO" then are used in the second stage regression. The dependent variables are cumulative net of market returns around the short and long event windows. "MuseFO" is a dummy that equals 1 if the target obtains two opinions. "lntsize" is the log value of the target size measured 30 days prior to merger announcement. "Private" is a dummy that equals 1 if the bidder's public status is 'private'. "Toehold" is dummy that equals 1 if the share held by bidder at announcement is larger than 5%. "Tenderoffer" is a dummy that equals 1 if a tender offer is used. "Cash" is a dummy that equals 1 if the deal is paid by cash. "Compete" is a dummy that equals 1 if there is more than one bidder. "Host(Pre)" is a dummy that equals 1 if there is a rumor (pre-activity) before merger announcement. "Finance" is a dummy that equals 1 if the target is in the financial industry. The instrument variable "Lnsupply" is the log value of local fairness opinion supply measured by the number of local IB branch offices, scaled by the number of merger transactions each year. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. T-statistics are reported in parentheses.

	Event Window: (-1, +1)			Event Window: (-20, +20)			Event Window : (-63, +126)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MuseFO	0.083	0.097	0.061	0.310**	0.293**	0.289***	0.281*	0.286*	0.273**
	(0.94)	(1.13)	(0.87)	(2.44)	(2.34)	(2.71)	(1.73)	(1.77)	(2.05)
Lntsize	-0.014**	-0.014**	-0.015***	-0.042***	-0.040***	-0.040***	-0.043***	-0.041***	-0.038***
	(-2.39)	(-2.42)	(-3.05)	(-5.21)	(-5.02)	(-5.89)	(-4.00)	(-3.84)	(-4.18)
Private	-0.049***	-0.050***	-0.048***	-0.107***	-0.102***	-0.100***	-0.158***	-0.144***	-0.135***
	(-3.47)	(-3.54)	(-3.74)	(-5.94)	(-5.75)	(-6.20)	(-6.56)	(-6.01)	(-6.40)
Toehold	-0.036**	-0.036**	-0.036**	-0.073***	-0.071***	-0.074***	-0.081**	-0.071**	-0.077**
	(-2.11)	(-2.09)	(-2.06)	(-3.32)	(-3.29)	(-3.38)	(-2.57)	(-2.26)	(-2.56)
Tenderoffer	0.076***	0.072***	0.072***	0.116***	0.113***	0.101***	0.080***	0.074***	0.050***
	(6.29)	(5.98)	(5.94)	(7.78)	(7.59)	(6.87)	(4.34)	(4.03)	(2.76)
Cash	0.056***	0.053***	0.042***	0.037***	0.033***	0.035***	0.037**	0.028*	0.042***
	(5.73)	(5.31)	(4.21)	(3.07)	(2.68)	(2.89)	(2.45)	(1.78)	(2.77)
Compete	-0.032**	-0.034**	-0.030**	-0.021	-0.018	-0.016	0.049	0.058*	0.062**
	(-2.14)	(-2.20)	(-2.01)	(-0.86)	(-0.78)	(-0.68)	(1.62)	(1.91)	(2.14)
Hostile(Pre)	-0.083***	-0.085***	-0.083***	-0.088***	-0.087***	-0.088***	-0.056*	-0.055*	-0.055*
	(-5.22)	(-5.51)	(-5.68)	(-3.66)	(-3.75)	(-3.87)	(-1.87)	(-1.87)	(-1.95)
Finance	-0.015*			-0.052***			-0.084***		
	(-1.69)			(-4.50)			(-5.27)		
Constant	0.260***	0.291***	0.300***	0.488***	0.517***	0.509***	0.569***	0.608***	0.564***
	(8.49)	(7.67)	(7.94)	(11.75)	(11.08)	(10.66)	(10.40)	(10.11)	(9.81)
Industry Control	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Year Control	No	No	Yes	No	No	Yes	No	No	Yes
Observations	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576

Table 3.14: Difference in Differences Estimation

This table reports the difference in differences estimation. Panel A compared the percentage increase of the use of multiple fairness opinions for buyout group and non-buyout group pre and post the year 2002. "Buyout" is a dummy variable that equals 1 if the deal is a management buyout or leverage buyout deal. "PostTreat" is a dummy variable that equals 1 if the transaction happened after the year 2002. Panel B reports the regression results for the difference in differences estimation. "PostTreat*Buyout" is an interaction term between the "PostTreat" dummy and "Buyout" dummy. The dependent variable in Panel B is target 3 day net of market returns over the (-1, +1) window, where day 0 is the announcement date and the market index is the CRSP value-weighted index.

Panel A: Comparison of % increase of multiple opinions

Analysis Variable : MuseFO

Buyout	PostTreat	N Obs	Mean	Median	T
0	0	147	7.48%	0	3.44
	1	137	11.68%	0	4.24
1	0	74	13.51%	0	3.38
	1	138	33.60%	0	8.14

Panel B: Difference in Differences Estimation

Event Window:	(-1, +1)	(-20, +20)	(-63, +126)
	(1)	(2)	(3)
PostTreat*Buyout	0.041	0.044	-0.019
	(1.20)	(1.07)	(-0.30)
Buyout	-0.034	-0.026	0.020
	(-1.29)	(-0.76)	(0.37)
PostTreat	0.011	0.008	0.031
	(0.42)	(0.27)	(0.73)
lntsize	-0.017***	-0.034***	-0.055***
	(-2.61)	(-4.23)	(-4.58)
toehold	-0.032	-0.043*	-0.006
	(-1.28)	(-1.67)	(-0.13)
tenderoffer	0.078***	0.119***	0.125***
	(2.85)	(3.91)	(2.94)
cash	0.012	-0.003	0.028
	(0.61)	(-0.15)	(0.82)
compete	-0.032	0.037	0.020
	(-1.18)	(1.01)	(0.40)
hostpre	-0.065***	-0.033	0.040
	(-2.90)	(-1.16)	(1.08)
Constant	0.186***	0.390***	0.326***
	(2.90)	(5.53)	(3.61)
Industry Control	Yes	Yes	Yes
Observations	492	492	492
R-squared	0.175	0.185	0.162

CHAPTER 4

CONCLUSION

The two essays comprising the current dissertation investigate why fairness opinions are used in mergers and acquisitions and the associated wealth implication. The goal of the research is to first better understand the main motivation for the management to seek fairness opinions and then examine the wealth implication associated with the choice of obtaining fairness opinions.

