

Aggregate Manager Sentiment and The Choice of Mergers and Acquisitions Payment Method

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Abstract

This research examines the impact of aggregate manager sentiment on the choice of merger and acquisition (M&A) payment method. Using manager sentiment index of Jiang et al. (2019), we show that aggregate manager sentiment has a strong and positive (negative) relationship with acquiring firm's likelihood of using fully cash (fully stock) in a takeover deal. We also find that the percentage of cash (stock) payment in M&A increases (decreases) following a period of high aggregate manager sentiment. Our results remain consistent with inclusion of additional market-level variables and firm-specific sentiment level. In addition, we find that increased number of directors on board enhances whereas higher CEO age attenuates the impact of aggregate manager sentiment on the likelihood of using fully cash in a takeover deal. Overall, our study shows that aggregate manager sentiment influences M&A payment method and certain board and CEO characteristics play roles in either enhancing or attenuating the impact of aggregate manager sentiment on M&A payment choices.

Keywords: Aggregate manager sentiment, mergers and acquisitions payment method, board size, board independence, CEO age, CEO tenure.

JEL Classifications: G41, G34, G30, C58

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1 Introduction

The choice of payment method in mergers and acquisitions (M&As) has been a subject of major interest for both researchers and financial decision makers over the last many years (e.g., Hansen, 1987; Faccio and Masulis, 2005; Karampatsas et al., 2014; Dutordoir et al., 2022). Prior literature document both positive and negative impacts of using cash as well as using stock payment method on firm's value and profitability in the post-merger period¹. Historically, many researchers theoretically and empirically identify various determinants of acquiring firm's choice of M&A payment method.

Traditional theories suggest that whether acquirers would choose all cash or all stock or a mix payment method depends on different factors including information asymmetry (Hansen, 1987; Eckbo et al., 1990; Boone et al., 2014), financial leverage (Uysal, 2011; Boateng and Bi, 2014), cash availability (Martin, 1996), growth opportunities (Faccio and Masulis, 2005; Di Guili, 2013; Yang et al., 2019), tax considerations (Ayers et al., 2004), managerial ownership (Amihud et al., 1990; Martynova and Renneboog, 2009), firm size (Faccio and Masulis, 2005; Baker et al., 2007), business cycle (Martin, 1996), credit rating (Karampatsas et al., 2014), policy uncertainty (Nguyen and Phan, 2017; Bonaime et al., 2018) and various deal characteristics such as relative deal value, hostility, competition among bidders and industry relatedness (Fishman, 1989; Berkovitch and Narayanan, 1990; Faccio and Masulis, 2005).

On the other hand, some researchers find behavioral bias motives as determinants of M&A payment method. In this regard, some researchers find evidence that mispricing of the firm in the market plays significant roles in determining such decisions (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf et al., 2005; Dong et al., 2006; Ben-David et al., 2015). Rhodes-Kropf and Viswanathan (2004) indicate that the overvaluation of acquiring firm is likely to result from the market wide optimism and Tsai et al. (2021) empirically show that investor sentiment has a direct effect on acquiring firm's choice of M&A payment method.

¹ The use of cash as a choice of M&A payment method increases firm value, improves general performance and yields higher profitability in the post-merger period while such payment method increases intrinsic business risk and is more costly than stock payment method because of the instant tax liability (Jensen, 1986; Eckbo and Langohr, 1989; Andrade et al., 2001; Tichy, 2001; André et al., 2004; Kalinowska and Mielcarz, 2014). In case stock payment method, Schlingemann (2004) finds that acquiring firms' gains are positively related to the amount of stock financing prior to the M&A announcement. However, stock payment method is more costly than cash payment method in terms of transaction costs and acquiring firms experience negative long-term abnormal return when they use stocks as means of M&A payment (Myers and Majluf, 1984; Loughran and Vijh, 1997; Mitchel and Stafford, 2000).

Although researchers who find mispricing as a determinant of M&A payment method consider managers to be rational agents of the firm, some researchers show that managers sometimes take M&A payment decisions based on beliefs which stem from their behavioral biases. In this regard, Malmendier and Tate (2008) show that conditional on conducting a merger, overconfident CEOs are more likely to use cash as means of M&A payment. Similarly, Ferris et al. (2013) find that in case of firms with overconfident CEOs, the probability of the use of cash payment method relative to other types of payment method in M&A deals is higher. In addition, Huang-Meier et al. (2016) find that firms with optimistic managers use relatively more cash compared to firms with non-optimistic managers during the acquisition activities.

In turn, different papers from psychology and sociology fields claim that individual decision making is shaped by collective social processes (Chambers and Windschitl, 2004; Bennett, 2011). Lucey and Dowling (2005) argue that individuals often make decisions in a social context where they get influenced by expectations, views as well as beliefs of others. In addition, Olson (2006) states that people spontaneously take on the goals of others in an unconscious manner and produce similar emotional states of their affiliates. Their arguments indicate that a key source of individual sentiment is the aggregate sentiment of one's peers. Existence of peer effect on various corporate finance and investment policies is evident in prior finance literature (e.g., Leary and Roberts, 2014; Park et al., 2017; Chen et al., 2019; and Grennan, 2019). Focusing on overconfidence bias, Johnson and Fowler (2011) state that overconfidence can arise and spread very quickly among interacting entities including individuals, groups or firms by means such as imitation or learning. Moreover, psychological and behavioral lab based experiments show that individuals sometimes take various decisions including investment decision by observing the behavior of others and by getting influenced by others' emotions and confidence (Proeger and Meub, 2014; Darai et al., 2017). Although different lab based experiments provide evidence about the impact of aggregate sentiment of one's peers on individual decision making behavior, the empirical findings about such impacts are limited in the literature². In case of M&A, Nofsinger (2005) argues that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including decisions about M&A activities.

² Anglin et al. (2018) show that collective entrepreneurial optimism plays role on creation and growth of business. However, they investigate the impact only at aggregate level. In addition, Jiang et al. (2019, p.145) claim that "periods of high (low) manager sentiment is accompanied by high (low) aggregate investment growth".

Following the argument that individual decision making behavior can be affected by aggregate sentiment and people are likely to adjust their behavior following the emotional states of their affiliates, in this study we investigate whether aggregate manager sentiment has any impact on individual firm's choice of M&A payment method. Since overconfident or optimistic managers prefer cash payment method over stock payment method during the takeover activities, we predict that aggregate manager sentiment has a positive (negative) association with the likelihood of using cash (stock) by individual acquiring firms as means of M&A payment. We extend our study to investigate whether acquiring firm's board structure alternates the impacts of aggregate manager sentiment on M&A payment choices as different researchers, such as Gordon (2007) and Mohamed et al. (2012) among others, claim that selective board characteristics can attenuate or enhance respective firm's managerial sentiment or confidence level. We further extend our study to examine whether acquiring firm's CEO characteristics influence the impacts of aggregate manager sentiment on such payment choices given the evidence provided by several researchers including Yim (2013), Serfling (2014) and Bochkay et al. (2019) that certain CEO characteristic can affect corporate investment policies as well as respective CEO's optimism level.

