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Managerial Behavior in M&A: The Role of Executive Compensation, Board Demographics and the M&A Advisor

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Preface

Today I'm proudly presenting my thesis on managerial behavior in mergers and acquisitions. My interest in the behavior of people, combined with a fascination for the dynamic M&A industry made me choose this subject. I've been working on this thesis for the past seven months in order to complete my master Financial Management.

I would like to thank Alberto Manconi for being my supervisor. Your enthusiasm was contagious. You were very helpful and the feedback you gave me was always useful, which enabled me to write a better thesis. Moreover, you're probably the quickest responding supervisor, which I appreciate a lot. In addition, I would like to thank Michel van Bremen for reading my thesis and being the graduation chairman.

Finally, I would like to thank my family and friends for being here today, but also for their friendship and support during my time studying in Tilburg, especially during the period my father passed away. My life as a student in Tilburg was full of good memories to all aspects student life brings. I will take all these good memories with me in the next step of my life.

Paco Hommel

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Abstract:

This thesis examines the behavior of managers in mergers and acquisitions (M&A), using a sample of US domestic M&As over the time period 1992-2010. The focus is on four domains. First, what induces the manager to make a 'good' deal? Second, what induces the manager to undertake M&A-activity? Third, what drives the cost of acquisitions? Fourth, what makes the manager hire a 'good' advisor? I find that the presence of women in the board and the manager's unexercised exercisable option holdings are positively associated with the bidder's announcement returns. Further, I find that advisors with large market shares, i.e. tier-1 advisors, are associated with higher bidder announcement returns and with completing more deals, than advisors with lower market shares. Moreover, I find that stock-based compensation is associated with more deals, that stock-based compensation is associated with larger deals relative to the bidder's size, and that the age of a manager is associated with smaller deals relative to the bidder's size. Finally, I find that stock-based compensation is associated with hiring a tier-1 advisor.

Table of contents

Preface 2

Abstract: 3

Table of contents 4

1: Introduction 6

2: Literature review and hypotheses 10

2.1 Bidder announcement returns 10

2.2 What induces managers to make acquisitions? 13

2.3 Cost of the acquisitions 14

2.4 What makes the firm choose a top-tier advisor? 15

3: Data and methodology 17

3.1 Data 17

3.2 Methodology 19

4: Results 23

4.1 Descriptive statistics and correlations 23

4.2 Bidder announcement returns 25

4.3 What induces managers to make acquisitions? 27

4.4 Cost of the acquisitions 29

4.5 What makes the firm choose a top-tier advisor? 31

5: Conclusions 33

References 36

Appendix A: Tables 39

Table 1 Descriptive statistics 39

Table 2 Correlation matrices 41

Table 3 Bidder announcement returns 43

Table 4 Bidder announcement returns 45

Table 5 What induces managers to make acquisitions? 47

Table 6 Cost of the acquisitions 49

Table 7 Cost of the acquisitions 51

Table 8 What makes the firm choose a top-tier advisor? 53

Table 9 Advisor performance 55

Appendix B: Variable definitions 56

B1: Dependent variables 56

B2: Explanatory variables 56

1: Introduction

Mergers and acquisitions (M&A) are one of the mostly hotly debated issues in corporate finance. Acquisitions are the firm's largest investment, they involve a change in the firm's capital structure, as well as, in many a case, a strategy re-orientation of the firm. In a sense, therefore, the issue of M&As speaks to most areas of the theory of corporate finance. Additionally, they may be detrimental to shareholder wealth.[1] As pointed out in Jensen's (1986) seminal paper on the agency costs of free cash flow, acquisitions can turn into a governance issue. This may induce pursuing personal benefits, risk-taking behavior and overconfidence, to which different demographical groups may respond differently as well. It is then important to understand what main drivers are behind the firm's decision to undertake an acquisition, as well as what factors are behind 'good' acquisitions, or at least under what conditions the firm does not overpay for its acquisitions. And how balanced the decisions of a firm are: are they willing to hire a good advisor? The object of this study is to bring these questions to the data.

Moeller et al. (2005) show that on average an investor loses 12 cents per dollar spent in an acquisition. Why is this massive wealth destruction happening? Several explanations have been proposed. Like Jensen (1986), who argues that the availability of free cash flow in a firm induces managers to make value-destroying acquisitions for empire-building reasons, instead of returning the excess cash flow to shareholders. Like Roll (1986), who argues that managers may be overconfident, which lets them overpay an acquisition, because they fail to realize that their offer might be subject to overvaluation and like Myers and Majluf (1984), who argue that an equity-financed deal is a signal to investors that the bidder's stock is overvalued.

[1] See for instance Moeller et al. (2005) who show that investors lose on average 12 cent per dollar spent in an acquisition.

The aim of this thesis is to shed light on this subject, by looking in particular at the behavior of the manager and her attitude to risk. The focus is on three factors that influence this behavior: stock-based compensation, board demographics and the deal advisor. Stock-based compensation is used to align the incentives of the manager with those of the company and has a stimulating effect on the eagerness of the manager to take risks (Guay, 1999). In addition, risk-attitudes may vary across different demographical groups. Finally, superior advice may benefit the deal, and the eagerness to hire a good advisor may vary across different groups of managers. Hence, the first main research question is:

What induces a manager to make a good deal?

Since a bidder in general overpays, it may be harmful to shareholders when the company's managers are more eager to make deals. Additionally a manager who is more eager to make deals might be more subject to hubris, since she might be too optimistic about a deal. Hence, the second main research question is:

What induces a manager to undertake M&A activity in general?

A stylized fact is that bidders lose more on large deals than on small deals (Travlos, 1987). Hence, an acquisition gets more costly when the deal value gets larger. Larger deals relative to the size of the company may be associated with more managerial risk-taking, since the risk of an acquisition increases with deal size. Agency problems as empire building may be an explanation for this phenomenon as well, since empire builders may be more eager to do large deals, which let them overpay more easily. Hence, the third main research question is:

What drives the cost of acquisitions?

When a firm is going to hire a deal advisor and it is known that hiring a top-tier advisor pays off, then the manager may be more eager to hire a top-tier advisor when her incentives are aligned with those of the shareholders. In addition an advisor may address risks and increase managerial confidence on taking a decision, which may be favored more by risk-averse managers. Hence, the fourth main research question is:

What makes the manager hire a good advisor?

I find that the presence of woman in the board is associated with higher bidder announcement returns. This is in line with earlier evidence suggesting that women are more risk-averse and less amenable to overconfident behavior (Prince, 1993; Byrnes et al., 1999; Barber and Odean, 2001). In addition I find that it's favorable for a manager to hire a top-tier advisor instead of a lower tier advisor.[2] Additionally I show that large unexercised exercisable option holdings of a manager may be a sign of (mere) confidence, as opposed to *over*confidence: it is positively associated with the bidder's announcement returns. The evidence does not suggest the presence of a relationship between stock-based compensation and the bidder announcement returns, although coefficient estimates are suggestively negative.

Further, I find that stock-based compensation is associated with more deals; this is in line with earlier evidence finding that stock-based compensation increases the eagerness of the manager to take risks (Guay, 1999). On the other hand, the evidence does not support the hypothesis that demographical differences influence the deal frequency.

Moreover, I find that stock-based compensation is associated with larger deals relative to the bidder's size. This connects to the increase in risk-taking behavior which is induced by an increase in stock-based compensation (Guay, 1999). Furthermore, the age of a manager is associated with smaller deals relative to the bidder's size. This is in line with Carlsson and Karlsson (1970), who show that older managers may want to avoid risks that can harm career and financial security.

Finally, I find that stock-based compensation is associated with hiring a top-tier advisor. This can be interpreted as evidence for the theorem of Jensen and Meckling (1976), who show that the incentives of the manager must be aligned with the company's to

[2] With a top-tier advisor is meant an advisor with a top-5 market share in the US market in the year the deal took place. Any other advisor is a lower tier advisor.

overcome agency problems. On the other hand, the evidence does not support the hypothesis that demographical differences influence the choice of the advisor.

The main contribution of this thesis is that it provides a better insight in the behavior of the manager in M&A. Most of the literature available focuses solely on the wealth effects of M&A (e.g. Morck et al., 1990; Moeller et al., 2005). This thesis adds different domains as it also looks at why a company undertakes an acquisition and at what makes the manager pick a good advisor. This improves the understanding of the behavior of the manager in an acquisition.

Moreover, a considerable body of research links managerial behavior to compensation, thus neglecting behavioral biases and differences in risk attitudes among managers (e.g. Guay, 1999). This thesis contributes to the relatively new strand of literature which views managerial behavior as influenced by other factors than compensation. For instance, behavioral biases such as in Malmendier and Tate (2010), who look at the influence of the great depression and of military experience on the behavior of a manager in M&As. I introduce gender and age as explanatory variables, thus providing further insight on whether it is favorable to have woman and old/young managers in the board of a company.