Using a comprehensive hand-collected data, the first essay examines the use of fairness opinions on the bidder side. Over the period 1996-2011, 22% of the bidders choose to rely on in-house experts and do not hire financial advisors. Among the 78% that do hire investment banks, 43% of the bidders obtain fairness opinions from their financial advisors. The main results provided in the first essay show that a bidder is more likely to obtain a fairness opinion if the deal needs shareholders' approval (i.e., the bidder needs to issue more than 20% new equity to finance the merger). The results indicate that firms use fairness opinions to communicate with shareholders and persuade shareholders to approve the issuance of new equity to finance the merger.

After identifying a jump of probability of obtaining fairness opinions at the cutoff of 20% equity issuance, I employ a regression discontinuity design (RDD) to estimate the causal effect of the use of fairness opinions on deal outcomes measured by premiums paid to targets, bidder announcement returns and the combined firm returns. In consistent with the findings of prior studies which document lower merger announcement returns

associated with the use of fairness opinions by bidders, RDD estimates show a positive and significant impact of the use of fairness opinion on both bidder announcement returns and the combined firm announcement returns.

The first essay also shows that traditional OLS estimates are biased because of endogeneity. The results show a negative relation between percentage of shares issued and bidder announcement returns. The negative coefficients observed in the OLS regression are driven by the high positive correlation between share issuance and the use of fairness opinion.

The second essay investigates the use of multiple fairness opinions by targets. The use of multiple opinions by targets has increased over time, especially after the year 2002. The results show that the use of multiple fairness opinions is highly related to target size, the public status of the bidder, whether the deal is classified as a hostile deal and also the number of business segments of the target firm.

Although the univariate tests show a negative wealth impact of the use of multiple fairness opinions over both the short event window and the longer event windows, direct matching analysis and Two Stage Least Square analysis show positive wealth effects over longer event windows and no negative effects over the short even window. These results indicate that after controlling for endogeneity, the use of multiple fairness opinions by targets does not destroy shareholders' wealth.

Together, the two essays show that management obtains fairness opinions for strategic reasons, and the use of fairness opinions does not have a negative impact on shareholders' wealth. The results provide new, important insights on the incentives of the management to use fairness opinions in takeover transactions.

REFERENCES

Alam, Zinat S, Mark A Chen, Conrad S Ciccotello, and Harley E Ryan, 2014, Does the location of directors matter? Information acquisition and board decisions, Journal of Financial and Quantitative Analysis 49, 131–164.

Andrade, Gregor, Mark Mitchell, and Erik Stafford, 2001, New evidence and perspectives on mergers, Journal of Economic Perspectives 15, 103–120.

Bao, Jack, and Alex Edmans, 2011, Do investment banks matter for M&A returns?, Review of Financial Studies p. hhr014.

Bargeron, Leonce L, Frederik P Schlingemann, Ren´e M Stulz, and Chad J Zutter, 2008, Why do private acquirers pay so little compared to public acquirers?, Journal of Financial Economics 89, 375–390.

Bebchuk, Lucian Arye, and Marcel Kahan, 1989, Fairness opinions: How fair are they and what can be done about it?, Duke Law Journal 1989, 27–53.

Becher, David A, 2000, The valuation effects of bank mergers, Journal of corporate finance 6, 189–214.

Becher, David A, J Harold Mulherin, and Ralph A Walkling, 2012, Sources of gains in corporate mergers: Refined tests from a neglected industry, Journal of Financial and Quantitative Analysis 47, 57.

Betton, Sandra, and B Espen Eckbo, 2000, Toeholds, bid jumps, and expected payoffs in takeovers, Review of Financial Studies 13, 841–882.

Boone, Audra L, and J Harold Mulherin, 2007a, Do termination provisions truncate the takeover bidding process?, Review of Financial Studies 20, 461–489.

Boone, Audra L, and J Harold Mulherin, 2007b, How are firms sold?, The Journal of Finance 62, 847–875.

Boone, Audra L, and J Harold Mulherin, 2014, Who monitors the monitor? the use of special committees by target firms in corporate takeovers, Journal of Corporate Finance.

Bowers, Helen, 2002, Fairness opinions and the business judgment rule an empirical investigation of target firms' use of fairness opinions, Northwestern University law review 96.

Bowers, Helen M, and William R Latham, 2006, Information asymmetry, litigation risk, uncertainty and the demand for fairness opinions: Evidence from us mergers and acquisitions, 1980-2002, Litigation Risk, Uncertainty and the Demand for Fairness Opinions: Evidence from US Mergers and Acquisitions 2002.

Bowers, Helen M, and Robert E Miller, 1990, Choice of investment banker and share-holders' wealth of firms involved in acquisitions, Financial Management pp. 34–44.

Cain, Matthew, and David Denis, 2013, Information production by investment banks: Evidence from fairness opinions, in Journal of Law and Economics, Forthcoming.

Cameron, A Colin, and Pravin K Trivedi, 2005, Microeconometrics: methods and applications (Cambridge university press).

Card, David, 1993, Using geographic variation in college proximity to estimate the return to schooling, Discussion paper, National Bureau of Economic Research.

Carney, William J, 1992, Fairness opinions: How fair are they and why should we do nothing about it, Washington University Law Quarterly 70, 523.

Chen, Lucy Huajing, and Heibatollah Sami, 2006, Does the use of fairness opinions impair the acquirers' abnormal returns? the litigation risk effect, Arizona State University and Lehigh University, Working Paper.

Cleveland, Steven J, 2006, An economic and behavioral analysis of investment bankers when delivering fairness opinions, Alabama Law Review 58, 299–348.

Dann, Larry Y, and Harry DeAngelo, 1983, Standstill agreements, privately negotiated stock repurchases, and the market for corporate control, Journal of Financial Economics 11, 275–300.

Davidoff, Steven, 2006, Fairness opinions, American University Law Review 55, 1557–1625.

DeAngelo, Harry, 1981, Competition and unanimity, The American Economic Review 71, 18–27.

DeAngelo, Harry, Linda DeAngelo, and Rene M Stulz, 2010, Seasoned equity offerings, market timing, and the corporate lifecycle, Journal of Financial Economics 95, 275–295.

DeAngelo, Harry, and Edward M Rice, 1983, Antitakeover charter amendments and stockholder wealth, Journal of Financial Economics 11, 329–359.