Using the updated version of monthly manager sentiment index developed by Jiang et al. (2019) as a proxy for aggregate manager sentiment, we investigate a sample of 3,437 domestic acquisitions announced by non-financial and non-utility US public firms between April 2003 and December 2017 to empirically test our predictions. Our findings suggest that the likelihood of using fully cash as a choice of M&A payment method increases whereas the likelihood of using fully stock as a choice of M&A payment method decreases following a period of high aggregate manager sentiment. Among the control variables, we find significant impacts of investor sentiment, firm size, ROA, market-to-book ratio, growth opportunities, relative deal value, and industry diversification on the choice of M&A payment method. In addition, we find that the percentage of cash (stock) payment in M&A deals increases (decreases) following a period of high manager sentiment. We find consistent results after including additional market-level control variables and firm-specific sentiment level in the regression model. The robust empirical results of our study provide evidence that, in addition to other previously documented determinants, aggregate manager sentiment plays a significant role in determining the choice of M&A payment method.

The empirical results about the role of board characteristics show that the impact of aggregate manager sentiment on the likelihood of using cash over other methods as the choice of M&A

payment method increases with the increase of board size. On the other hand, we find that the impact of aggregate manager sentiment on such payment choice decreases with the increase of CEO age. These findings suggest that certain board structure and CEO characteristic play important roles in alternating the M&A payment decisions that are particularly driven by aggregate manager sentiment.

Our study contributes to the literature in several ways. First, it contributes to the behavioral corporate finance literature by providing evidence that aggregate manager sentiment provides additional and complementary information beyond existing investor sentiment about the choice of M&A payment method. The findings are consistent with Jiang et al. (2019) who find that manager sentiment is distinct from existing investor sentiment and strongly tied to investment related activities. Again, the empirical findings of this study suggest that aggregate manager sentiment dominates over investor sentiment in some cases, implying that managers are more likely to get influenced by their peer's sentiment rather than investor sentiment in the market and take decisions accordingly. This finding indicates the presence of peer effect in M&A payment decisions and is consistent with the previous findings of Leary and Roberts (2014), Chen et al. (2019) and Grennan (2019) among others who document the existence of peer effect in various corporate finance decisions. Second, it contributes to the M&A literature by documenting another determinant of choice of M&A payment method. Previous literature identify several driving factors of such decision including investor sentiment, individual manager's bias, different firm-level and deal-level characteristics. Our study documents a new sentiment based determinant, aggregate manager sentiment, significantly affecting M&A payment decision. Finally, our study contributes to the corporate governance literature by showing that certain board and CEO characteristics can significantly alternate respective firm's choice of M&A payment method that is driven by the aggregate manager sentiment.

The remainder of the paper is organized as follows: section 2 discusses about the past literature and presents the particular research hypotheses that we empirically examine in this study. Section 3 discusses about the data and methodology that we use to test our hypotheses. We present and discuss our findings in section 4 and section 5 concludes the paper.

2 Literature Review

2.1 Aggregate Manager Sentiment and M&A Payment Method

Historically, many researchers attempt to identify the determinants of M&A activities and investigate why M&A activities vary substantially over time. Neoclassical theory suggests that

firms engage in M&A activities to gain synergy or generate innovation (Devos et al., 2009; Maksimovic et al., 2013; Bena and Li, 2014). Other determinants of time series variations of M&As are related to features such as industry shocks (Harford, 2005; Nguyen and Phan, 2017), change in business cycle (Maksimovic and Phillips, 2001; Komlenovic et al., 2011), corporate liquidity (Almeida et al., 2011), CEO demographics (Yim, 2013; Serfling, 2014), and mispricing in the market (Shleifer and Vishny, 2003; Rhodes-Kropf et al., 2005).

In a seminal paper, Roll (1986) proposes hubris hypothesis and argue that successful acquirers may be overconfident and optimistic in their assessment of synergy gains. Later, Berkovitch and Narayanan (1993) and Hayward and Hambrick (1997) also find evidence of hubris motive of firms' M&A activities. More recently, Malmendier and Tate (2008) provide evidence that if the firm has an overconfident CEO, the likelihood of making an acquisition for that firm increases by 65 percent. In case of aggregate level, Nofsinger (2005) provides theoretical explanations and argues that aggregate M&A activity is positively related to the level of CEO optimism which originates from high social mood. In addition, Rosen (2006) indicates that in addition to investor sentiment, managerial optimism may also drive market-wide M&A activity. Recently, An et al. (2022) find that there is a strong association between manager sentiment and takeover waves.

The extant literature (e.g., Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf et al., 2005) consider managers to be rational agents of the firm who take value maximizing decisions for their firms. Nevertheless, different papers such as Roll (1986), Malmendier and Tate (2008), An et al. (2022), among others show that managers sometimes take decisions that are not in the best interest of their firms. Although these managers believe that they are taking decisions in line with the firm's objective and shareholders interest, their actions sometimes involve value destroying corporate finance decisions, which essentially stem from various behavioral biases of the managers. The impact of managerial behavioral biases on various corporate finance decisions is evident in different theoretical and empirical papers³.

In case of corporate M&A activities, Malmendier and Tate (2008) address the link between managerial behavioral biases and M&A payment choice by using stock option as a proxy to

³ Heaton (2002) provides a model of corporate finance that incorporates managerial optimism and efficient capital markets to examine the implications of behavioral biases for free cash flow debate. His model generates the prediction that managerial optimism anticipates the existence of biased cash flow forecasts. Again, Malmendier and Tate (2005a, 2005b) and Ben-David et al. (2013) find that managerial overconfidence as well as optimism helps explain the level of investment as opposed to its sensitivity to cash flow.

measure CEO overconfidence. Their findings show that conditional on conducting a merger, overconfident CEOs are more likely to use cash as a medium of finance. Malmendier et al. (2011) report that CEOs who believe that their firms are undervalued, issue less equity than CEOs of other firms when they have access to external capital. Their results show that depending on the inclusion of various types of control variables in the model, overconfident CEOs are 37 percent to 49 percent less likely to issue equity than non-overconfident CEOs. According to them, these overconfident CEOs overestimate firm's future cash flows and perceive equity financing to be costly. In case of international firm-level M&A activity, Ferris et al. (2013) investigate a sample of CEOs of Fortune Global 500 companies and find that CEO overconfidence plays a significant role in determining the choice of M&A payment method where the probability of the use of cash payment relative to other types of payment methods in M&A deals is found to be higher for firms with overconfident CEOs. They argue that overconfident CEOs tend to perceive their firms as undervalued and thus are more averse to use equity of their firms as a medium of payment. Using vested option holding measures to identify CEO optimism, Huang-Meier et al. (2016) find that firms with optimistic managers use relatively more cash compared to firms with non-optimistic managers during the acquisition activities.