Finally, very little literature is available on the role of the advisor on acquisitions. Some research looks at the wealth effects of advisors in acquisitions (e.g. Rau, 2000), but looking at what makes a manager hire a top advisor is an unexplored field. This gives a better understanding about the decision making behavior of the manager in an acquisition.

The remainder of this thesis proceeds as follows: Section 2 continues with the literature review, which links the existing literature to the four main research questions as stated above. Hypotheses are brought up here as well. Section 3 discusses the sample selection and data sources, as well as the methodology used. Section 4 presents and discusses the empirical results of the analysis. In section 5 the conclusion is presented followed by a discussion on the limitations of this research and some directions future research can aim at.

2: Literature review and hypotheses

This thesis is all about the relationship between the behavior of a manager and M&A. I consider three factors to be influential on M&A, that is: the role of executive compensation, of board demographics and of the M&A advisor. These three factors influence four domains of the M&A industry, which are discussed in the sections below. Section 2.1 deals with bidder announcement returns, section 2.2 with what induces managers to make acquisitions, section 2.3 with the cost of the acquisitions and section 2.4 with what makes the firm choose a top-tier advisor.

2.1 Bidder announcement returns

There is no univocal evidence on the success of mergers, but many studies suggest that on average a firm loses money when making an acquisition.[3] This suggests that bidding firms in general overpay. Why is this happening? Managers of bidding firms might pursue personal objectives other than the maximization of shareholder value, which might lead to squandering the money of shareholders. Jensen (1986) argues that the availability of free cash flow in a firm brings a lot of agency costs, because the exposure to disciplining debt holders decreases with the amount of free cash flow available to managers. In a merger it should therefore be a bad sign when a manager refuses to pay out free cash flow by paying a deal with equity, which is confirmed by evidence of Masulis and Wang (2007). Therefore for each hypothesis, if possible, is also discussed if the means of payment matters.

As Jensen and Meckling (1976) argue in their influential paper, compensation of managers must create incentives that match the objectives of the shareholders. An important element of compensation plans is the possibility to tailor the risk-behavior of the manager to align it with the demanded risk behavior of the company. Increasing the risk behavior of managers may be favorable, since Smith and Stulz (1985) show that risk-averse managers

[3] Like Moeller et al. (2005), who show that investors lose on average 12 cent per dollar spent in an acquisition.

may choose to forgo positive NPV-projects that would increase firm risk. Guay (1999) examines the pay schemes of managers and distinguishes between a wealth effect and a risk-aversion effect induced by this scheme. The wealth effect represents the change in expected wealth experienced by a manager when firm risk changes. The risk-aversion effect captures the influence of risk-aversion on managers' utility. A manager's overall preference towards firm risk will depend upon the relative magnitudes of the wealth effect and the risk-aversion effect in her pay scheme. The wealth effect dominates when the pay scheme is convex and the risk-aversion effect dominates when it's concave. Stock-based compensation makes the pay scheme more convex. The effect is relatively small for common stock and large for options. Hence, there should be a negative relationship between stock-based compensation and risk-aversion. Problem is though that making the pay scheme less risk-averse might increase the number of acquisitions and in particular the number of acquisitions of which the outcome is more uncertain. Hence, a negative relationship between stock-based compensation and the bidder announcement returns is expected.

Another possible explanation has is it's foundation in psychology. People do not make rational decisions under uncertainty (Tversky and Kahneman, 1981). Roll (1986) connects the insights from this research field to the M&A industry by developing his hubris hypothesis. The valuation price should be the market price plus synergies, though it is hard to quantify this. The problem is that a valuation which is above the 'right' price leads to winning bid and hence to overpaying, where a too low valuation leads to a non-succeeding bid. This is called the 'winner's curse'. Rational bidders should account for this so called 'winner's curse', but as stated, not all managers act rational and they might be subject to overconfidence. Malmendier and Tate (2008) classify CEO's who hold shares to maturity as overconfident managers and find a negative relationship with the bidder announcement returns. Therefore in thesis a simple proxy for (over)confidence is used, that is the percentage of unexercised exercisable option holdings to total compensation. A negative relationship between the unexercised exercisable option holdings and the bidder announcement returns is expected.

Risk-taking and (over)confidence deals with the behavior of managers which may vary by nature, therefore it is interesting to have a look at if demographics influence the likelihood of undesirable behavior. This thesis looks at gender and age. Byrnes et al. (1999) find that in general women are more risk-averse. More in specific, Prince (1993) finds that men tend to be more risk-taking and confident with respect to money and Barber and Odean (2001) find that men are overconfident investors. Hence, men may be more amenable for risk-taking and overconfident behavior. They may be associated with making more acquisitions and in particular with making more acquisitions of which the outcome is more uncertain. Therefore a positive relationship is expected between women on the board and the bidder announcement returns.

Bertrand and Schoar (2003) find that older CEO Managers are overall more conservative, less risk-taking and make in particular fewer investments. Hambrick and Mason (1974), while referring to other papers, argue that this is because of three possible explanations. It is harder for an older manager to process information and hence more difficult to make decisions (Taylor, 1975); older executives have greater psychological commitment to the organizational status quo (Stevens, Beyer and Trice, 1978); and career and financial security are more important for older managers, which leads to risk-avoiding behavior (Carlsson and Karlsson, 1970). Therefore it is expected that they are associated with making less acquisitions and in particular with making less acquisitions of which the outcome is more uncertain. Hence, a positive relationship is expected between executive age and the bidder announcement returns.

The third factor is the role of the advisor. Rau (2000) argues that a good advisor should be an advisor with a large market share, i.e. a tier-1 advisor. But what is good? He proposes two possible explanations for the market share of a financial deal advisor. Both explanations are tested in this thesis. They are: the deal completion hypothesis, which states that a top advisor obtained its market share by completing a superior percentage of deals, and the superior deal hypothesis, which states that a top advisor obtained its market share

by making superior deals. Hence, it is expected that there is a positive association between hiring a tier-1 advisor and the bidder announcement returns.

The discussion above leads to the following hypotheses:

H1a: "There is a negative association between stock-based compensation and unexercised exercisable option holdings with the bidder announcement returns."

H1b: "There is a positive association between women in the board, executive age and hiring a tier-1 advisor with the bidder announcement returns."

2.2 What induces managers to make acquisitions?

This section looks at the incentives for a manager to undertake an acquisition. The basic assumption in this hypothesis section is that a more risk-averse manager may be less eager to undertake acquisitions. This is based on the paper of Smith and Stulz (1985) who show that a risk-adverse manager may choose to forgo positive NPV projects that increase firm risk.

The pay scheme of a manager may influence her risk-attitude. Guay (1999) finds that stock-based compensation provides incentives for an investor to act less risk-averse. Hence, it is expected that stock-based compensation is associated with more deals. In addition, as Roll (1986) argued, managers can be subject to hubris and Malmendier and Tate (2008) confirm this by showing that overconfident managers overpay. They do also find that overconfidence leads to announcing more acquisitions. Hence, it is expected that the unexercised exercisable option holdings are associated with more deals.

Demographical differences can play a role as well. Women are more risk-averse (Byrnes et al., 1999) and less confident about their decisions with respect to money (Prince, 1993). Hence they may be associated with fewer deals. Older executives have greater psychological commitment to the organizational status quo (Stevens, Beyer and Trice, 1978) and Bertrand and Schoar (2003) find that older CEO Managers make fewer investments. Therefore the same result is expected here.

The discussion above leads to the following hypotheses:

H2A: "There is a positive association between stock-based compensation and unexercised exercisable option holdings with the likelihood of announcing an acquisition."

H2B: "There is a negative association between women in the board and age with the likelihood of announcing an acquisition."

2.3 Cost of the acquisitions

Earlier evidence shows that the amount the bidder overpays increases with the size of the deal (Travlos, 1987). This might be because of empire building motives, because empire building managers may be more eager to do large deals, which lets them overpay more easily. It is checked if the finding of Travlos (1987) can be confirmed for my data as well.

Therefore it may be interesting to see if executive compensation or board demographics influence the relative size of the deal. Ceteris paribus the risk of a deal rises with the relative value of deal; a company might bite off more than it can chew. The relative size of the deal should thus decrease with the level of risk-aversion. Guay (1999) finds that stock-based compensation provides incentives for an investor to act less risk-averse. Hence, it is expected that stock-based compensation is associated with bigger deals. (Over)confidence is associated with higher risk-taking, because overconfident managers may also overestimate potential synergies, because they fail to perceive some of the risks involved in an acquisition due to the illusion of control over its outcome (Brown and Sarma, 2007). Hence, it is expected that unexercised exercisable option holdings are associated with bigger deals.

Demographical differences may play a role as well. Women are more risk-averse (Byrnes et al., 1999) and less confident about their decisions with respect to money (Prince, 1993). Therefore they may be associated with making smaller deals. Carlsson and Karlsson (1970) argue that the importance of financial security and career security is increasing with age. Therefore older managers may avoid risks that can harm those. A large deal relative to

the size of the firm might bring risks that can harm those securities and hence it is expected that older managers are associated with making smaller deals.