DeAngelo, Linda Elizabeth, 1990, Equity valuation and corporate control, Accounting Review pp. 93–112.

Eckbo, B Espen, and Herwig Langohr, 1989, Information disclosure, method of payment, and takeover premiums: Public and private tender offers in France, Journal of Financial Economics 24, 363–403.

Elson, CM, AH Rosenbloom, and DGL Chapman, 2003, Fairness opinions–can they be made useful, Securities Regulation and Law Report 35.

Elson, Charles M, 1992, Fairness opinions: Are they fair or should we care, Ohio State Law Journal 53, 951.

Fama, Eugene F, 1980, Agency problems and the theory of the firm, The Journal of Political Economy pp. 288–307.

Fama, Eugene F, 1991, Efficient capital markets: II, The Journal of Finance 46, 1575–1617.

Fan, Jianqing, 1992, Design-adaptive nonparametric regression, Journal of the American Statistical Association 87, 998–1004.

Fan, Jianqing, and Irene Gijbels, 1996, Local polynomial modelling and its applications: monographs on statistics and applied probability 66 . vol. 66 (CRC Press).

Fischel, Daniel R, 1985, The business judgment rule and the trans union case, The Business Lawyer pp. 1437–1455.

Frye, Melissa B, and Weishen Wang, 2010, Boards, uncertainty, and the use of fairness opinions, Corporate Governance: An International Review 18, 48–63.

Goldman, Eitan, and Jun Qian, 2005, Optimal toeholds in takeover contests, Journal of Financial Economics 77, 321–346.

Hahn, Jinyong, Petra Todd, and Wilbert Van der Klaauw, 2001, Identification and estimation of treatment effects with a regression-discontinuity design, Econometrica 69, 201–209.

Harford, Jarrad, Sattar A Mansi, and William F Maxwell, 2008, Corporate governance and firm cash holdings in the us, Journal of Financial Economics 87, 535–555.

Houston, Joel F, and Michael D Ryngaert, 1994, The overall gains from large bank mergers, Journal of Banking & Finance 18, 1155–1176.

Huang, Yen-Sheng, and Ralph A Walkling, 1987, Target abnormal returns associated with acquisition announcements: Payment, acquisition form, and managerial resistance, Journal of Financial Economics 19, 329–349.

Iacono, Christopher, 2004, Tender offers and short-form mergers by controlling shareholders under Delaware law: The'800-pound gorilla'continues unimpeded-in re pure resources, inc., shareholders litigation, Delaware Journal of Corporate Law 28.

Imbens, Guido W, and Thomas Lemieux, 2008, Regression discontinuity designs: A guide to practice, Journal of Econometrics 142, 615–635.

Jarrell, Gregg A, and Annette B Poulsen, 1989, Stock trading before the announcement of tender offers: insider trading or market anticipation?, Journal of Law, Economics, & Organization 5, 225–248.

Jensen, Michael C, and William H Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, Journal of financial economics 3, 305–360.

Kale, Jayant R, Omesh Kini, and Harley E Ryan, 2003, Financial advisors and shareholder wealth gains in corporate takeovers, Journal of Financial and Quantitative Analysis 38, 475–501.

Kane, Thomas J, and Cecilia Elena Rouse, 1995, Labor-market returns to two-and four-year college, The American Economic Review 85, 600–614.

Kim, Woojin, and Michael S Weisbach, 2008, Motivations for public equity offers: An international perspective, Journal of Financial Economics 87, 281–307.

Kisgen, Darren J, Jun Qian, and Weihong Song, 2009, Are fairness opinions fair? the case of mergers and acquisitions, Journal of Financial Economics 91, 179–207.

Krishnan, CNV, Ronald W Masulis, Randall S Thomas, and Robert B Thompson, 2012, Shareholder litigation in mergers and acquisitions, Journal of Corporate Finance 18, 1248–1268.

Lee, David S, 2008, Randomized experiments from non-random selection in us house elections, Journal of Econometrics 142, 675–697.

Lee, David S., and Thomas Lemieux, 2010, Regression discontinuity designs in economics, Journal of Economic Literature 48, 281–355.

Liu, Tingting, and Juan Julie Wu, 2014, Merger arbitrage short selling and price pressure, Journal of Corporate Finance 27, 36–54.

Louis, Henock, 2004, Earnings management and the market performance of acquiring firms, Journal of Financial Economics 74, 121–148.

Ludwig, Jens, and Douglas L Miller, 2007, Does head start improve children's life chances? evidence from a regression discontinuity design, The Quarterly Journal of Economics 122, 159–208.

Makhija, Anil, and Rajesh Narayanan, 2007, Fairness opinions in mergers and acquisitions, Working Paper, Fisher College of Business.

Mallar, Charles D, 1979, Alternative econometric procedures for program evaluations: illustrations from an evaluation of job corps, in Proceedings of the Business and Economics Statistics Section of the American Statistical Association pp. 317–321.

McCrary, Justin, 2008, Manipulation of the running variable in the regression discontinuity design: A density test, Journal of Econometrics 142, 698–714.

Michel, Allen, Israel Shaked, and You-Tay Lee, 1991, An evaluation of investment banker acquisition advice: the shareholders' perspective, Financial Management pp. 40–49.

Mitchell, Mark, Todd Pulvino, and Erik Stafford, 2004, Price pressure around mergers, The Journal of Finance 59, 31–63.

Moeller, Thomas, 2005, Let's make a deal! how shareholder control impacts merger payoffs, Journal of Financial Economics 76, 167 – 190.

Mulherin, Harold, and Serif Aziz Simsir, 2014, Measuring deal premiums in takeovers, Financial Management.

Mulherin, J Harold, and Audra L Boone, 2000, Comparing acquisitions and divestitures, Journal of Corporate Finance 6, 117–139.

Oesterle, Dale A, 1992, Fairness opinions as magic pieces of paper, Washington University Law Quarterly 70, 541.

Officer, Micah S, 2003, Termination fees in mergers and acquisitions, Journal of Financial economics 69, 431–467.

Petersen, Mitchell A, 2009, Estimating standard errors in finance panel data sets: Comparing approaches, Review of financial studies 22, 435–480.

Porter, Jack, 2003, Estimation in the regression discontinuity model, Unpublished Manuscript, Department of Economics, University of Wisconsin at Madison pp. 5–19.