Although these studies focus on the overconfidence or optimism of individual managers⁴, sentiment is also argued to be a social rather than individual phenomenon. For instance, Nofsinger (2005) argues that general optimistic or pessimistic mood of society is transmitted through social interaction and this mood influences all types of decision makers. According to the author, people obtain information about a decision by communicating with one another, and these optimistic emotions become extreme at the peak which lead people to become overconfident. The author also argues that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including M&A activities. In addition, studying how overconfidence evolve among population of competing strategies that include unbiased beliefs, Johnson and Fowler (2011) state that overconfidence can arise and spread very quickly among interacting entities including individuals, groups or firms by means such as imitation or learning. In their experimental study, Proeger and Meub (2014) find that individuals with realistic confidence level in individual

⁴ Baker and Nofsinger (2010, P. 417) state that “despite the fact that overconfidence and optimism are technically distinct, the two biases are often taken to mean the same thing in the finance literature. In the context of capital budgeting, this turns out to be legitimate, as only information that leads to new investments affects firm value”.

setting show much higher level of overconfidence in social setting where they can observe others' decisions. Also, conducting an experimental study, Darai et al. (2017) find that when participants can observe the average signal of all participants along with their own private signals, they use this information to shift their behavior towards an efficient equilibrium with high levels of investment.

Shue (2013) argues that managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs since managers are extremely networked and social agents. According to the author, managerial decision can be affected by their peers as information and beliefs travel through social networks. The author finds strong impact of social interactions among peers on individual manager's acquisition strategy. These studies suggest that even if CEOs are not born overconfident or do not possess biased beliefs because of their past experiences as discussed in past papers⁵, they can make biased decisions by getting influenced by the aggregate sentiment of corporate decision makers. Thus, considering the findings that firms with biased or optimistic managers are more likely to choose cash as means of M&A payment and sentiment can propagate among the financial decision makers, we purport the following hypothesis:

Hypothesis 1: The likelihood of using cash (stock) as means of M&A payment increases (decreases) with the increase of aggregate manager sentiment in the market.

2.2 Aggregate Manager Sentiment, Board Characteristics and M&A Payment Method

Board Size

Discussing the factors that affect the board efficiency in firm's performance and monitoring management, Lipton and Lorsch (1992) argue that when the number of members on a board increases, several problems like the possibility of less meaningful conversation and the lack of cohesiveness among the board members also increase. They suggest that to have more effective discussions among the directors, a small board is more likely to be useful where the number of members should be limited to a maximum of ten directors. Similarly, Jensen (1993) argues that the problems with firm's internal control system start with the board since the board has the

⁵ Billett and Qian (2008) report that CEO overconfidence stems from self-attribution bias. Again, Hilary and Hsu (2011) find that managerial attribution bias leads managers, who have short term forecasting success experience, to become overconfident about their future earnings forecast capability. Similarly, Hilary et al. (2016) report that past successes make managers to issue more optimistic forecasts and conclude that some managers are made overoptimistic rather than just born overconfident. On the other hand, Hwang et al. (2020) find that CEO power is positively associated with the increasing likelihood of a CEO being overconfident.

ultimate responsibility for the functioning of the firm. According to him, along with other factors, a small board can improve its efficiency and the board is less likely to perform effectively if the number of people on board, who in general set the rules for the CEOs, go beyond seven or eight people⁶. Mohamed et al. (2012) empirically find that the level of CEO optimism increases when the number of directors on a board increases. They claim that larger board size opens the door to the installation of managerial biases. Hence, we propose the following hypothesis:

Hypothesis 2(a): Larger board size enhances the impact of aggregate manager sentiment on the choice of M&A payment method.

Board Independence

Board independence is argued to act as an effective system for monitoring corporate finance decisions taken by firm's executives and serves the interest of the shareholders (see for example, Fama and Jensen, 1983; Brickley et al., 1994). In case of M&A activity, Gordon (2007) argues that board independence better controls certain agency problems of acquiring firm's managers including over-optimism bias. However, the findings about the effectiveness of board independence in firm's value creation is contradictory in the literature⁷. In their theoretical paper, Kumar and Sivaramakrishnan (2008) show that the efficacy of the board monitoring may decline when directors are less dependent on the CEO if both adverse selection and moral hazard exist in firm's management. They argue that in such cases, a more independent board generally performs worse than less independent board because directors themselves avoid effort. Lipton and Lorsch (1992) argue that certain factors including time limitations, information complexity, lack of cohesiveness among the directors, etc. limit the effectiveness of a board. Since independent directors are the outside directors who rarely meet with each other apart from the board meeting, they face higher difficulties in understanding firm-specific complex information in a short period of time. Hence, we anticipate that the board efficiency would be lower with larger number of independent directors. Accordingly, the outside directors would be more likely to get influenced by the aggregate manager sentiment. Hence, we hypothesize:

⁶ Other factors include board culture, information problems, legal liability, etc.

⁷ Byrd and Hickman (1992) report that announcement-date abnormal returns for acquiring firms whose board consist of more than 50 percent outside independent directors are significantly higher than that of other acquiring firms. On the contrary, Subrahmanyam et al. (1997) find that the proportion of outside directors is negatively associated with bidders abnormal returns in case of M&A activity in banking industry.

Hypothesis 2(b): Higher level of board independence enhances the impact of aggregate manager sentiment on the choice of M&A payment method.

2.3 Aggregate Manager Sentiment, CEO Characteristics and M&A Payment Method

CEO Age

Evidence from studies in psychology and finance fields suggests that age of individuals can significantly affect their level of behavioral biases and investment related decisions. In this regard, Kovalchik et al. (2005) find that younger individuals are more bias prone than older individuals in decision making behavior. They report that younger individuals in general are more overconfident and argue that older individuals temper their overconfidence because they learn through experience. Investigating the confidence level of new-venture managers of New York City's Silicon Alley community of internet firms, Forbes (2005) finds that younger entrepreneurs are more overconfident than older ones. Mohamed et al. (2012) investigate the factors that affect the level of CEO optimism and find that CEO age significantly affects their optimism level. Their findings suggest that the level of CEO optimism decreases with the increase of CEO age. Similarly, Hinz et al. (2017) find that younger people are more optimistic than older people.

CEO age impact is evident in different corporate finance decisions. In this regard, Serfling (2014) finds that CEO age is negatively associated with firm's R&D expenditure and operating leverage. In case of M&A activities, Yim (2013) analyzes the CEO age effect on acquisition propensity of S&P 1500 firms and find that CEO age is negatively related with the likelihood of making an acquisition. The author reports that a CEO who is 20 years older relative to other CEOs has 32 percent lower probability of making an acquisition.