The role of the advisor should be of increasing importance when the relative deal size increases. If choosing a top-tier advisor is favorable, then it should be of increasing importance to pick a top-tier advisor when the relative deal value rises. Therefore it is expected that the presence of a top-tier advisor is associated with larger deals than the presence of lower tier advisors.

The discussion above leads to the following hypotheses:

H3a: "There is a negative association between the bidder announcement returns, women on the board and executive age with the deal value relative to the size of the bidder"

H3b: "There is a positive association between stock-based compensation, unexercised exercisable option holdings and hiring a tier-1 advisor with the deal value relative to the size of the bidder"

2.4 What makes the firm choose a top-tier advisor?

This section looks at who chooses a top advisor. If a stock-based compensated manager is more eager to make deals, then Rau (2000)'s deal completion hypothesis should imply that a stock-based compensated manager prefers a top advisor. In addition, the remuneration of stock-based compensated managers is more sensitive to superior deal performance than the remuneration of other managers: superior performance should make it more likely that a stock-based compensated manager chooses a top advisor. Both theories suggest that there might be incentives for a stock-based compensated manager to choose a top advisor.

Demographics might play a role as well. Women are more risk-averse (Byrnes et al., 1999) and less confident about their decisions with respect to money (Prince, 1993). Good advice may lower the risk of a merger, since opportunities and risks may be better addressed, and women might hire a good advisor in order to raise confidence. Bertrand and Schoar (2003) find that older CEO Managers are overall more conservative and make in

particular fewer investments. In addition, it is harder for an older manager to process information and thus more difficult to make decisions (Taylor, 1975). Hence, older managers may want to take their decisions with more care and therefore may demand good advice.

The discussion above leads to the following hypothesis:

H4: "There is a positive association between stock-based compensation, women in the board and executive age with the likelihood of hiring a top-tier advisor."

3: Data and methodology

This section deals with the data and methodology used in this thesis. Section 3.1 deals with the collection process of data and gives information on the data sources used. Section 3.2 presents the regression models used and discusses the dependent, explanatory and control variables.

3.1 Data

This study uses merger announcement, advisor, event study, executive compensation and balance sheet data. The final sample is the result of linking the sources of those data together. All companies are US and data is from 1992-2010.[4] It contains about 26000 observations for the research part on 'What induces managers to make acquisitions?' and for the other three researches parts about 2600 observations. A concern to my data might be that the intersection of the different data sets leads to a data set which is skewed to large companies. However for larger companies the event study methodology might be more accurate and less noisy, since the stocks of those companies are more frequently traded.

Merger announcement dates are retrieved with the SDC Platinum Database. This database is used because it's the largest and most accurate database on mergers. Therefore most influential papers in the research field of my thesis use it as well (like Moeller et al., 2004). Withdrawn deals are excluded as well as deals other than mergers and tender offers. In addition, deals acquiring less than 50% of the value of the target were excluded and both bidder and target should be present in the Compustat database. This assures that the deal is major enough to influence the stock price of the bidder. Deal value and means of payment are also retrieved with SDC. A sample including withdrawn deals is retrieved as well for calculating deal completion percentages.

[4] Data period is as long as possible; The ExecuComp database starts in 1992.

Information on which investment bank advises the bidder in the deal is obtained from SDC Platinum Database, since they provide a unique large dataset on who advises on the merger. In addition financial advisor league tables were obtained from SDC for each year in the period 1992-2010. The position in the league table depends on the market share of the advisor in the US market.

Bidder announcement returns are retrieved with the Eventus tool in WRDS. Hence, the underlying data set is CRSP for the stock returns and it uses the CRSP value-weighted index as the benchmark. This is used because many event study papers in finance, like Mackinlay (1997), use it too and it can be easily merged with Compustat.

Executive compensation data are retrieved from the Compustat ExecuComp database. This is used because it is the most comprehensive and the most widely used database (e.g. Masulis and Wang, 2007, Malmendier and Tate, 2008). The following items are retrieved from ExecuComp: total compensation (TDC1), options granted Black Sholes (BLK_VALUE), stock awards (STOCK_AWARDS_FV), unexercised exercisable option holdings (INMONEX), restricted stock holdings (RSTKHLDV), gender (PGENDER) and age (P_AGE_2). For a company to be included in the sample, TDC1 data should be available for at least one executive. In addition an executive had to be working in the company for the whole year to be included in the sample. If there is TDC1 data available for more than 5 executives, then the 5 executives with the highest TDC1 in a year are included in the sample.

Balance sheet data are retrieved with the Compustat database, because of its comprehensiveness, because it's widely used (e.g. Moeller et al., 2004; Smith and Stulz, 1985) and because it's easy to merge with the CRSP and the Compustat ExecuComp database. The following data items are retrieved with Compustat: total assets (DATA6), cash (DATA162), annual closing stock price (DATA24), common shares outstanding (DATA25), common equity liquidation value (DATA235) and the security industry classification code (DNUM).

3.2 Methodology

This section deals with models and variables used in this thesis. Section 3.2.1 introduces the explanatory variables; section 3.2.2 introduces the control variables and section 3.2.3 deals with the different models and corresponding dependent variables.

3.2.1 Explanatory variables

With respect to compensation four items are calculated, all are aggregated per company and divided by the aggregated TDC1. Guay (1999) finds that option compensation has a stronger effect on the level of risk-taking than stock compensation; therefore both 'Option compensation (%)' and 'Option and stock compensation (%)' are tested here. Restricted stock holdings compensation (%) is added because this type of compensation increases the sensitivity of the manager's long-term financial well-being to the performance in the company. As stated in the literature part the unexercised exercisable option holdings (%) are used as a simple proxy for overconfidence.

Two demographical variables are calculated. The first, 'Woman on board (Y/N)', is a dummy variable which takes the value of 1 if at least one woman is among the executives in a company. The other, 'Average age of board (Y/N)', is the average age of the board's five most earning executives.

Three dummy variables with respect to the deal advisor are calculated as well.[5] 'Advised by tier-1 bank' is a dummy variable which takes the value of 1 when the deal advisor is ranked in the top 5 with respect to M&A advisory US market share in the SDC league tables for the corresponding year. 'Advised by tier-2 bank' is a dummy variable which takes the value of 1 when the deal advisor is ranked between position 6 and 20 with respect to M&A advisory US market share in the SDC league tables for the corresponding year. 'Advised by tier-3 bank' is a dummy variable which takes the value of 1 when the deal

[5] The three dummy variables are only used in the research on bidder announcement returns and cost of the acquisitions.

advisor is ranked lower than position 20 with respect to M&A advisory US market share in the SDC league tables for the corresponding year

3.2.2 Control variables

Means of payment is added as control variable. As discussed, a deal financed with equity may be a bad sign to shareholders (Myers and Majluf, 1984). Two dummy variables are added which take the value of 1 when the deal is financed with cash and equity respectively. 12 dummy variables were created for 12 Fama-French industries by classifying the SIC-codes according to the division of Fama-French. [6] Another stylized fact is that merger premia can vary in time.[7] Therefore 19 year dummies are added, which take the value of 1 when a company announces an acquisition in the corresponding year. Another control variable added is relative size: the bid premium increases with the differential between the size of the bidder and target (Lambrecht, 2003). [8] It's determined by subtracting the logarithm of total net assets of the target from the logarithm of total net assets of the bidder. Furthermore size (total net assets), the market-to-book ratio (total net assets/common equity liquidation value) and leverage (total net assets/(common shares outstanding*closing price annual)) are added as well. [9]

3.2.3 Models and dependent variables

Bidder announcement returns

The main setup for this part is a multiple linear regression model of the form

$$E(Y) = \beta_0 + \beta_1 X_1 + \cdots + \beta_i X_i \qquad (1)$$

[6] See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html.

[7] See for instance Goel and Thakor (2010) who find that in merger waves premia are significantly higher at the start of a merger wave than at the end.

[8] Only used in the research on bidder announcement returns and cost of the acquisitions.

[9] Size is controlled for both bidder and target in the research on bidder announcement returns and cost of the acquisitions.

The dependent variable is the bidder's announcement return with as event window -1,+1 and as underlying model a market model. Therefore I'll explain in a few steps how it is retrieved.

Abnormal returns for company i at time t are derived as follows:

$$AR_{i,t} = R_{i,t} - NR_{i,t} \tag{2}$$

where $R_{i,t}$ is the continuously compounded daily return on the common stock of company i at time t. $NR_{i,t}$ is the normal stock return for company i at time t, further defined as the residuals from a market model:

$$NR_{i,t} = \hat{\alpha}_i + \widehat{\beta}_\iota R_{m,t} \tag{3}$$

where $\hat{\alpha}_i$ and $\widehat{\beta}_\iota$are security specific and time independent parameters. The parameters are estimated over a 255 day estimation period ending 46 days prior to the event.[10] $R_{m,t}$ is the continuously compounded daily return on the CRSP Value-Weighted index. Combining the two formulas leads to:

$$AR_{i,t} = R_{i,t} - (\widehat{\alpha}_\iota + \widehat{\beta}_\iota R_{m,t}) \tag{4}$$

which is the daily prediction error for company i at time t. Aggregation of the different $AR_{i,t}$'s brings the here desired CAR, hence

$$CAR_i = \sum_{t=1}^{n} AR_{i,t} \tag{5}$$

What induces managers to make acquisitions?