Prabhala, N, and K Li, 2007, Self-selection models in corporate finance, Handbook of Corporate Finance, Espen Eckbo ed.

Ricadela, Aaron, 2013, September 12, Dell shareholders approve founder buyout proposal, Bloomberg.com.

Roberts, Michael, and Toni Whited, 2012, Endogeneity in empirical corporate finance, Working Paper, University of Rochester.

Schwert, G William, 1996, Markup pricing in mergers and acquisitions, Journal of Financial economics 41, 153–192.

Schwert, G William, 2000, Hostility in takeovers: in the eyes of the beholder?, The Journal of Finance 55, 2599–2640.

Servaes, Henri, and Marc Zenner, 1996, The role of investment banks in acquisitions, Review of Financial Studies 9, 787–815.

Shaw, Bill, and Edward J Gac, 1995, Fairness opinions in leveraged buy-outs-should investment bankers be directly liable to shareholders, Securities Regulation Law Journal 23, 293–319.

Shleifer, Andrei, and Robert W Vishny, 2003, Stock market driven acquisitions, Journal of Financial Economics 70, 295–311.

Smith, Clifford W, 1991, Globalization of financial markets, in Carnegie-Rochester Conference Series on Public Policy vol. 34 pp. 77–96. Elsevier.

Song, Weihong, Jie Diana Wei, and Lei Zhou, 2012, The value of boutique? financial advisors in mergers and acquisitions, Journal of Corporate Finance.

Wooldridge, Jeffrey M, 2002, Econometric analysis of cross section and panel data (The MIT press).

APPENDICES

APPENDIX A: Example of Letter to Bidder Shareholders

GILLETTE- Duracell Battery Merger As filed with the Securities and Exchange Commission on November 26, 1996

SECURITIES AND EXCHANGE COMMISSION Washington, D.C. 20549

Form S-4

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

THE GILLETTE COMPANY Letter to Gillette Shareholders

Prudential Tower Building

Boston, MA 02199

November 29, 1996

Dear Stockholder:

A Special Meeting of the stockholders of The Gillette Company will be held at 10:00 a.m. on Monday, December 30, 1996, at the Sheraton Boston Hotel, 39 Dalton Street, Boston, Massachusetts.

At the Special Meeting, holders of shares of Gillette stock will be asked to consider and vote upon a proposal to approve the issuance of shares of Gillette common stock pursuant to an Agreement and Plan of Merger (”Merger Agreement”), dated as of September 12, 1996, among Gillette, a wholly-owned subsidiary of Gillette, and Duracell International Inc. Pursuant to the Merger Agreement, Gillette’s subsidiary will be merged into Duracell (the ”Merger”), and Duracell will become a wholly-owned subsidiary of

Gillette. In the Merger, each outstanding share of Duracell common stock will be converted into the right to receive 0.904 shares of Gillette common stock and each outstanding option to purchase Duracell common stock will become an option to purchase Gillette common stock.

Your Board of Directors has carefully reviewed and considered the terms and conditions of the Merger and has received the opinions of Merrill Lynch, Pierce, Fenner & Smith Incorporated and J. P. Morgan Securities Inc., its financial advisors, that, as of September 12, 1996 and based on and subject to certain matters stated therein, the consideration to be paid by Gillette in the Merger was fair to Gillette from a financial point of view. Copies of these opinions are attached as Annexes B and C to the accompanying Joint Proxy Statement/Prospectus.

THE BOARD OF DIRECTORS OF GILLETTE HAS DETERMINED THAT THE MERGER IS FAIR TO GILLETTE AND IN THE BEST INTERESTS OF ITS STOCKHOLDERS. ACCORDINGLY, THE BOARD OF DIRECTORS HAS APPROVED THE MERGER AGREEMENT AND RECOMMENDS THAT YOU VOTE IN FAVOR OF THE ISSUANCE OF SHARES OF GILLETTE COMMON STOCK IN CONNECTION WITH THE MERGER.

Your vote is important regardless of how many shares you own. Please take a few minutes now to review the proxy statement and to sign and date your proxy and return it in the envelope provided. You may attend the meeting and vote in person even if you have previously returned your proxy.

Sincerely, ALFRED M. ZEIEN,

Chairman of the Board and Chief Executive Officer

APPENDIX B: Fairness Opinion that Deems the Initial Consideration as "Unfair"

UNITED STATES SECURITIES AND EXCHANGE COMMISSION Washing- ton, D.C. 20549 SCHEDULE 14D-9 SOLICITATION/RECOMMENDATION STATEMENT PURSUANT TO SECTION 14(d)(4) OF THE SECURITIES EXCHANGE ACT OF 1934 VENTANA MEDICAL SYSTEMS, INC. As filed with the Securities and Exchange Commission on June 27, 2007

Item 1. Subject Company Information. (a) Name and Address. The name of the subject company to which this Solicitation/Recommendation Statement on Schedule 14D-9 (this "Statement") relates is Ventana Medical Systems, Inc., a Delaware corporation ("Ventana" or the "Company"). The address of the principal executive office of Ventana is 1910 E. Innovation Park Drive, Tucson, Arizona 85755, and its telephone number is (520) 887-2155. (b) Securities. The title of the class of equity securities to which this Statement relates is the Company's Common Stock, par value $0.001 per share (the shares of the Common Stock being referred to as the "Shares"), and the associated preferred stock purchase rights (the "Rights") issued pursuant to the Preferred Shares Rights Agreement, dated as of May 6, 1998, between Ventana and Wells Fargo Shareowner Services, as successor to Norwest Bank Minnesota, N.A. (as amended from time to time, the "Rights Agreement"). Unless the context requires otherwise, all references to the Shares include the Rights and all references to the Rights include the benefits that may inure to the holders of the Rights pursuant to the Rights Agreement. As of June 30, 2007, there were 34,015,886 (net of treasury shares) Shares outstanding with an additional 8,333,819 Shares reserved for issuance under the Company's equity

compensation plans, which includes 5,695,903 Shares is- suable upon the exercise of outstanding stock options granted pursuant to such equity compensation plans.

...

On June 18, 2007, Dr. Humer called Mr. Schuler to request a meeting. During their conversation, Mr. Schuler indicated that he would like to wait and discuss Dr. Humer's request for a meeting with the Board the following day. Later that day, Dr. Humer sent a letter to Mr. Schuler formally proposing that Roche acquire all of the outstanding shares of Ventana common stock for $75.00 per share and indicating that such proposal was conditioned on the completion of satisfactory due diligence and acceptable transaction documentation.