Grennan (2019) discusses a potential channel, reputation building, that can generate peer effects and argues that younger CEOs as well as early tenured CEOs have greater incentives to invest in reputation building. According to the author, executives have incentives to build their reputation by taking actions that will make them more reliable which, in turn, will improve their employment prospects and rents. Hence, young and early tenured CEOs have motivations to build their reputation in order to improve their employment prospects by adjusting their corporate finance related decisions following their peers. Previously, Scharfstein and Stein (1990) argue that the labor market favourably evaluates managers if they follow the decision of peers than if they behave in contrarian manner provided that the absolute profitability of the

investment choice is fixed. Thus, unlike older and long-tenured CEOs who have already secured reputations, young and early-tenured CEOs can be expected to be more likely to take corporate finance decisions following the aggregate sentiment level of their peers. Following the literature which provide evidence that individual's age has profound relationship with their level of optimism and young CEOs are more likely to follow their peers in order to build their reputation, we test the following hypothesis:

Hypothesis 3(a): Higher CEO age attenuates the impact of aggregate manager sentiment on the choice of M&A payment method.

CEO Tenure

Campbell et al. (2011) investigate whether overly optimistic or under optimistic CEOs face higher forced turnover compared to CEOs who display moderate level of optimism. They argue that CEOs with moderate level of optimism choose the investment level that maximizes the firm value. On the other hand, CEOs with higher and lower optimism level tend to overinvest and underinvest, respectively than the value maximizing level of investment. According to them, because of their investment behavior at different optimism level, CEOs with higher or lower optimism level face greater forced turnover risk than CEOs with moderate optimism level when the boards act in the interest of shareholders. In their empirical analysis, the authors find that CEOs with high and low optimism levels are, on average, 48 percent and 81 percent more likely to face forced turnover than CEOs with moderate level of optimism. From their findings, we can infer that CEOs who are not driven by sentiments generally have longer tenure in their firms. Bochkay et al. (2019) analyze the changes in disclosure style in earnings conference call over the tenure of CEOs and find that relative optimism of disclosures by CEOs gradually decreases over their tenure. Their result suggests that the level of CEO optimism declines when the CEO stays longer in the firms. Therefore, following the literature which indicate that CEO tenure has profound relationship with their level of optimism and short-tenured CEOs are more likely to follow their peers in order to build their reputation as previously discussed, we test the following hypothesis:

Hypothesis 3(b): Longer CEO tenure attenuates the impact of aggregate manager sentiment on the choice of M&A payment method.

3 Data and Methodology

3.1 Data

Mergers and Acquisitions Payment Data

We collect the mergers and acquisitions (M&As) payment data for US public firms from Thomson One Banker database. Our sample includes M&A data from April 2003 to December 2017 to match with the availability of monthly manager sentiment index of Jiang et al. (2019)⁸. From our sample, we exclude cross-border M&A data and restrict our sample to domestic M&As only since cross-border M&As are more complex in nature and take longer time from planning to deal announcement stage⁹. We also restrict our sample to non-financial and non-utility firms since the business model of these types of firms are somewhat different from other types of firms¹⁰. We then exclude those observations whose deal value information are missing since we include deal level characteristics in our analysis. Next, we exclude those observations for which payment data are missing. After applying these conditions, we get an initial sample of 17,943 observations. Finally, we match our observations with various firm level characteristics (which form a portion of control variables discussed in the next section) with data sourced from Compustat and CRSP. After matching with our control variables, we get a final sample of 3,437 domestic observations that are announced by 1,236 unique non-financial and non-utility US public firms between April 2003 and December 2017. Table 1 shows the number of M&As in our sample by year.

<Insert Table 1 Here>

From the table we can see that the frequencies of M&A activities are relatively higher in the year 2003, 2006 and 2011 with the highest in 2011. In addition, we observe that the number of M&A deals in our sample gradually drops during the period from 2007 to 2009 and increases again from 2010¹¹. The total deal value in our sample is USD 3.16 trillion with an average deal

⁸ Although the updated version of manager sentiment index developed by Jiang et al. (2019) is available from January 2003 to December 2017, we use M&A payment data from April 2003 since as our independent variable we include 3-month average of manager sentiment index prior to M&A announcement excluding the specific announcement month to deal with reverse causality issue.

⁹ Erel et al. (2012) state that unlike domestic mergers, cross-border mergers are associated with an additional set of frictions that can affect the deals.

¹⁰ For instance, Fama and French (1992) indicate the differences in business models between the financial firms and the non-financial firms by arguing that high leverage for financial firms are normal whereas high leverage for non-financial firms often indicate distress.

¹¹ These findings are similar to the findings reported in Nguyen and Phan (2017).

value of USD 17.88 billion per month. The average deal value in our sample is USD 921.02 million by observations and USD 2.56 billion by firms.

Aggregate Manager Sentiment Data

To examine the impact of aggregate manager sentiment on the choice of M&A payment method, we use the updated version of monthly manager sentiment index of Jiang et al. (2019)¹². A number of studies conduct textual analysis and analyze the tone embedded in various types of corporate disclosures. In this regard, Price et al. (2012) and Lee et al. (2017) analyze tones of conference call transcripts and use the tone of such disclosures as proxies to measure managerial sentiment or confidence. In addition, Feldman et al. (2010), Li (2010) and Loughran and McDonalds (2011), among others analyze the tones of financial statements to measure managerial sentiments. On the other hand, Jiang et al. (2019) claim that conference call transcripts and financial statements contain complementary information about manager sentiment and hence analyze the tones of both types of disclosure to construct their monthly aggregated manager sentiment index. In addition, Jiang et al. (2019) argue that manager sentiment index, which contains additional and complementary sentiment information beyond investor sentiment index, reflects management's overly optimistic beliefs about the future cash flows and find evidence of overinvestment at both aggregate and firm-level following the periods of high manager sentiment. Therefore, following their argument, we use manager sentiment index of Jiang et al. (2019) in our study as a proxy for aggregate manager sentiment in the market where high sentiment indicates managerial optimism and low sentiment indicates managerial pessimism.

Investor Sentiment Data

It is argued that investors' irrationality could cause a divergence of short-term market price of assets from their fundamental values (see for instance, De Long et al., 1990 and Barberis et al., 1998). Rhodes-Kropf and Viswanathan (2004) indicate that overvaluation of firms tend to be caused by market wide optimism. During this overvaluation period, managers of acquiring firms are more likely to exchange their overvalued stock with target stock and thus they tend to choose stock more compared to cash as a method of M&A payment. Recently, Tsai et al. (2021) empirically find that investor sentiment has a negative (positive) and significant association with the likelihood of cash (stock) payment in M&A deals. Hence, we expect a negative (positive) relationship between investor sentiment and probability of using cash

¹² Available at <http://apps.olin.wustl.edu/faculty/zhou/zpublications.html> (the faculty website of Professor Guofu Zhou)

(stock) as a method of M&A payment in our sample. In our regression, we use the investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardized sentiment proxies¹³.