The main setup for this part is a probit model of the form.

$$P(Y = 1|x) = \Phi(\beta_0 + \beta_1 X_1 + \cdots + \beta_i X_i) \tag{6}$$

Because the probit model is not easily interpretable its partial derivative is used to interpret the results:

$$\frac{d}{dx}\ln(y) \tag{7}$$

[10] The minimum estimation period is set to 100 days.

Which is interpreted as the marginal effect of changing a variable it the other explanatory variables are kept constant.

The dependent variable is 'Company announces M&A in a year (Y/N)', which is a binary variable which takes the value of 1 when a company announces a deal in a year.

Cost of the acquisitions

The main setup for this part is a multiple linear regression model of the form

$$E(Y) = \beta_0 + \beta_1 X_1 + \cdots + \beta_i X_i \tag{8}$$

The dependent variable is 'Deal value relative to firm size (%)', which is the logarithm of the value of the deal divided by the logarithm of the total net assets of the bidder in the year prior to the merger.

What makes the firm choose a top-tier advisor?

The main setup for this part is a probit model of the form.

$$P(Y = 1|x) = \Phi(\beta_0 + \beta_1 X_1 + \cdots + \beta_i X_i) \tag{9}$$

Because the probit model is not easily interpretable its partial derivative is used to interpret results:

$$\frac{d}{dx}\ln(y) \tag{10}$$

which is interpreted as the marginal effect of changing a variable it the other explanatory variables are kept constant.

The dependent variable is 'Advised by tier-1 bank (Y/N)', which is a binary variable which takes the value of 1 when the deal advisor is ranked in the top 5 with respect to M&A advisory US market share in the SDC league tables for the corresponding year.

4: Results

In this section the descriptive statistics and regression results are presented. Section 4.1 presents and discusses the descriptive statistics and correlations. It is followed by four sections presenting the regression results. Section 4.2 deals with bidder announcement returns, section 4.3 deals with what induces managers to make acquisitions, section 4.4 deals with the cost of acquisitions and section 4.5 deals with what makes the firm choose a top-tier advisor. Each of those sections ends with a discussion.

4.1 Descriptive statistics and correlations

Table 1 presents the descriptive statistics. Panel A describes those of the large sample, which is used for the 'What induces managers to make acquisitions?' part of my research. 35.6% of the companies announce an acquisition in a year. Furthermore only 17.9% has at least one woman on the board and the average age of the executives is 51.55 years. Option compensation is on average 25% of total compensation; though the median is lower (17.9%). This is because of the large number of zeros in the data, which is about 36% of the observations. The aggregate of stock and option compensation to total compensation is on average 30.3%, with a medium of 26.4%, since 17.9% of the observations is a zero. The unexercised exercisable option holdings to total compensation are on average 125.8% of total compensation in a year, though there is a lot of dispersion here. Its median is 47.7%, 16.1% of the observations are zero and the maximum value is 1286%. The restricted stock holdings to total compensation show a similar pattern, though less extreme, but with more zeros. Its average is 25.7%, 53.9% are zeros and the maximum value is 253.7%.

Panel B describes the descriptive statistics of the smaller sample, which is used for the remainder of the research. The bidder's announcement return is on average -1.5% with a standard deviation of 6.8%. The deal value relative to the size of the firm is on average 76% and ranges from 31.5% to 149.1%. This means all are deals which are large enough to have an effect on the stock price of the bidding firm, which is a good thing for my research. 17.2%

has at least one woman on the board and the average age of executives is 51.70. Both figures are in line with the data in the larger sample. Option compensation is on average 33.3% and its median is lower (29.7%), because 22.8% of the observations are zeros. The aggregate of stock and option compensation to total compensation is on average 36.9%, with a medium of 34.3%, since 11.2% of the observations is a zero. The unexercised exercisable option holdings to total compensation are on average 192.1% of total compensation in a year, though there is a lot of dispersion here. Its median is 93.8%, 7.2% of the observations are zero and the maximum value is 1369%. The restricted stock holdings to total compensation show a similar pattern, though less extreme, but with more zeros. Its average is 29.6%, 51.6% are zeros and the maximum value is 285.7%. All compensation items in panel B are on average higher than those in panel A and contain less zeros. It's likely that this is because in Panel B the average company is about 35% larger than in Panel A. Furthermore, a tier-1 investment bank advises in 37.5% of the deals in the sample, a tier-2 bank on 17.4% of the deals in the sample and a tier-3 investment bank on 22.7% of the deals in the sample.

Table 2 presents the correlations of the variables used. I only discuss the most interesting and significant relationships. Panel A describes the descriptive statistics of the larger sample. A lot of the correlations between the variables are close to zero, which is nice. The correlation between 'Option compensation (%)' and 'Stock and option compensation' is 85.9%, which could be expected since the first variable is also included in computing the latter. The high level should be no problem, since they are not used simultaneously in regressions, though it does make it likely that the outcomes obtained with those variables are very similar. The dependent variable 'Company announces M&A in a year (Y/N)' correlates significantly positive with 'Option compensation (%)', 'Stock and option compensation (%)', 'Unexercised exercisable option holdings (%)' and 'Restricted stock holdings' and it correlates significantly negative with 'Woman on board (Y/N)' and 'Average age of board'. These correlations confirm the predictions made in section 2. Furthermore 'Average age of the board' is significantly negatively correlated with 'Option compensation (%)' and 'Stock and option compensation (%)'.

Panel B describes the correlations of the smaller sample. Most of the correlations between the variables are close to zero again. The correlation between 'Option compensation (%)' and 'Stock and option compensation (%)' is high again (90.1%). The correlations between the different advisor tiers are significantly negative correlated, which make sense, since it's less likely that an investment bank from another tier advises on the same deal as well. In addition a number of significant correlations make sense. The dependent variable 'CAR (-1,+1)' correlates significantly negative with 'Deal value relative to firm size (%)', 'Option compensation (%)', 'Stock and option compensation (%)' and 'Advised by tier-2 bank (Y/N)' and it correlates significantly positive with 'Unexercised exercisable option holdings (%)' and 'Woman on board (Y/N)'. The dependent variable 'Deal value relative to firm size (%)' correlates significantly negative with 'Average age of board' and significantly positive with 'Option compensation (%)', 'Stock and option compensation (%)', 'Advised by tier-1 bank (Y/N)' and 'Advised by tier-2 bank (Y/N)'. These correlations confirm the predictions made in section 2. Furthermore, as in the larger sample, 'Average age of board' is significantly negatively correlated with 'Option compensation (%)' and 'Stock and option compensation (%)'.

4.2 Bidder announcement returns

This section deals with three factors that influence the performance of the bidder around a deal announcement: the role of executive compensation, of board demographics and of the advisor. Results are presented in Table 3 and 4. Table 3 describes the effect of the factors in general and table 4 divides the sample in cash respectively equity financed deals.

Table 3 panel A uses 'Option compensation (%)' as key explanatory variable, where panel B uses 'Stock and option compensation (%)' instead. Both variables are very significant negative in the columns I-III. A one standard deviation increase of both variables is associated with a decrease in 'CAR -1,+1' of between -7.6% and -8.1%. The significance vanishes when all control variables are added in column IV, though the signs of the variables stay negative. A one standard deviation increase is still associated with a decrease

in ‘CAR -1,+1’ in the range -1.8% to -2.9%. Table 4 panel A, the equity-deal sample, shows significant negative figures for columns I-III, column IV is non-significant. The economic effect is about the same for each column compared to the figures in Table 3. The cash-deal sample shows no significant evidence for any column. The variable ‘Restricted stock holdings (%)’ isn’t significant in both table 3 and 4. The variable ‘Unexercised exercisable option holdings (%)’ is very significant in all columns in table 3, a one standard deviation increase in ‘Unexercised exercisable option holdings (%)’ is associated with an increase in ‘CAR -1,+1’ of 7.1% to 7.8%. Again, the equity-deal sample shows about the same figures and the cash-deal sample shows no significant results.

In table 3 the variable ‘Woman on board (Y/N)’ turns out to be very significant before and after adding control variables. A one standard deviation increase of ‘Woman on board (Y/N)’ increases ‘CAR -1,+1’ with 7% to 7.5%. The variable is not significant for the cash-deal and equity-deal samples in table 4, though the signs of the variables are still positive. The variable ‘Average age of board’ isn’t significant in both table 3 and 4.