...

The Board met again on July 10, 2007 to review the Company's business, financial condition and prospects, the terms and conditions of the Offer and other matters. At the meeting, each of Merrill Lynch and Goldman Sachs delivered an oral opinion to the effect that, as of the date of such opinion, the Offer is inadequate to the holders of the Company's Shares from a financial point of view. After lengthy analysis and discussions, the Board unanimously concluded that the Offer is inadequate and not in the best interests of Ventana's stockholders and unanimously decided to recommend rejection of the Offer.

APPENDIX C: Fairness Opinion that Deems the Revised Consideration as "Fair"

Opinions of the Company's Financial Advisors

Opinion of Goldman Sachs

Goldman Sachs rendered its opinion to the Board that, as of January 21, 2008 and based upon and subject to the factors and assumptions set forth therein, the $89.50 per Share in cash to be received by the holders of Shares in the Revised Offer and the Merger was fair from a financial point of view to such holders. The full text of the written opinion of Goldman Sachs, dated January 21, 2008, which sets forth assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Exhibit (a)(30) to this Schedule 14D-9. Goldman Sachs provided its opinion for the information and assistance of the Board in connection with its consideration of the Revised Offer and the Merger. The Goldman Sachs opinion is not a recommendation as to whether or not any holder of Shares should tender such Shares in connection with the Revised Offer or how any holder of Shares should vote with respect to the Merger.

Opinion of Merrill Lynch

The Company retained Merrill Lynch to act as its financial advisor in connection with the transactions contemplated by the Merger Agreement. In connection with that engagement, the Company requested that Merrill Lynch evaluate the fairness, from a financial point of view, of the consideration to be received by the holders of the Shares pursuant to the Revised Offer and the Merger, other than Roche, Rocket Acquisition Corporation and their respective affiliates. At the meeting of the Board on January 21, 2008, Merrill Lynch rendered its oral opinion to the Board, which opinion was

subsequently confirmed in writing, that as of January 21, 2008, based upon the assumptions made, matters considered and limits of such review, as set forth in its opinion, the consideration to be received by the holders of the Shares pursuant to the Revised Offer and the Merger was fair from a financial point of view to such holders, other than Roche, Rocket Acquisition Corporation and their respective affiliates. The full text of Merrill Lynch's written opinion, which sets forth material information relating to such opinion, including the assumptions made, matters considered and qualifications and limitations on the scope of review undertaken by Merrill Lynch, is attached as Exhibit (a)(31) to this Schedule 14D-9 and is incorporated by reference herein. This description of Merrill Lynch's opinion is qualified in its entirety by reference to, and should be reviewed together with, the full text of the opinion. Company stockholders are urged to read the opinion and consider it carefully.

APPENDIX D: Example of Fairness Opinion Analysis

Opinion of Goldman Sachs

Goldman Sachs rendered its opinion to the Baker Hughes board of directors that, as of August 30, 2009, and based upon and subject to the factors and assumptions set forth therein, the aggregate of $2.69 in cash and 0.40035 shares of Baker Hughes common stock to be paid by Baker Hughes in respect of each share of BJ Services common stock pursuant to the merger agreement was fair from a financial point of view to Baker Hughes.

The full text of the written opinion of Goldman Sachs, dated August 30, 2009, which sets forth assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Annex B. Goldman Sachs provided its opinion for the information and assistance of the Baker Hughes board of directors in connection with its consideration of the merger. The Goldman Sachs opinion is not a recommendation as to how any holder of Baker Hughes common stock should vote with respect to the merger or any other matter.

In connection with rendering the opinion described above and performing its related financial analyses, Goldman Sachs reviewed, among other things:

- the merger agreement;
- annual reports to stockholders and Annual Reports on Form 10-K of Baker Hughes and BJ Services for the five fiscal years ended December 31, 2008, in the case of Baker Hughes, and the five fiscal years ended September 30, 2008, in the case of BJ Services;

• certain interim reports to stockholders and Quarterly Reports on Form 10-Q of Baker Hughes and BJ Services;

• certain other communications from Baker Hughes and BJ Services to their respective stockholders;

• certain publicly available research analyst reports for BJ Services and Baker Hughes;

• certain internal financial analyses and forecasts for BJ Services prepared by its management;

• certain internal financial analyses and forecasts for Baker Hughes prepared by its management, including Case A (Management Base Case) and certain financial analyses and forecasts for BJ Services prepared by the management of Baker Hughes, in each case, as approved by Baker Hughes for use by Goldman Sachs, referred to as the Forecasts; and

• certain cost savings and operating synergies projected by the management of Baker Hughes to result from the merger, as prepared by the management of Baker Hughes and approved by Baker Hughes for use by Goldman Sachs, referred to as the Synergies.

Goldman Sachs also held discussions with members of the senior managements of Baker Hughes and BJ Services regarding their assessment of the past and current business operations, financial condition, and future prospects of BJ Services and with the members of the senior management of Baker Hughes regarding their assessment of the past and current business operations, financial condition and future prospects of Baker Hughes and the strategic rationale for, and the potential benefits of, the merger. In

addition, Goldman Sachs reviewed the reported price and trading activity for the shares of Baker Hughes common stock and the shares of BJ Services common stock, compared certain financial and stock market information for BJ Services and Baker Hughes with similar information for certain other companies, the securities of which are publicly traded, reviewed the financial terms of certain recent business combinations in the oilfield services industry specifically and in other industries generally and performed such other studies and analyses, and considered such other factors, as Goldman Sachs considered appropriate.