Control Variables

Firm Size (Size): A firm's capacity to borrow increases with the increase of their size. Previous literature such as Faccio and Masulis (2005), Baker et al. (2007), Boateng and Bi (2014), among others find that the probability of using cash (stock) as a choice of M&A payment method increases (decreases) with the increase of acquiring firm's size. Thus, we expect a positive (negative) association between firm size and the likelihood of cash (stock) payment in our sample. We measure firm size using the book value of the assets. In the regression, we use the natural logarithm of firm size.

Return on Asset (ROA): According to the free cash flow theory, managers are more likely to make low-benefit M&A deals if they have access to large free cash flow. In addition to the likelihood of making an acquisition, previous literature document that the choice of M&A payment sometimes depends on acquiring firm's cash flow. In this regard, Gao (2010) and An et al. (2022) report that firms with higher ROA are less likely to use equity as a method of payment during their takeover activities. Thus, following the past findings, we expect a positive (negative) association between acquiring firm's ROA and the likelihood of using cash (stock) as a method of M&A payment in our sample. We calculate acquiring firm's ROA by adding income before extraordinary items, interest expense and income taxes and then dividing the resulting outcome by the book value of total assets of the firm.

Book Leverage (BL): High level of existing leverage limits the ability of firms to further raise sufficient debt if it is necessary to pay during their investment activities. In this context, Faccio and Masulis (2005) find that acquiring firms with high leverage are less likely to choose cash and Boateng and Bi (2014) find that acquiring firms with low pre-event leverage are more likely to use cash as means of their M&A payment. Following the past literature, we predict a negative (positive) association between acquiring firm's pre-event leverage status and their likelihood of using cash (stock) as means of payment during the takeover process. We calculate acquiring firms' book leverage by adding their book value of long-term debt with the book

¹³ Available at <http://people.stern.nyu.edu/jwurgler/> (the faculty website of Professor Jeffrey Wurgler)

value of debt in current liabilities and then dividing this book value of total debt by the book value of their total assets.

Cash to Total Asset (CTL): High level of internal cash reserve allows firms to rely less on external financing if it is necessary during the takeover activities. In case of M&A, Martin (1996) provides evidence that the probability of stock financing decreases while the probability of cash financing increases during the takeover activities when acquiring firms have greater cash balances. In addition, Karampatsas et al. (2014) show that the probability of using cash as means of M&A payment method is positively associated with the size of acquirer cash flow relative to their asset. Hence, we expect a positive (negative) relationship between acquirer's cash reserve and the likelihood of using cash (stock) in M&A deals. We calculate acquirer's cash reserve by dividing their total value of cash and short-term investment with the book value of their total assets.

Market-to-Book Ratio (M/B Ratio): Acquiring firms with overvalued stocks are likely to exchange their overvalued stocks with the undervalued stocks of the targets. In such a case where the acquiring firm's stocks are overvalued, the managers of these acquiring firms tend to use stock as means of M&A payment method. Many researchers such as Martin (1996), Faccio and Masulis (2005), Di Giuli (2013), among others report that acquiring firm's growth opportunities are positively associated with the likelihood of using stock as means of M&A payment method. Following past literature, we use acquiring firm's market-to-book ratio to proxy for both mispricing and growth opportunities and expect a negative (positive) association with the likelihood of using cash (stock) in our regression outcome. To calculate the acquiring firm's market-to-book ratio, we follow Chen et al. (2020) who use this ratio in their analysis. To calculate the firm's market value, we first subtract the book value of common equity from the book value of total asset and add the market value of common equity where the market price of equity is the closing price on the last trading day of respective firms fiscal year preceding the M&A announcement. Next, we divide the resulting market value by the book value of firm's total asset to calculate the respective firm's market-to-book ratio.

Stock Return (Ret): If acquiring firms experience a high stock price gains prior to M&A activities, the existing shareholders of respective firms face lower dilution of their voting power in case of stock financing during the takeover process. Following the argument, Faccio and Masulis (2005) find that percentage and probability of using cash decrease in M&A payment when acquiring firm's experience a stock price gain prior to the announcement. Therefore, we

expect a negative (positive) relationship between the past stock return and the probability of using cash (stock) as means of M&A payment method in our regression outcome. We calculate stock return as the cumulative stock returns during the 12-month period ending at the end of firm's fiscal year preceding an M&A announcement.

We use four deal-level control variables and we collect these data from Thomson One Banker database.

Relative Deal Value (RV): Faccio and Masulis (2005) find that relative deal size is negatively associated with the proportion of cash used in M&A payment. Accordingly, we predict a negative (positive) relationship between the relative deal value and the likelihood of using cash (stock) as means of M&A payment method in our regressions. We measure relative deal value by dividing the deal size by the total value of deal size and acquirer's market capitalization four weeks prior to the M&A announcement.

Hostile Dummy (HD): In case of a hostile deal, the offer needs to be sufficiently generous so that the shareholders of the target firms surrender their shares. Acquiring firms in hostile takeovers intend to complete the deal as promptly as possible. Previously, Martynova and Renneboog (2009) find that the probability of the use of cash as means of M&A payment is higher in case of hostile takeovers. Thus, we expect a positive (negative) association between the hostile deal dummy and the likelihood of using cash (stock) in takeover deals in our study. We define hostile dummy being equal to 1 if the M&A deal is a hostile takeover and 0 otherwise.

Challenge Dummy (CD): If a takeover attempt is challenged by other competing bidders, the original acquirers need to be generous enough in their offer so that the shareholders of the target firms accept their offer and reject other offers. Previously, Berkovitch and Narayanan (1990) show that the use of cash as means of M&A payment increases when the competition among the acquiring firms increases. Thus, we expect a positive (negative) relationship between the challenge dummy and the likelihood of using cash (stock) as means of M&A payment in our study. We define challenge dummy being equal to 1 if the acquirer's offer is challenged by a competing offer and 0 otherwise.

Diversifying Dummy (DD): It is argued that if a merger occurs between firms from two unrelated industries, acquirers face more difficulties in evaluating the targets because of their limited familiarity about target's industry and hence acquirers are likely to choose stock financing to avoid adverse selection costs (Tsai et al., 2021). On the contrary, Faccio and

Masulis (2005) argue that in case of cross-industry M&A, target firms are less likely to accept acquirers' stock as a method of payment since the shareholders of target firms are not well acquainted with acquiring industry's risks and prospects. Thus, ex ante we cannot predict the relationship between the inter-industry dummy variable and the choice of M&A payment method. We construct diversifying dummy being equal to 1 if acquiring firms and their respective target firms are from different industries as differentiated by 2-digit SIC codes and 0 otherwise.

In case of market-level analysis, we use the following variables as market-level controls in addition to investor sentiment data.

CAPE Ratio: Rational managers could take advantage of market mispricing between the acquiring firms and the target firms. Previously, Shleifer and Vishny (2003) as well as Rhodes-Kropf and Viswanathan (2004) report that market misvaluation affects M&A activities. Gugler, Mueller, Weichselbaumer and Yurtoglu (2012) empirically find similar result that market valuation drives M&A activities. In this study, we include Robert J. Shiller's cyclically adjusted price earnings ratio to control for the alternative explanation that market misvaluation affects aggregate M&A activities¹⁴.