Table 3, columns II en III, show negative figures for all advisor variables, which are ‘Advised by tier-1 bank (Y/N)’, ‘Advised by tier-2 bank (Y/N)’ and ‘Advised by tier-3 bank (Y/N)’. A one standard deviation increase of each variable is associated with a decrease in ‘CAR -1,+1’ of between -7.9% to -10.6%. However when adding control variables the results change a lot and only ‘Advised by tier-3 bank (Y/N)’ is still significantly negative. The variable ‘Advised by tier-1 bank (Y/N)’ becomes positive and, as table 9 shows, it is statistically significant larger than both ‘Advised by tier-2 bank (Y/N)’ and ‘Advised by tier-3 bank (Y/N)’. As is showed in table 9, tier-1 advisors also complete more deals than lower tier advisors. The equity-based sample in table 4 shows significantly negative figures for all advisor variables, with about the same economic effect as in the general sample of table 3. Though, when adding control variables, significance vanishes. The cash-based sample is weak significant negative for some variables and not significant when adding control

variables. The differences between the advisor variables, as presented in table 9, are not significant as well.

The hypothesized negative relationship between stock-based compensation and the bidder announcement returns is not significant when adding control variables, though the signs of the variables are negative and it might become significant when the sample size is increased. The separation of the sample by means of payment doesn't show a lot, though the cash-deal sample shows less significant negative figures on compensation. This may be suggestive of better behavior of managers when cash is used; further research is needed to confirm this. The hypothesized negative relationship between the bidder announcement returns and 'Unexercised exercisable option holdings (%)' faces counterevidence. The reason why it contradicts with Malmendier and Tate (2008) might be that their measure of overconfidence is much stricter. They signal a manager as overconfident only when she holds her options to maturity. My results may still be useful though since it signals that it's 'good news' for shareholders when managers hold large portions of unexercised exercisable options. A very stable significant result is found for the relationship between the presence of a woman in the board and the bidder announcement returns. This is consistent with the evidence on gender in other research fields, like Barber and Odean (2001), who find that men are worse investors. The results do suggest that there is no evidence (but also no counterevidence) for the additive value of an advisor. I do find that choosing a tier-1 advisor is favorable: tier-1 advisors make better deals and complete more deals than lower tier advisors, which is in line with Rau (2000)'s superior deal and deal completion hypothesis.

4.3 What induces managers to make acquisitions?

This section deals with two factors that influence the likelihood of announcing an acquisition: the role of executive compensation and of board demographics. The results are presented in table 5.

Table 5 panel A uses 'Option compensation (%)' as key explanatory variable, where panel B uses 'Stock and option compensation (%)' instead. Both variables are strong significant positive in all cases. Results for both variables are very similar; no significant differences can be concluded. A one standard deviation increase is associated with an increase of between 1.56-1.67% of the likelihood of announcing an acquisition in the columns I-III. When the control variables are added the increase diminishes, but is still between 0.88 and 1.01%. The variables 'Unexercised exercisable option holdings' (%) and 'Restricted stock holdings' are significant positive as well, though their economic effect is not meaningful, since for all cases a one standard deviation increase is associated with an increase of less than 0.22% in the likelihood of announcing an acquisition.

The variable 'Woman on board (Y/N)' is significant negative in the columns I-III. Adding a woman to the board is associated with a 5.3% decrease in the likelihood of announcing an acquisition. When all control variables are added in column IV, significance vanishes, though the sign stays negative. The variable 'Average age of board' is very significant negative, but economically negligible.

The hypothesized positive relationship between stock-based compensation and the likelihood that a company announces an acquisition is confirmed. This is in line with earlier evidence, which suggests that stock-based compensation makes managers less risk-averse (Guay, 1999). The hypothesized positive relationship between (over)confidence and the likelihood that a company announces an acquisition is confirmed, but the economic effect is very little. A negative relationship between the presence of women in the board and the likelihood of announcing an acquisition cannot be confirmed significantly, though the signs are in the 'right' direction. The hypothesized negative relationship between the average age of the board and the likelihood of announcing an acquisition is confirmed, but economically negligible.

4.4 Cost of the acquisitions

This section deals with four factors that influence the relative size of the deal: the bidder announcement returns, the role of executive compensation, of board demographics and of the advisor. The results are presented in table 6 and 7. Table 6 describes the effect of the factors in general and table 7 divides the sample in cash respectively equity financed deals.

Table 6 shows a strong significant negative relationship for the relationship between CAR (-1,+1) and 'Deal value relative to firm size (%)'. In column III a one standard deviation increase of CAR(-1,+1) leads to a 18.1% decrease in 'Deal value relative to firm size (%)'. With all control variables added in column IV the decrease is still -7.1%. The equity-deal sample of table 7 panel A delivers very similar results. The cash-deal sample of panel B brings less strong results and is even insignificant when adding control variables in column IV.

Table 6 panel A uses 'Option compensation (%)' as key explanatory variable, where panel B uses 'Stock and option compensation (%)' instead. Both variables are significant in the columns I-III, where the latter variable is slightly stronger significant. A one standard deviation increase is associated with an increase of between 9% and 13.2% in 'Deal value relative to firm size (%)'. With all control variables added in column IV, only the variable 'Stock and option compensation (%)' remains significant and the increase diminished to 2.7%. In the cash-sample all significance is vanished and in the equity sample the significance of 'Stock and option compensation (%) vanishes in column IV. In table 6 the variable 'Unexercised exercisable option holdings (%)' is significant in the columns I-III. A one standard deviation increase is associated with a 4.9% to 5.8% increase in 'Deal value relative to firm size (%)'. Significance vanishes when all control variables are added in column IV, though the sign stays positive. More or less the same results are found in the equity-deal sample of table 7. 'Unexercised exercisable option holdings (%)' is not significant in the cash-deal sample. The variable 'Restricted stock holdings (%)' does not a give an unambiguous result, it is not consistently significant and it changes sign when

adding control variables in column IV. Hence, no evidence for a significant influence of 'Restricted stock holdings (%)' on 'Deal value relative to firm size (%)' can be concluded.

Both table 6 and 7 show no significant relationship between 'Woman on board (Y/N)' and 'Deal value relative to firm size (%)'. In table 6 the variable 'Average age of board' is strong significant negative associated with 'Deal value relative to firm size (%)'. In column III a one standard deviation increase of 'Average age of board' is associated with a decrease in 'Deal value relative to firm size (%)' of 17.2%. This decrease is still 5.2% when all control variables are added in column IV. The results in the equity-deal and the cash-deal sample in table 7 are very similar to those of table 6.

Table 6 shows that all advisor tiers, 'Advised by tier-1 bank (Y/N)', 'Advised by tier-2 bank (Y/N)' and 'Advised by tier-3 bank (Y/N)', are strong significant positive associated with 'Deal value relative to firm size (%)'. In column III a one standard deviation increase leads to respectively a 60.1%, 35% and 22.9% increase of 'Deal value relative to firm size (%)'. With all control variables added in column IV this increase is still 18.1%, 10% and 5.7%. As reported in table 9 the differences between the different advisor tiers are very significant as well. The results in the equity-deal and the cash-deal sample in table 7 are very similar to those of table 6.

My findings confirm the evidence of Travlos (1987) and shows that larger deals relative to the bidder's firm size are worse for shareholders. Hence, if there are influential factors that make it more likely for a manager to undertake such deals, then this is no good news for the shareholder. The hypothesized positive relationship between stock-based compensation and the relative deal size is mostly confirmed. The cash-deal sample shows less significant positive figures on compensation than the equity sample. This may be suggestive of better behavior of managers when cash is used; further research is needed to confirm this. The hypothesized positive relationship between 'Unexercised exercisable option holdings (%)' and the relative deal size is confirmed in columns I-III, but is not significant when all control variables are added in column IV. Because the sign is still

positive, it might be the case that a relationship can be confirmed when the sample size is increased. The influence of the average age of the board on the relative deal size is very significant negative in both tables 6 and 7, which confirms the hypothesis. The hypothesized positive relationship between the relative deal size and hiring a tier-1 advisor is confirmed in both table 6 and 7, which might mean that managers pick better advisors when the deal matters more for the firm.

4.5 What makes the firm choose a top-tier advisor?

This section deals with two factors that influence the likelihood of choosing an M&A advisor: the role of executive compensation and of board demographics. Results are presented in table 8.

Table 8 panel A uses 'Option compensation (%)' as key explanatory variable, where panel B uses 'Stock and option compensation (%)' instead. Both variables are significant positive in all cases, where the variable 'Stock and option compensation' is somewhat stronger significant. A one standard deviation increase of 'Option compensation (%)' is associated with an increase of between 1.70 and 3.69% in the likelihood of choosing a tier-1 advisor, where this increase is between 3.82 and 4.92% for the variable 'Stock and option compensation (%). No significant results are found for the variable 'Unexercised exercisable option holdings (%)'. 'Restricted stock holdings (%)' is significant positive associated to the likelihood of choosing a tier-1 advisor. A one standard deviation increase of 'Restricted stock holdings (%)' is associated with an increase of the likelihood of choosing a top-tier advisor of between 0.74% and 0.90%.