For purposes of rendering the opinion described above, Goldman Sachs relied upon and assumed, without assuming any responsibility for independent verification, the accuracy and completeness of all of the financial, legal, regulatory, accounting, tax and other information provided to, discussed with or reviewed by Goldman Sachs, and did not assume any liability for any such information. In that regard, Gold- man Sachs assumed with Baker Hughes consent that the Case A (Management Base Case) Forecasts for each of Baker Hughes and BJ Services and Synergies have been reasonably prepared on a basis reflecting the best currently available estimates and judgments of the management of Baker Hughes. In addition, Goldman Sachs did not make an independent evaluation or appraisal of the assets and liabilities (including any contingent, derivative or off-balance-sheet assets and liabilities) of Baker Hughes or BJ Services or any of their respective subsidiaries, nor was any such evaluation or appraisal furnished to Goldman Sachs. Goldman Sachs assumed that all governmental, regulatory or other consents and approvals necessary for the consummation of the transaction will be obtained without any adverse effect on Baker Hughes or BJ Services or on the expected benefits of the merger

in any way meaningful to Goldman Sachs analysis. Goldman Sachs also assumed that the merger will be consummated on the terms set forth in the merger agreement, without the waiver or modification of any term or condition the effect of which would be in any way meaningful to Gold- man Sachs analysis. Goldman Sachs did not express any opinion as to the impact of the transaction on the solvency or viability of Baker Hughes or BJ Services or the ability of Baker Hughes or BJ Services to pay its obligations when they come due. In addition, Goldman Sachs opinion did not address any legal, regulatory, tax or accounting matters nor did it address the underlying business decision of Baker Hughes to engage in the merger or the relative merits of the merger as compared to any strategic alternatives that may be available to Baker Hughes. Goldman Sachs opinion addressed only the fairness from a financial point of view to Baker Hughes, as of August 30, 2009, of the aggregate of $2.69 in cash and 0.40035 shares of Baker Hughes common stock in respect of each share of BJ Services common stock pursuant to the merger agreement. Goldman Sachs did not express any view on, and its opinion did not address, any other term or aspect of the merger agreement or merger, including, without limitation, the fairness of the merger to, or any consideration received in connection therewith by, the holders of any class of securities, creditors, or other constituencies of Baker Hughes or BJ Services; nor as to the fairness of the amount or nature of any compensation to be paid or payable to any of the officers, directors or employees of Baker Hughes or BJ Services, or any class of such persons, in connection with the merger, whether relative to the aggregate of $2.69 in cash and 0.40035 shares of Baker Hughes common stock in respect of each share of BJ Services common stock pursuant to the merger agreement or otherwise. Goldman Sachs opinion necessarily was based on

economic, monetary, market and other conditions as in effect on, and the information made available to Goldman Sachs as of, the date of the opinion and Goldman Sachs assumed no responsibility for updating, revising or reaffirming its opinion based on circumstances, developments or events occurring after the date of its opinion. In addition, Goldman Sachs did not express any opinion as to the prices at which shares of Baker Hughes common stock will trade at any time.

The following is a summary of the material financial analyses delivered by Goldman Sachs to the board of directors of Baker Hughes in connection with rendering the opinion described above. The following summary, however, does not purport to be a complete description of the financial analyses performed by Goldman Sachs, nor does the order of analyses described represent relative importance or weight given to those analyses by Goldman Sachs. Some of the summaries of the financial analyses include information presented in tabular format. The tables must be read together with the full text of each summary and are alone not a complete description of Goldman Sachs financial analyses. Except as otherwise noted, the following quantitative information, to the extent that it is based on market data, is based on market data as it existed on or before August 30, 2009 and is not necessarily indicative of current market conditions.

Historical Exchange Ratio Analysis and Premia Analysis. Goldman Sachs calculated the average historical exchange ratios of the shares of BJ Services common stock to the shares of Baker Hughes common stock based on the closing prices of the shares of Baker Hughes common stock and the shares of BJ Services common stock during the 30-trading day, 60-trading day, 90-trading day, one-year and two- year periods ended August 28, 2009 as well as the exchange ratio of the closing prices of the shares of

BJ Services common stock to the shares of Baker Hughes common stock on August 28, 2009. The following table presents the results of this analysis:

Time Period (up to August 28, 2009) Implied Exchange Ratio of BJ Services Common Stock to Baker Hughes Common Stock:

Historical Exchange Ratio Analysis		
Time Period (up to August 28, 2009)	Implied Exchange Ratio of BJ Services Common Stock to Baker Hughes Common Stock	
Current	0.405	x
30-trading day Average	0.377	x
60-trading day Average	0.375	x
90-trading day Average	0.385	x
1-year Average	0.359	x
2-year Average	0.342	x

Goldman Sachs also analyzed the implied $17.94 value of the consideration as of August 28, 2009 to be received by holders of shares of BJ Services common stock pursuant to the merger agreement in relation to the closing market price of BJ Services common stock on August 28, 2009 and to the average market prices of shares of BJ Services common stock during the 30-trading day, 60-trading day, 90-trading day, one-year and two-year periods ended August 28, 2009.

This analysis indicated that the implied $17.94 value of the consideration to be received by holders of shares of BJ Services common stock pursuant to the merger agreement represented:

• a premium of 16.3% based on the closing market price on August 28, 2009;

• a premium of 22.8% based on the 30-trading day average market price;

• a premium of 25.9% based on 60-trading day average market price;

• a premium of 23.5% based on the 90-trading day average market price;

• a premium of 33.8% based on the 1-year average market price; and

• a discount of 11.0% based on the 2-year average market price.

Selected Companies Analysis. Goldman Sachs reviewed and compared certain financial information, ratios and public market multiples for Baker Hughes and BJ Services to corresponding financial information, ratios and public market multiples for the following publicly traded corporations in the oilfield services and pressure pumping industries:

Selected Companies Analysis 1	
Oilfield Services	
•	Schlumberger N.V.
•	Halliburton Company
•	Weatherford International Ltd.
•	Smith International, Inc.
Pressure Pumping	
•	Trican Well Services Ltd.
•	RPC, Inc.
•	Calfrac Well Services Ltd.
•	Superior Well Services, Inc.

Although none of the selected companies is directly comparable to Baker Hughes or BJ Services, the companies included were chosen because they are publicly traded companies with operations that for purposes of analysis may be considered similar to certain operations of Baker Hughes and BJ Services.

Goldman Sachs calculated and compared the various financial multiples and ratios for Baker Hughes, BJ Services and the selected companies based on information it obtained from publicly available financial information, IBES median estimates and common stock closing prices on August 28, 2009. The financial multiples and ratios for BJ Services also were based on Baker Hughes managements Case A (Management Base Case) estimates for BJ Services and the implied merger consideration to be paid in the merger. Since BJ Services fiscal year ends on September 30, Goldman Sachs used the IBES median estimates for the calendar quarters of the corresponding calendar periods for purposes of the estimates set forth in the table below. With respect to Baker Hughes, BJ Services and the selected companies, Goldman Sachs calculated:

• Enterprise Value, which is the market value of common equity plus the book value of debt, less cash as a multiple of estimated 2009, 2010 and 2011, re- spectively, earnings before interest, taxes, depreciation and amortization, or EBITDA;

• Price as a multiple of estimated earnings per share, or EPS, for 2009, 2010 and 2011, respectively; and

• Price as a multiple of estimated cash flow per share for 2009, 2010 and 2011, respectively.