CRSP Index: Lambrecht (2004) reports that takeover waves that have taken places in the past century coincided with the economic expansion. Using continuous-time real options techniques and game theoretic concepts, the author examines the timing of mergers motivated by economies of scale and shows that firms have motivations to engage in merger activity during the periods of economic expansion. Thus, to control for general economic condition, we include CRSP value-weighted market index in our analysis as a control variable

Aggregate Cash Holding: When firms have excess liquidity, they could use these cash or cash equivalents for their corporate expansion through M&As. Harford (2005) finds that economic, regulatory and technological shocks accompanied by capital liquidity drive industry merger wave. According to him, sufficient capital liquidity must be present for industry shocks to propagate a wave. In addition, investigating the relation between corporate liquidity and asset reallocation opportunities, Almeida et al. (2011) argue that corporate liquidity is another important determinant of M&A activities. In case of merger wave, Alexandridis et al. (2012) find evidence that sixth merger wave, which started in 2003 and ended in around 2007, was primarily driven by the availability of abundant liquidity. This liquidity awash, resulted from

¹⁴ Available at <http://www.econ.yale.edu/~shiller/data.htm> (the faculty website of Professor Robert J. Shiller)

the rich cash balances and low rate of financing, led firms to engage in M&As with more pronounced cash financing. Following the prior findings, our study includes this variable as a control for availability of corporate liquidity. We calculate this variable by adding the cash and cash equivalent value of the firms in Compustat. In our analysis, we take the natural logarithm of this variable.

We collect our board and CEO characteristic variables from BoardEx database and measure the variables as follows:

Board Size: We define board size as the number of members on board of the acquiring firm.

Board Independence: We define board independence as the ratio of number of independent directors to the number of total members on board of the acquiring firm.

CEO Age: In our study, we calculate CEO age by subtracting the birth year of the CEO from the year of M&A announcement by the acquiring firms of respective CEOs.

CEO Tenure: To proxy for CEO tenure in our study, we calculate the total number of years a CEO has been working in the acquiring firm till the M&A announcement.

3.2 Methodology

To investigate the impact of aggregate manager sentiment on the choice of individual firm's M&A payment method for the firm level analysis, we use the following regression equation in our study.

$$Y_{ijt} = \alpha + \beta_1 X_{t-1} + \beta_2 X'_{jt-1} + \beta_3 Z_{it} + \gamma \ln_FE + \mu_{ijt} \quad (1)$$

Here, Y represents the payment information of deal i by firm j at time t . X represents the sentiment variables including manager sentiment index and investor sentiment index. X' represents the firm level control variables whereas Z represents the deal level control variables. β_1 , β_2 and β_3 represents the coefficients of sentiment variables, firm level control variables and deal level control variables, respectively. We further control for common industry factors by including industry fixed effects in the regression and γ denotes the coefficient of industry fixed effects as differentiated by 2-digit SIC codes of the respective acquiring firms' industries. Finally, μ denotes the error term in the model. We cluster the standard errors in all our

regressions by years since all firms are subject to the same aggregate manager sentiment at a given period in time¹⁵.

To check the impact of aggregate manager sentiment on the likelihood of using fully cash (fully stock), we define our dependent dummy variable, Y , being equal to 1 if the payment of a deal consist of 100 percent cash (stock) and 0 otherwise in our regression. In this case, following Nguyen and Phan (2017), we use a Probit regression model in our analysis. In addition, we also conduct the analysis by defining our dependent variable as cash and stock proportion measured by the percentage of cash payment and stock payment, respectively in M&A deals. In case of cash and stock proportion, we use a Tobit model in our regression analysis. We winsorize all firm level variables, and one deal characteristic variable, relative deal value, at 1st and 99th percentiles and use these winsorized values in our regressions.

For our market-level analysis, we use Newey-West estimators which provides consistent estimates in the presence of heteroscedasticity and autocorrelation. This model provides a technique for determining a positive semidefinite covariance matrix that is consistent in the presence of unknown forms of heteroscedasticity and autocorrelation in time series data (Smith and McAleer, 1994).

4 Results and Discussion

4.1 Descriptive Statistics

Table 3 shows the summary statistics of the variables that we use in this study.

<Insert Table 3 Here>

From table 3, we can see that the mean and median of cash dummy variable are 0.695 and 1.000, respectively whereas the mean and median of stock dummy variable are 0.043 and 0.000, respectively. These results indicate that the number of observations of M&As with fully cash payment is higher than the number of observations of M&As with fully stock payment in our sample. Similarly, we can see that the average proportion of cash payment is around 75 percent higher than average proportion of stock payment in M&A deals in our sample. In case of monthly total deal value, we can see that the average deal value for fully cash deal is higher than that of fully stock deal. The mean and standard deviation of aggregate manager sentiment are 0.018 and 0.913 respectively whereas the mean and standard deviation of investor sentiment

¹⁵ We get qualitatively similar results when we cluster the standard errors by firms.

are -0.218 and 0.293, indicating that aggregate manager sentiment has a higher fluctuation rate than the investor sentiment.

In case of correlations among the variables, we find that cash dummy as well as cash proportion and manager sentiment index has positive relationship whereas stock dummy as well as stock proportion and manager sentiment index has negative relationship between them¹⁶. These correlations are statistically significant at 1 percent level. We can also see that manager sentiment and investor sentiment has a moderately high and significant relationship between them. However, we find that the Variance Inflation Factors (VIF) of manager sentiment index and investor sentiment index are 1.57 and 1.60 respectively, indicating no multicollinearity issues in the model.

4.2 Empirical Results

4.2.1 Market-level Tests

We start our empirical analysis by conducting a market-level analysis. The following figures show the fluctuations in the number of fully cash and fully stock M&A deals per month in our sample along with the manager sentiment index of Jiang et al. (2019) between April 2003 and December 2017.

<Insert Figure 1 Here>

From the top panel in the graph, we can see a somewhat positive association between the number of M&A deals that is paid by 100 percent cash and 3-month moving average of manager sentiment index. From these line graphs, we can observe that the number of fully cash (fully stock) M&A deals increases (decreases) following a period of high aggregate manager sentiment and vice versa.

Table 3 presents the Newey-West regression results about the impact of aggregate manager sentiment on monthly total deal value of market-level M&A activities with market-level control variables.

<Insert Table 3 Here>

From column 1 of the table we can see that manager sentiment does not have any impact on monthly total deal value when we consider all deals irrespective of their payment method. On the other hand, column 2 and 3 show that aggregate manager sentiment is positively and

¹⁶ Correlation and VIF results are provided in table A1 in the appendix.

negatively associated with monthly total value of fully cash and fully stock M&A deals, respectively. Here, 1 standard deviation increase in manager sentiment results in approximately 15 percent increase and 35 percent decrease in aggregate deal value in case of fully cash and fully stock M&As, respectively. These market-level results provide empirical evidence in support of our hypothesis 1¹⁷ which suggests that the likelihood of using cash (stock) as means of M&A payment increases (decreases) following periods of high aggregate manager sentiment in the market.