The variable 'Woman on board (Y/N)' is significant in the column I-III. In column III, adding a woman to the board of a company is associated with an increase of 15% in the likelihood of choosing a tier-1 advisor. However significance vanishes when control variables are added in column IV. The variable 'Average of board' is significant positive in

column I-III, but a one standard deviation increase is associated with a negligible increase in the likelihood of choosing a tier-1 advisor. In column IV significance is vanished.

The hypothesized positive relationship between stock-based compensation and the likelihood that a company chooses a tier-1 advisor is confirmed, suggesting that stock-based compensation leads to picking a 'better' advisor. On the other hand, demographical influences on the likelihood of choosing a 'good' advisor cannot be confirmed significantly.

5: Conclusions

The object of this study is to investigate the behavior and the risk-attitude of a manager in a merger or acquisition. Below I provide a discussion of the main findings of the thesis. In addition, I will discuss the potential limitations of my research as well as the potential directions for future research.

My findings indicate a strong relationship between the presence of a woman in the board and bidder announcement returns, suggesting that women make better deals than men. A possible explanation might be that women are more risk-averse and less amenable to overconfident behavior (Prince, 1993; Byrnes et al., 1999; Barber and Odean, 2001). I also find that it is favorable for a manager to pick a tier-1 financial advisor, as tier-1 advisors are associated with superior deals and a greater completion rate. Additionally, I document that large unexercised exercisable option holdings of a manager may be a sign of (mere) confidence, as opposed to *over*confidence: their presence is positively associated with the bidder's announcement returns. The evidence does not suggest the presence of a relationship between stock-based compensation and the bidder announcement returns, although coefficient estimates are suggestively negative.

Further, my findings indicate a strong relationship between stock-based compensation and the likelihood that a company announces an acquisition. This is in line with the results of Guay (1999). Since in general the bidder overpays (Moeller et al., 2005), this might be a downside of stock-based compensation. However, the data do not allow to make a clear-cut statement here, since the relationship between stock-based compensation and bidder announcement returns is not statistically significant. A relationship between demographics and the likelihood of announcing an acquisition cannot be confirmed either.

Moreover, in line with the findings of Travlos (1987), my results show that the amount the bidder overpays increases with relative deal size. Hence, factors that increase the likelihood of making 'large' deals might be considered as bad news to shareholders. The

relationship between stock-based compensation and making large deals is confirmed here, which might be because stock-based compensation deduces risk averse behavior (Guay, 1999). In addition the result seems to be more pronounced in the equity-deal sample, suggesting that managers that finance acquisitions with equity are more likely to make large deals. Further research is needed to address this. A strong significant negative relationship is found between age and the likelihood of making 'large' deals. Older managers are less likely to make 'large' deals. A plausible explanation is that older managers may want to avoid risks that can harm career and financial security (Carlsson and Karlsson, 1970).

Finally, no relationship between demographics and hiring a good advisor can be confirmed. My findings do indicate a strong significant relationship between stock-based compensation and hiring a good advisor. A plausible explanation may be that they want to hire a good advisor, because their own money is at stake as well.

It is often suggested that the relationships in this thesis are due to differences in risk attitudes and confidence.[11] A potential limitation of this thesis is that it is not possible to directly examine managerial risk attitudes – we can only infer them from managerial choices, such as the decision to announce an acquisition, etc. My analysis would be sharper if data on the risk-attitude and the level of confidence of each individual executive were available. A potential approach would be, for instance, to run a survey of executives, as for example Graham and Harvey (2001) do for other corporate finance decisions. This, however, is beyond the scope of my thesis, and is left for future research.

Another potential limitation is that this thesis focuses at exchange-traded bidders and targets, while the M&A-environment is much broader than only those companies. Further research might aim at investigating M&As in private firms to see if the same determinants drive the behavior of a manager in M&As. Though, it might be hard to

[11] For instance: women are associated with making better deals, this might be because they are more risk-averse and less amenable to overconfident behavior.

investigate this, since the lack of daily stock prices makes event study methodology impossible.

Finally, further research can aim at digging deeper into the demographical differences. Gender and age were the two only demographical factors investigated here. It may be the case that results can be found with other demographics, like nationality and the education level, as well.

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Appendix A: Tables

Table 1
Descriptive statistics

Table 1 present the descriptive statistics of the variables used. Panel A presents those statistics for the larger sample, which is used for 'What induces managers to make acquisitions?' Panel B presents those statistics for the rest of the research. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	N	Minimum	Maximum	Mean	Std. Deviation	Median
Company announces M&A in a year (Y/N)	26008	0,000	1,000	0,356	0,479	0,000
Option compensation (%)	26001	0,000	0,910	0,250	0,265	0,179
Stock and option compensation (%)	26001	0,000	0,929	0,303	0,254	0,264
Unexercised exercisable option holdings (%)	26008	0,000	12,855	1,258	2,098	0,477
Restricted stock holdings (%)	26008	0,000	2,537	0,257	0,468	0,000
Woman on board (Y/N)	26008	0,000	1,000	0,179	0,384	0,000
Average age of board	25551	39,000	64,667	51,550	5,113	51,667

Panel B	N	Minimum	Maximum	Mean	Std. Deviation	Median
CAR (-1,+1)	2612	-0,239	0,182	-0,015	0,068	-0,010
Deal value relative to firm size (%)	2530	0,315	1,491	0,760	0,235	0,743
Option compensation (%)	1453	0,000	0,911	0,333	0,280	0,297
Stock and option compensation (%)	1453	0,000	0,911	0,369	0,263	0,343
Unexercised exercisable option compensation (%)	1453	0,000	13,696	1,921	2,734	0,938
Restricted stock holdings (%)	1453	0,000	2,857	0,296	0,522	0,000
Woman on board (Y/N)	1454	0,000	1,000	0,172	0,377	0,000
Average age of board	1433	38,800	64,667	51,701	4,752	52,000
Advised by tier-1 bank (Y/N)	2612	0,000	1,000	0,375	0,484	0,000
Advised by tier-2 bank (Y/N)	2612	0,000	1,000	0,174	0,379	0,000
Advised by tier-3 bank (Y/N)	2612	0,000	1,000	0,227	0,419	0,000

Table 2
Correlation matrices

Table 2 present the correlation matrices of the variables used. Panel A presents those statistics for the larger sample, which is used for 'What induces managers to make acquisitions?' Panel B presents those statistics for the rest of the research. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	Company announces M&A in a year (Y/N)	Option compensation (%)	Stock and option compensation (%)	Unexercised exercisable option holdings (%)	Restricted stock holdings (%)	Woman on board (Y/N)	Average age of board
Company announces M&A in a year (Y/N)	1,000						
Option compensation (%)	0,101	1,000					
Stock and option compensation (%)	0,091	0,852	1,000				
Unexercised exercisable option holdings (%)	0,105	0,083	0,046	1,000			
Restricted stock holdings (%)	0,024	-0,229	-0,061	0,001	1,000		
Woman on board (Y/N)	-0,015	-0,024	0,019	0,021	0,009	1,000	
Average age of board	-0,029	-0,155	-0,159	-0,038	0,065	-0,079	1,000

Panel B	CAR (-1,+1)	Option compensation (%)	Stock and option compensation (%)	Unexercised exercisable option holdings (%)	Restricted stock holdings (%)	Woman on board (Y/N)	Average age of board	Advised by tier-1 bank (Y/N)	Advised by tier-2 bank (Y/N)	Advised by tier-3 bank (Y/N)
CAR (-1,+1)	1,000									
Deal value relative to firm size (%)	-0,198									
Option compensation (%)	-0,076	1,000								
Stock and option compensation (%)	-0,082	0,901	1,000							
Unexercised exercisable option holdings (%)	0,070	0,112	0,070	1,000						
Restricted stock holdings (%)	0,006	-0,251	-0,155	-0,039	1,000					
Woman on board (Y/N)	0,070	-0,053	-0,017	0,024	0,000	1,000				
Average age of board	0,029	-0,185	-0,204	-0,066	0,080	-0,052	1,000			
Advised by tier-1 bank (Y/N)	-0,033	0,046	0,091	0,013	0,070	0,052	0,001	1,000		
Advised by tier-2 bank (Y/N)	-0,069	-0,020	-0,019	-0,049	-0,043	-0,010	-0,031	-0,356	1,000	
Advised by tier-3 bank (Y/N)	-0,004	0,045	0,015	0,034	-0,052	-0,040	0,000	-0,420	-0,249	1,000