The following table presents the results of this analysis:

Selected Companies Analysis 2										
	EV/EBITDA			P/E			P/CF			
Company	2009E	2010E	2011E	2009E	2010E	2011E	2009E	2010E	2011E	
Baker Hughes (IBES)	7.2x	6.7x	5.2x	19.7x	19x	12.5x	9.2x	8.6x	6.6x	x
BJ Services (IBES)	12.7x	8.9x	NA	90.8x	28.8x	NA	12.4x	9.7x	NA	
BJ Services (IBES) – Implied Value of Merger Consideration	14.6x	10.2x	NA	105.5x	33.5x	NA	14.4x	11.2x	NA	
BJ Services (Management Base Case) – Implied Value of Merger Consideration	14.1x	9.8x	7x	96.5x	34.1x	16.4x	14.7x	11.4x	8.5x	x
Oilfield Services Companies	8.5x-11.2x	8.3x-10.9x	6.5x-8.9x	19.8x-28.5x	18.0x-23.0x	12.8x-17.4x	10.8x-12.4x	8.6x-12.5x	6.6x-10.7x	
Pressure Pumping Companies	9.1x-20.1x	4.4x-7.9x	2.6x-6.2x	NM	16.6x-21.9x*	5.1x-13.4x	7.6x-29.1x	3.4x-8.0x	4.4x-8.0x*	

*Information not available or not measured for two out of the four companies

Discounted Cash Flow Analyses. Goldman Sachs performed illustrative discounted cash flow analyses on BJ Services based on three different forecasts for BJ Services provided by Baker Hughes management: Case A (Management Base Case), Case B and Case C. For each of the three cases, Goldman Sachs performed illustrative discounted cash flow analyses to generate reference ranges for the implied present value per share of BJ Services common stock by calculating the total present value of estimated cash flows for the period beginning on July 1, 2009 and ending on June 30, 2014. Goldman Sachs then calculated, for each of the three cases, the present value of BJ Services terminal value at June 30, 2014 by applying a range of Enterprise Value/estimated 2015 EBITDA multiples of 5.0x to 9.0x. Goldman Sachs then calculated, for each of the three cases, the implied value per share of BJ Services common stock by adding the present value of the five years of projected cash flows beginning from July 1, 2009 to the present value of BJ Services terminal value at June 30, 2014. Present values were calculated by using discount rates ranging from 10.5% to 14.5%. The following table presents the results of this analysis.

Discounted Cash Flow Analyses		
	Implied Value per Share	
Case A (Management Base Case)	$	14.05--$26.54
Case B	$	14.97--$28.24
Case C	$	10.35--$18.79

Pro Forma Merger Analysis. Goldman Sachs prepared illustrative pro forma analyses of the potential financial impact of the merger using (a) EPS and cash flow per share estimates for each of Baker Hughes and BJ Services provided by Baker Hughes management (Cases A (Management Base Cases)) and from IBES, (b) estimates of

synergies resulting from the merger in 2010 and 2011, in each case provided by Baker Hughes management and (c) estimated transaction and other costs as pro- vided by Baker Hughes management. For each of the years 2010 and 2011, Goldman Sachs compared the projected EPS and cash flow per share of Baker Hughes common stock, on a standalone basis, to the projected EPS and cash flow per share of Baker Hughes common stock on a pro forma basis following the merger. The following table presents the results of this analysis:

Selected Transactions Analysis. Goldman Sachs analyzed certain information relating to the following selected transactions in the oilfield services and equipment industry since 2004:

• National Oilwell, Inc.s acquisition of Varco International, Inc. announced on August 12, 2004;

• Tenaris S.A.s acquisition of Maverick Tube Corporation announced on June 12, 2006;

Pro Forma Merger Analysis		
		Cases A
Earnings Per Share Accretion/(Dilution)	IBES	(Management Base Cases)
2010E EPS	-0.025	-0.062
2011E EPS	NA	0.081

		Cases A
Cash Flow Per Share Accretion/(Dilution)	IBES	(Management Base Cases)
2010E CFPS	0.001	-0.031
2011E CFPS	NA	0.03

• Compagnie Generale de Geophysiques acquisition of Veritas DGC Inc. announced on September 5, 2006;

• IPSCO Inc.s acquisition of NS Group, Inc. announced on September 10, 2006;

• Universal Compression Holdings, Inc.s acquisition of Hanover Compressor Company announced on February 5, 2007;

• Tenaris S.A.s acquisition of Hydril Company announced on February 12, 2007;

• United States Steel Corporations acquisition of Lone Star Technologies, Inc. announced on March 29, 2007;

• The acquisition of CCS Income Trust by an investor group announced on June 29, 2007;

• National Oilwell Varco, Inc.s acquisition of Grant Prideco, Inc. announced on December 17, 2007;

• First Reserve Corporations acquisition of CHC Helicopter Corporation announced on February 22, 2008;

• Candover Partner Ltd.s acquisition of Expro International Group PLC announced on April 17, 2008;

• Smith International Inc.s acquisition of W-H Energy Services, Inc. announced on June 3, 2008; and

• Cameron International Corporations acquisition of NATCO Group Inc. announced on June 1, 2009.

For each of the selected transactions, Goldman Sachs calculated and compared enterprise value based on the implied transaction value as a multiple of the targets estimated current-year and estimated forward-year EBITDA, based on IBES median

estimates at the time of announcement, respectively, implied transaction price as a multiple of the targets estimated current-year and estimated forward-year EPS, based on IBES median estimates at the time of announcement, respectively, and the premium represented by the implied transaction price relative to the targets closing common stock price one day before announcement of the transaction. While none of the companies that participated in the selected transactions are directly comparable to BJ Services, the companies that participated in the selected transactions are companies with operations that, for the purposes of analysis, may be considered similar to certain of BJ Services results, market size and product profile.