4.2.2 Firm-level Tests

In this section, we discuss the empirical findings about the impact of aggregate manager sentiment on the choice of individual acquiring firm's M&A payment method. Table 4 reports the Probit regression results about the impact of aggregate manager sentiment on the likelihood of using fully cash and fully stock as choices of M&A payment method.

<Insert Table 4 Here>

From column 1 of table 4 we can see that the likelihood of using fully cash in takeover deals by acquiring firms increases following periods of high aggregate manager sentiment. On the other hand, from column 2 of the table we can see the likelihood of using fully stock in takeover deals decreases following periods of high aggregate manager sentiment in the market. The average marginal effects of aggregate manager sentiment on the likelihood of using fully cash and fully stock are 0.041 and -0.008, respectively. This findings suggest that one standard deviation increase in aggregate manager sentiment increases the probability of fully cash M&A payment by approximately 3.75 percent and decreases the probability of fully stock M&A payment by 0.70 percent. Thus, we can say that aggregate manager sentiment is positively and strongly associated with the likelihood of using fully cash whereas it is negatively associated with the likelihood of using fully stock by acquiring firms as choices of M&A payment method. These findings are also consistent with our research hypotheses 1¹⁸. Our findings suggest that aggregate manager sentiment can affect individual acquiring firm's M&A decisions and confirm Shue (2013) who argues that managerial decisions are likely to be affected by their social experiences in addition to being guided by their own beliefs. In addition, our results supplement Proeger and Meub (2014) and Darai et al. (2017) who document that individuals

¹⁷ We find similar results when we calculate sentiment variables by taking the average of 6-month instead of 3-month prior to the M&A announcement. Table A2 of the appendix reports results of such regressions.

¹⁸ We find similar results when we calculate sentiment variables by taking the average of 6-month instead of 3-month prior to the M&A announcement. Table A3 of the appendix reports results of such regressions.

shift their behavior and show higher level of confidence when they can observe the average signals of all participants in addition to their own private signals.

Among the control variables, we can see that investor sentiment has a significant negative impact on the likelihood of using fully cash which is consistent with our prediction. Nevertheless, results do not reveal a statistically significant association between investor sentiment and the likelihood of using fully stock as a choice of M&A payment method. Next, we find that firm size has strong and positive association with the likelihood of using fully cash as predicted. In addition, consistent with cash flow hypothesis, we find that acquiring firms' profitability has strong positive (negative) relationships with the likelihood of using fully cash (fully stock) as means of M&A payment by those firms. We also find that mispricing of acquiring firm's value, as defined by the market-to-book ratio, is negatively associated with the likelihood of using fully cash whereas cumulative market return of those firms are positively associated with the likelihood of using stock as means of M&A payment. Additionally, the significant findings about the market-to-book ratio indicates that acquiring firms are less likely to pay cash in takeover deals when they have higher growth opportunities. Moreover, similar to the findings of Faccio and Masulis (2005), our findings suggest that the likelihood of using fully cash (fully stock) decreases (increases) when the deal value relative to the acquirer's market value is higher. Lastly, we find that the likelihood of using fully cash decreases when the merger occurs between firms from two unrelated industries, suggesting that acquirers are more likely to pay using stock when they face extra difficulty in evaluating targets from another industry to avoid adverse selection costs. All of our findings show consistent signs with our predictions. Overall, this table suggests that aggregate manager sentiment plays significant roles in driving individual acquiring firm's M&A payment decisions after controlling for previously identified determinants of choice of M&A payment method.

Next, we present and discuss our findings about the impact of aggregate manager sentiment on the proportion of cash and stock payment in takeover deals.

<Insert Table 5 Here>

From the results of the Tobit regression in table 5 we can see that the proportion of cash (proportion of stock) used in takeover deals increases (decreases) following periods of high aggregate manager sentiment. Thus, we can say that aggregate manager sentiment has a strong positive (negative) relationship with the proportion of using cash (stock) in addition to its significant relationship with the likelihood of using fully cash or fully stock as means of M&A

payment¹⁹. Here, we find that investor sentiment index generates signs which are consistent with our predictions in case of both cash and stock proportion. Nevertheless, their impacts are statistically insignificant in both cases. Thus, our findings indicate that aggregate manager sentiment dominates over investor sentiment in determining the choice of M&A payment method. This finding on the M&A payment choice supplements Jiang et al. (2019) evidence in predicting the aggregate investment growth where they document manager sentiment domination over investor sentiment. Hence, we find further empirical evidence in support of our hypothesis 1. In addition to aggregate manager sentiment, we also find that firm size, cash flow, mispricing, and relative deal value play significant roles in determining the proportion of the use of cash or stock in takeover deals.

4.2.3 Aggregate Manager Sentiment, Board Characteristics and M&A Payment Method

In this section, we discuss the empirical findings about the role of different board characteristics on the impact of aggregate manager sentiment in determining the choice of M&A payment method. Table 6 reports the regression results about the role of two board characteristics: size and independence.

<Insert Table 6 Here>

Column 1 suggests that the interaction between aggregate manager sentiment and board size is positively related with the likelihood of using fully cash as the M&A payment method. The finding suggests that the likelihood of using fully cash as a choice of M&A payment method gradually increases with the increase of board size and vice versa following periods of high sentiment. Panel B shows that the marginal effect gradually increases at higher percentiles of board size. From column 3 we can see that the interaction between aggregate manager sentiment and board size generates negative and significant sign, suggesting that the likelihood of using fully stock gradually decreases with the increase of board size and vice versa following periods of high manager sentiment. From marginal effect analysis in panel B we can see that the value of the coefficient on the likelihood of using fully stock gradually decreases at higher percentiles of board size which indicates that the magnitude of the impact of aggregate manager sentiment gradually increases with the increase of board size. Therefore, we find that larger board size enhances the impact of aggregate manager sentiment on individual firm's choice of M&A payment method. The findings are consistent with our hypothesis 2(a) which suggests that

¹⁹ We find similar results when we calculate sentiment variables by taking the average of 6-month instead of 3-month prior to the M&A announcement. Table A4 of the appendix reports results of such regressions.

larger board size enhances the impact of aggregate manager sentiment on the choice of M&A payment method.

Next, from column 2 of table 6 we can see that the interaction between aggregate manager sentiment and board independence variable generates positive and significant result. This suggests that the likelihood of using fully cash as a choice of M&A payment method increases with the increase of acquiring firm's board independence level and vice versa following periods of high sentiment. In case of fully cash payment method, from panel B we can see that the marginal effect of the aggregate manager sentiment gradually and significantly increases at higher percentiles of board independence. Thus, we can say that higher level of board independence enhances the impact of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method and the finding is consistent with our hypothesis 2(b). In case of fully stock payment method, from column 4 we can see that the interaction term here does not generate any significant result. The marginal effect analysis also does not show any significant changes at various percentiles of board independence level, suggesting that board independence level does not play any role on the impact of aggregate manager sentiment in case of fully stock M&A payment method.