Table 3
Bidder announcement returns

Table 3 presents the results of ordinary least squares regressions with the bidder announcement returns as the dependent variable. The event period of this variable starts at t-1 and ends at t+1. Panel A takes options to total compensation as key variable and Panel B takes stocks and options to total compensation as key variable. Those are tested in column I. In column II unexercised exercisable options and restricted stock to total compensation are added as well as dummies for the type advisor that advises on the deal. Column III adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	I	II	III	IV
Option compensation (%)	-0.017***	-0.018***	-0.017***	-0.006
	(-2.893)	(-2.988)	(-2.774)	(-0.778)
Advised by tier-1 bank (Y/N)		-0.013***	-0.012***	0.002
		(-3.018)	(-2.705)	(0.417)
Advised by tier-2 bank (Y/N)		-0.017***	-0.017***	-0.008
		(-3.243)	(-3.041)	(-1.307)
Advised by tier-3 bank (Y/N)		-0.014***	-0.013**	-0.010*
		(-2.621)	(-2.418)	(-1.718)
Unexercised exercisable option holdings (%)		0.002***	0.002***	0.002***
		(2.969)	(2.810)	(2.611)
Restricted stock holdings (%)		-0.002	-0.001	-0.001
		(-0.489)	(-0.418)	(-0.331)
Woman on board (Y/N)			0.012***	0.012***
			(2.658)	(2.752)
Average age of board			-0.000	-0.000
			(-0.205)	(-0.433)
Means of payment	No	No	No	Yes
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	1,453	1,453	1,453	1,337
R-squared	0.007	0.021	0.030	0.156

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
Stock and option compensation (%)	-0.019***	-0.019***	-0.017***	-0.004
	(-3.118)	(-2.973)	(-2.609)	(-0.552)
Advised by tier-1 bank (Y/N)		-0.013***	-0.012***	0.002
		(-2.902)	(-2.649)	(0.415)
Advised by tier-2 bank (Y/N)		-0.017***	-0.016***	-0.008
		(-3.185)	(-3.000)	(-1.317)
Advised by tier-3 bank (Y/N)		-0.014***	-0.013**	-0.010*
		(-2.622)	(-2.419)	(-1.711)
Unexercised exercisable option holdings (%)		0.002***	0.002***	0.002***
		(2.856)	(2.694)	(2.619)
Restricted stock holdings (%)		-0.001	-0.000	-0.001
		(-0.202)	(-0.135)	(-0.237)
Woman on board (Y/N)			0.012***	0.012***
			(2.732)	(2.762)
Average age of board			-0.000	-0.000
			(-0.067)	(-0.404)
Means of payment	No	No	No	Yes
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	1,453	1,453	1,453	1,337
R-squared	0.007	0.021	0.029	0.155

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4
Bidder announcement returns

Table 4 presents the results of ordinary least squares regressions with the bidder announcement returns as the dependent variable. The event period of this variable starts at t-1 and ends at t+1. Panel A contains deals which are financed at least partially by equity and Panel B contains deals which are financed at least partially by cash. In column I the level of options and stocks to total compensation is tested. In column II unexercised exercisable options and restricted stock to total compensation are added as well as dummies for the type advisor that advises on the deal. Column III adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	I	II	III	IV
Stock and option compensation (%)	-0.018**	-0.017**	-0.015*	0.006
	(-2.302)	(-2.043)	(-1.750)	(0.597)
Advised by tier-1 bank (Y/N)		-0.017***	-0.015**	0.000
		(-2.799)	(-2.428)	(0.061)
Advised by tier-2 bank (Y/N)		-0.017**	-0.015**	-0.004
		(-2.219)	(-2.033)	(-0.423)
Advised by tier-3 bank (Y/N)		-0.020***	-0.018**	-0.009
		(-2.650)	(-2.393)	(-1.083)
Unexercised exercisable option holdings (%)		0.002**	0.002**	0.002*
		(2.354)	(2.182)	(1.860)
Restricted stock holdings (%)		-0.001	-0.001	-0.002
		(-0.185)	(-0.150)	(-0.454)
Woman on board (Y/N)			0.007	0.008
			(1.242)	(1.315)
Average age of board			-0.000	-0.000
			(-0.300)	(-0.344)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	930	930	930	856
R-Squared	0.006	0.022	0.032	0.142

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
Stock and option compensation (%)	-0.013	-0.012	-0.012	-0.011
	(-1.622)	(-1.512)	(-1.393)	(-1.149)
Advised by tier-1 bank (Y/N)		-0.010*	-0.009*	-0.002
		(-1.918)	(-1.700)	(-0.256)
Advised by tier-2 bank (Y/N)		-0.012*	-0.011	-0.008
		(-1.766)	(-1.617)	(-1.136)
Advised by tier-3 bank (Y/N)		-0.005	-0.005	-0.010
		(-0.725)	(-0.624)	(-1.247)
Unexercised exercisable option holdings (%)		0.001	0.001	0.001*
		(1.634)	(1.477)	(1.763)
Restricted stock holdings (%)		-0.002	-0.001	0.000
		(-0.411)	(-0.241)	(0.006)
Woman on board (Y/N)			0.005	0.007
			(1.062)	(1.423)
Average age of board			-0.001	-0.000
			(-1.577)	(-0.495)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	688	688	688	638
R-squared	0.004	0.016	0.020	0.208

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5
What induces managers to make acquisitions?

Table 5 presents the results of a probit regression with 'Company announces M&A in a year (Y/N)' as dependent variable. Panel A takes options to total compensation as key variable and Panel B takes stocks and options to total compensation as key variable. Those are tested in column I. In column II unexercised exercisable options and restricted stock to total compensation are added. Column III adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	I	II	III	IV
Option compensation (%)	0.467***	0.482***	0.453***	0.216***
	(0.000)	(0.000)	(0.000)	(0.000)
Unexercised exercisable option holdings (%)		0.055***	0.054***	0.038***
		(0.000)	(0.000)	(0.000)
Restricted stock holdings (%)		0.122***	0.124***	0.036**
		(0.000)	(0.000)	(0.049)
Woman on board (Y/N)			-0.053**	-0.028
			(0.014)	(0.227)
Average age of board			-0.007***	-0.014***
			(0.000)	(0.000)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, market-to-book and cashholdings	No	No	No	Yes
Observations	25,817	25,817	25,360	23,027
Number of companies	2,447	2,447	2,446	2,419

pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
Stock and option compensation (%)	0.458***	0.447***	0.433***	0.176***
	(0.000)	(0.000)	(0.000)	(0.000)
Unexercised exercisable option holdings (%)		0.058***	0.056***	0.038***
		(0.000)	(0.000)	(0.000)
Restricted stock holdings (%)		0.081***	0.089***	0.026
		(0.000)	(0.000)	(0.154)
Woman on board (Y/N)			-0.060***	-0.029
			(0.648)	(0.794)
Average age of board			-0.009***	-0.014***
			(0.000)	(0.000)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, market-to-book and cashholdings	No	No	No	Yes
Observations	25,817	25,817	25,360	23,027
Number of companies	2,447	2,447	2,446	2,419

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6
Cost of the acquisitions

Table 6 presents the results of ordinary least squares regression with 'Deal value relative to firm size (%)' as dependent variable. Panel A takes options to total compensation as key variable and Panel B takes stocks and options to total compensation as key variable. In column I the bidder's announcement return for the event period -1,+1 is tested. In column II the key variable is tested as well as unexercised exercisable options and restricted stock to total compensation and dummies for the type advisor that advises on the deal. Column III adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B

Panel A	I	II	III	IV
CAR (-1,+1)	-0.684***	-0.614***	-0.608***	-0.235***
	(-10.143)	(-8.070)	(-8.111)	(-5.323)
Advised by tier-1 bank (Y/N)		0.252***	0.254***	0.076***
		(19.661)	(20.071)	(9.219)
Advised by tier-2 bank (Y/N)		0.200***	0.197***	0.056***
		(12.713)	(12.707)	(5.927)
Advised by tier-3 bank (Y/N)		0.127***	0.131***	0.032***
		(7.995)	(8.327)	(3.403)
Option compensation (%)		0.096***	0.068***	0.020
		(5.461)	(3.809)	(1.535)
Unexercised exercisable option holdings (%)		0.004**	0.004**	0.001
		(2.382)	(2.182)	(1.101)
Restricted stock holdings (%)		-0.016*	-0.013	0.007
		(-1.700)	(-1.381)	(1.259)
Woman on board (Y/N)			-0.010	-0.005
			(-0.797)	(-0.746)
Average age of board			-0.008***	-0.002***
			(-6.733)	(-3.284)
Means of payment	No	No	No	Yes
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	2,530	1,442	1,442	1,331
R-squared	0.039	0.290	0.313	0.807