The following table presents the results of this analysis:

Selected Transactions Analysis					
	EV/EBITDA		Price/EPS		
Selected Transactions	Current	Forward	Current	Forward	1-Day Premium
Range	6.5x-14.2x	5.3x-13.3x	9.6x-50.9x	8.6x-30.0x	2%-49%
Mean	10.2x	9.0x	23.0x	18.2x	0.25
Median	9.2x	8.1x	19.4x	18.1x	0.22

The preparation of a fairness opinion is a complex process and is not necessarily susceptible to partial analysis or summary description. Selecting portions of the analyses or of the summary set forth above, without considering the analyses as a whole, could create an incomplete view of the processes underlying Goldman Sachs opinion. In arriving at its fairness determination, Goldman Sachs considered the results of all of its analyses and did not attribute any particular weight to any factor or analysis considered by it. Rather, Goldman Sachs made its determination as to fairness on the basis of its experience and professional judgment after considering the results of all of its analyses.

No company or transaction used in the above analyses as a comparison is directly comparable to Baker Hughes or BJ Services or the contemplated merger.

Goldman Sachs prepared these analyses for purposes of Goldman Sachs providing its opinion to the Baker Hughes board of directors as to the fairness from a financial point of view of the aggregate of $2.69 in cash and 0.40035 shares of Baker Hughes common stock to be paid by Baker Hughes in respect of each share of BJ Services common stock pursuant to the merger agreement. These analyses do not purport to be appraisals nor do they necessarily reflect the prices at which businesses or securities actually may be sold. Analyses based upon forecasts of future results are not necessarily indicative of actual future results, which may be significantly more or less favorable than suggested by these analyses. Because these analyses are inherently subject to uncertainty, being based upon numerous factors or events beyond the control of the parties or their respective advisors, none of Baker Hughes, BJ Services, Goldman Sachs or any other person assumes responsibility if future results are materially different from those forecast.

The merger consideration was determined through arms-length negotiations between Baker Hughes and BJ Services and was approved by the Baker Hughes board of directors. Goldman Sachs provided advice to Baker Hughes during these negotiations. Goldman Sachs did not, however, recommend any specific amount of consideration to Baker Hughes or its board of directors or that any specific amount of consideration constituted the only appropriate consideration for the merger.

APPENDIX E: Shareholder Approval Policy

Shareholder Approval Policy

Section 312.00 Shareholder Approval Policy

312.01 Shareholders' Interest

Shareholders' interest and participation in corporate affairs has greatly increased. Management has responded by providing more extensive and frequent reports on matters of interest to investors. In addition, an increasing number of important corporate decisions are being referred to shareholders for their approval. This is especially true of transactions involving the issuance of additional securities.

Good business practice is frequently the controlling factor in the determination of management to submit a matter to shareholders for approval even though neither the law nor the company's charter makes such approvals necessary. The Exchange encourages this growth in corporate democracy. For example, due to the recent growth of officer and director equity - based compensation arrangements and the increased interest of shareholders in this area, companies may determine to submit stock option and similar plans to shareholders for approval, whether or not the Exchange requires such approval.

312.02 Companies Are Urged

Companies are urged to discuss questions relating to this subject with their Exchange representative sufficiently in advance of the time for the calling of a shareholders' meeting and the solicitation of proxies where shareholder approval may be involved. All relevant factors will be taken into consideration in applying the policy expressed in this Para. 312.00 and the Exchange will advise whether or not shareholder approval will be required in a particular case.

312.03 Shareholder Approval

• (A) Shareholder approval is required for equity compensation plans.

• (B) Shareholder approval is required prior to the issuance of common stock, or of securities convertible into or exercisable for common stock, in any transaction or series of related transactions, to:

1. a director, officer or substantial security holder of the company (each a "Related Party")

2. a subsidiary, affiliate or other closely-related person of a Related Party; or

3. any company or entity in which a Related Party has a substantial direct or indirect interest;

If the number of shares of common stock to be issued, or if the number of shares of common stock into which the securities may be convertible or exercisable, exceeds either one percent of the number of shares of common stock or one percent of the voting power outstanding before the issuance.

However, if the Related Party involved in the transaction is classified as such solely because such person is a substantial security holder, and if the issuance relates to a sale of stock for cash at a price at least as great as each of the book and market value of the issuer's common stock, then shareholder approval will not be required unless the number of shares of common stock to be issued, or unless the number of shares of common stock into which the securities may be convertible or exercisable, exceeds either five percent of the number of shares of common stock or five percent of the voting power outstanding before the issuance.

• (C) Shareholder approval is required prior to the issuance of common stock, or of securities convertible into or exercisable for common stock, in any transaction or series of related transactions if:

1. the common stock has, or will have upon issuance, voting power equal to or in excess of 20 percent of the voting power outstanding before the issuance of such stock or of securities convertible into or exercisable for common stock; or

2. the number of shares of common stock to be issued is, or will be upon issuance, equal to or in excess of 20 percent of the number of shares of common stock outstanding before the issuance of the common stock or of securities convertible into or exercisable for common stock.

APPENDIX F: Summary Statistics for Firms with and without Fairness Opinions (SDC)

Table F.1: Summary Statistics for Subsamples with and without Fairness Opinions Reported by SDC

This table presents summary statistics for sub-samples with fairness opinions and without fairness opinions reported by SDC. "Target Size" is mean (median) equity values in $ million, measured as (stock price * shares outstanding), estimated 30 days prior to announcement. "Premium 1 week (4 weeks) prior" is the percentage difference between the offer price and target share price 1 week (4 weeks) prior to the announcement date. "Private_Bidder" is a dummy that equals 1 if the bidder's public status is 'private'. "Compete" is a dummy variable that equals 1 if there is more than one bidder. "Unrelated" is a dummy variable equals 1 if the target and bidder are not from the same industry (with different the first two-digit of SIC). "P-value" is the p-value of paired t-tests that test the null that the mean of the two samples are equal.

	No FO (SDC Data)		Yes FO (SDC Data)		Difference	P-value
	N=1045		N=1732			
	Mean	Median	Mean	Median	Yes FO – No FO	
Target Size	1,160.1	192.1	1,514.9	308.2	354.8	0.04
Premium1weekprior	29.17	25.00	26.87	23.08	-2.30	0.02
Premium4weeksprior	40.37	34.66	35.65	30.00	-4.71	0.00
Private Bidder	0.15	0.00	0.20	0.00	0.05	0.00
Compete	0.05	0.00	0.05	0.00	0.00	0.81
Unrelated	0.38	0.00	0.41	0.00	0.03	0.18