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
CAR (-1,+1)	-0.684***	-0.612***	-0.608***	-0.235***
	(-10.143)	(-8.057)	(-8.116)	(-5.332)
Advised by tier-1 bank (Y/N)		0.249***	0.253***	0.076***
		(19.370)	(19.899)	(9.146)
Advised by tier-2 bank (Y/N)		0.198***	0.196***	0.056***
		(12.597)	(12.632)	(5.885)
Advised by tier-3 bank (Y/N)		0.126***	0.130***	0.032***
		(7.980)	(8.297)	(3.354)
Stock and option compensation (%)		0.106***	0.076***	0.021*
		(5.796)	(4.089)	(1.750)
Unexercised exercisable option holdings (%)		0.004***	0.004**	0.001
		(2.595)	(2.335)	(1.138)
Restricted stock holdings (%)		-0.020**	-0.016*	0.006
		(-2.230)	(-1.739)	(1.172)
Woman on board (Y/N)			-0.011	-0.005
			(-0.883)	(-0.765)
Average age of board			-0.008***	-0.002***
			(-6.892)	(-3.237)
Means of payment	No	No	No	Yes
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	2,530	1,442	1,442	1,331
R-squared	0.039	0.290	0.309	0.807

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7
Cost of the acquisitions

Table 7 presents the results of ordinary least squares regression with 'Deal value relative to firm size (%)' as dependent variable. Panel A contains deals which are financed at least partially by equity and Panel B contains deals which are financed at least partially by cash. In column I the bidder's announcement return for the event period -1,+1 is tested. In column II the level of options and stocks to total compensation is tested as well as unexercised exercisable options and restricted stock to total compensation and dummies for the type advisor that advises on the deal. Column III adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	(1)	(2)	(3)	(4)
CAR (-1,+1)	-0.707***	-0.638***	-0.625***	-0.223***
	(-8.834)	(-6.959)	(-6.899)	(-4.267)
Advised by tier-1 bank (Y/N)		0.268***	0.268***	0.071***
		(15.295)	(15.419)	(6.180)
Advised by tier-2 bank (Y/N)		0.213***	0.206***	0.060***
		(10.226)	(9.985)	(4.698)
Advised by tier-3 bank (Y/N)		0.163***	0.160***	0.040***
		(7.764)	(7.719)	(3.200)
Stock and option compensation (%)		0.174***	0.141***	0.018
		(7.578)	(6.066)	(1.139)
Unexercised exercisable option holdings (%)		0.006**	0.005**	0.001
		(2.514)	(2.330)	(1.141)
Restricted stock holdings (%)		-0.011	-0.007	0.008
		(-0.903)	(-0.548)	(1.074)
Woman on board (Y/N)			-0.009	-0.012
			(-0.539)	(-1.237)
Average age of board			-0.007***	-0.002**
			(-5.126)	(-2.489)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	1,708	929	915	844
R-squared	0.044	0.323	0.346	0.820

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
CAR (-1,+1)	-0.207*	-0.288**	-0.296**	-0.046
	(-1.925)	(-2.433)	(-2.513)	(-0.660)
Advised by tier-1 bank (Y/N)		0.229***	0.229***	0.085***
		(13.726)	(13.852)	(7.970)
Advised by tier-2 bank (Y/N)		0.191***	0.191***	0.070***
		(9.077)	(9.178)	(5.558)
Advised by tier-3 bank (Y/N)		0.100***	0.110***	0.026*
		(4.513)	(4.978)	(1.920)
Stock and option compensation (%)		0.001	-0.017	0.014
		(0.046)	(-0.666)	(0.831)
Unexercised exercisable option holdings (%)		0.003	0.003	0.001
		(1.269)	(1.285)	(0.830)
Restricted stock holdings (%)		-0.025**	-0.026**	0.007
		(-2.090)	(-2.186)	(0.942)
Woman on board (Y/N)			-0.001	-0.001
			(-0.047)	(-0.158)
Average age of board			-0.005***	-0.003***
			(-3.014)	(-2.927)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, relative size, cash, leverage and market-to-book	No	No	No	Yes
Observations	1,122	688	683	633
R-squared	0.003	0.248	0.266	0.802

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8

What makes the firm choose a top-tier advisor?

Table 8 presents the results of a probit regression with 'Advised by tier-1 bank (Y/N)' as dependent variable. Panel A takes options to total compensation as key variable and Panel B takes stocks and options to total compensation as key variable. Those are tested in column I. In column II unexercised exercisable options and restricted stock to total compensation are added. Column 3 adds demographical board characteristics and column IV adds control variables. All variables contain winsorized fractions of 1%. Precise data definitions can be found in Appendix B.

Panel A	I	II	III	IV
Option compensation (%)	0.205*	0.282**	0.389***	0.286*
	(0.065)	(0.015)	(0.001)	(0.082)
Unexercised exercisable option holdings (%)		0.005	0.005	-0.002
		(0.725)	(0.706)	(0.881)
Restricted stock holdings (%)		0.181***	0.178***	0.126**
		(0.007)	(0.009)	(0.091)
Woman on board (Y/N)			0.177**	0.117
			(0.034)	(0.191)
Average age of board			0.018**	-0.000
			(0.019)	(0.971)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, market-to-book and cashholdings	No	No	No	Yes
Observations	1,637	1,637	1,616	1,563
Number of companies	799	799	786	757

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Panel B	I	II	III	IV
Stock and option compensation (%)	0.432***	0.489***	0.526***	0.400**
	(0.000)	(0.000)	(0.000)	(0.009)
Unexercised exercisable option holdings (%)		0.005	0.007	-0.000
		(0.676)	(0.609)	(0.975)
Restricted stock holdings (%)		0.186***	0.169**	0.127*
		(0.005)	(0.012)	(0.087)
Woman on board (Y/N)			0.174**	0.117
			(0.037)	(0.192)
Average age of board			0.019**	0.001
			(0.015)	(0.910)
Year dummies	No	No	No	Yes
Industry dummies	No	No	No	Yes
Size, market-to-book and cashholdings	No	No	No	Yes
Observations	1,637	1,637	1,616	1,563
Number of companies	799	799	786	757

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9
Advisor performance

Table 9 presents the performance of M&A advisors based on the deal completion ratio and the bidder announcement returns of the firms they advise to. Panel A shows the deal completion percentages and the difference between those for the three earlier discussed advisor tiers. Panel B shows the p-values of the differences in bidder announcement returns induced by the three different tiers and it is divided by means of payment. The model used is the same as the model of column IV in table 3 and 4. Panel C shows the p-values of the differences in (deal value/bidder total net assets) induced by the three different tiers and it is divided by means of payment. The model used is the same as the model of column IV in the tables 6 and 7. Precise data definitions can be found in Appendix B.

Panel A	**Deal Completion**	
	% Completed	Observations
Tier1	93,289%	5168
Tier2	94,016%	3543
Tier3	95,919%	6542

	Diff	t-stat
Tier1<Tier2	0,731%	1,718
Tier1<Tier3	2,633%	6,463
Tier2<Tier3	1,902%	4,443

Panel B	**CAR**	**Panel C**	**Bidder's load**
General	P-val		P-val
Tier1>Tier2	0,033		0,013
Tier1>Tier3	0,017		0,000
Tier2>Tier3	0,728		0,004
Equity			
Tier1>Tier2	0,526		0,304
Tier1>Tier3	0,202		0,003
Tier2>Tier3	0,551		0,069
Cash			
Tier1>Tier2	0,213		0,112
Tier1>Tier3	0,140		0,000
Tier2>Tier3	0,743		0,001

Appendix B: Variable definitions

B1: Dependent variables

Company announces M&A in a year (Y/N)	Dummy variable which takes the value of 1 if a company undertakes a merger or acquisition in a year
Advised by tier-1 bank (Y/N)	Dummy variable which takes the value of 1 when a top-5 investment bank, according to the SDC league table of the year in which the deal took place, advised the bidder on the deal
CAR (-1,+1)	Bidder announcement returns as specified in the methodology section for the event period -1, +1
Deal value relative to firm size (%)	The logarithm of the value of the deal divided by the logarithm of the total net assets of the bidder in the year prior to the merger

B2: Explanatory variables

Option compensation (%)	Average percentage of option awards to total compensation for the five most-earning executives in company in a year
Stock and option compensation (%)	Aggregate of the average percentage of option and stock awards to total compensation for the five most-earning executives in company in a year
Unexercised exercisable option holdings (%)	Average percentage of unexercised exercisable option holdings to total compensation for the five most-earning executives in company in a year
Restricted stock holdings (%)	Average percentage of restricted stock holdings to total compensation for the five most-earning executives in company in a year
Woman on board (Y/N)	Dummy variable which takes the value of 1 when a Woman on board (Y/N) executive is present in the ExecuComp database for the bidder
Average age of board	Average age of the five most-earning executives in company in a year
Advised by tier-1 bank (Y/N)	Dummy variable which takes the value of 1 when a top-5 investment bank, according to the SDC league table of the year in which the deal took place, advised the bidder on the deal
Advised by tier-2 bank (Y/N)	Dummy variable which takes the value of 1 when a rank 6-20 investment bank, according to the SDC league table of the year in which the deal took place, advised the bidder on the deal
Advised by tier-3 bank (Y/N)	Dummy variable which takes the value of 1 when a rank >20 investment bank, according to the SDC league table of the year in which the deal took place, advised the bidder on the deal