Our findings about the role of board size and board independence level in enhancing the impact of aggregate manager sentiment on the choice of M&A payment method are consistent with Mohamed et al. (2012) who argue that the larger board size and higher level of board independence make the way to the installation of managerial biased decisions. Although some researchers such as Brickley et al. (1994) and Gordon (2007) document that board independence acts as an effective monitoring system for corporate finance decisions and limits individual manager's over optimism bias, our findings suggest that independent board members can also be influenced by the aggregate manager sentiment and hence enhance the impact of such sentiment on individual firm's choice of M&A payment method.

4.2.4 Aggregate Manager Sentiment, CEO Characteristics and M&A Payment Method

In this section, we investigate the role of CEO age and CEO tenure on the impact of aggregate manager sentiment in determining the choice of M&A payment method. The results are presented in table 7.

<Insert Table 7 Here>

From column 1 we can see that the interaction between aggregate manager sentiment and CEO age variable generates significant negative sign, suggesting that the likelihood of using fully

cash in takeover deal decreases with the increase of CEO age and vice versa following periods of high aggregate manager sentiment. From panel B we can see that the marginal effect of aggregate manager sentiment on the likelihood of using fully cash gradually decreases at higher percentiles of CEO age. The findings suggest that higher CEO age attenuates the impact of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method. From column 3 we can see that the interaction of these two variables generates a significant positive sign, suggesting that likelihood of using fully stock gradually increases with the increase of CEO age and vice versa following periods of high aggregate manager sentiment. Marginal effect analysis also shows similar results. Thus, we can say that higher CEO age of acquiring firms attenuates the impact of aggregate manager sentiment on the likelihood of using fully stock as a choice of M&A payment method. Overall, we find consistent results with our hypothesis 3(a) that CEO age has significant impact on the intensity at which aggregate manager sentiment affects the choice of M&A payment method where higher CEO age attenuates such impacts.

Next, from column 2 and 4 we find that, the interacting variables between CEO tenure and aggregate manager sentiment generate predicted signs for both fully cash and fully stock M&A payment method. Nevertheless, our findings are statistically insignificant. From panel B we can see that the marginal effect of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method gradually decreases at higher percentiles of CEO tenure. Overall, we can say that we do not find strong empirical evidence in support of our hypothesis 3(b) which suggest that higher CEO tenure attenuates the impact of aggregate manager sentiment on individual firm's choice of M&A payment method.

Our findings that higher CEO age attenuates the impact of aggregate manager sentiment on acquiring firm's choice of M&A payment method are consistent with the previous findings of Kovalchik et al. (2005) which suggest that CEO age is negatively related with their optimism level. Young CEOs tend to be influenced more by the aggregate sentiment of their peers while taking M&A payment decisions relative to the older CEOs. These young CEOs are more concerned in building their reputation to improve their employment prospects as indicated in Grennan (2019). Hence, they potentially prefer to follow the footsteps of their peers to build up their reputation as Scharfstein and Stein (1990) argue that the labor market favourably evaluates managers if they follow the decision of peers than if they behave in contrarian manner.

4.3 Robustness Checks

4.3.1 Robustness Checks for Firm-level Tests

To examine that our findings about the impact of aggregate manager sentiment on the choice of M&A payment method of individual acquiring firms are not driven by some market-level factors, we include three additional market-level variables in our regression that previous literature find to be significant in M&A activities.

First, we include CRSP value weighted market index (CRSP Index) to control for alternative explanation general economic condition plays role in determining firm's choice of M&A payment method. Faccio and Masulis (2005) find that the likelihood of using cash by acquiring firms in takeover deals decreases when they experience a stock price gain prior to the announcement. However, in case of overall stock price gain in the market, target firms also experience price gains prior to the takeover deals. On the other hand, during the period of economic expansion, firms in general may have higher cash flows and access to more debt financing which allow firms to pay more cash if needed during the takeover activities. Thus, ex ante it is difficult to predict the relationship between the stock market returns and individual firm's choice of M&A payment method. To investigate the relationship empirically in our regression, we use CRSP value weighted index instead of equal weighted index since the former one adjusts for the market capitalization.

Second, we include Robert J. Shiller's cyclically adjusted price earnings ratio (CAPE Ratio) to control for the alternative explanation that market misvaluation affects firm's M&A decisions. Previously, Shleifer and Vishny (2003) as well as Rhodes-Kropf and Viswanathan (2004) report that market misvaluation affects M&A activities. Gugler et al. (2012) empirically find similar result that market valuation affects M&A decisions. Recently, An et al. (2022) argue that managers of acquiring firms tend to make stock payment in exchange of their overvalued equity for undervalued or comparatively lower overpriced asset of the target firms.

Finally, we include aggregate cash holding in the market as an additional market-level control variable in our regression. Previously, Harford (2005) documents the importance of corporate liquidity in M&A activities. In addition, investigating the relationship between corporate liquidity and asset reallocation opportunities, Almeida et al. (2011) argue liquidity awash, resulted from rich cash balances and low rate of financing, previously led firms to engage in M&As with more pronounced cash financing.

Table 8 reports the Probit regression results about the impact of aggregate manager sentiment on the choice of M&A payment method with three additional market-level control variables.

<Insert Table 8 Here>

From table 8 we can see that our findings about the aggregate manager sentiment remain consistent after including additional market-level variables where the likelihood of using cash (stock) as means of M&A payment method increases (decreases) following periods of high aggregate manager sentiment in the market. Thus, we can say that our findings are not driven by other market-level factors. Other firm level and deal specific control variables show consistent results. In case of our additional market-level variables, we find that the likelihood of using fully stock as a choice of M&A payment method decreases following periods of high market return. In the regression result, the negative sign of CRSP index and positive sign of cumulative stock return of acquiring firms on the likelihood of using stock as a choice of M&A payment indicate that targets are less likely to accept stock during the takeover activities when they also experience stock price gains prior to the M&A announcement. However, we do not find any significant result of CAPE ratio and aggregate cash holding in our regression which suggest that individual firm's valuation and cash flow is more important in deciding the choice of M&A payment method rather than overall market valuation and liquidity condition.

Next, to check that if our findings about the impact of aggregate manager sentiment on the choice of M&A payment method remain consistent after controlling for individual acquiring firm's sentiment, we include the firm-specific sentiment as a control variable in our model and conduct the analysis. To measure firm-specific sentiment, following prior studies (e.g., Loughran and McDonald, 2011; An et al., 2022), we first subtract the total number of negative words from the total number of positive words and then divide the resulting value by the total number of words in respective firm's 10-K and 10-Q filings released prior to the M&A announcement month²⁰. The mean, median and standard deviation of the firm-specific sentiment in our sample are -0.010, -0.009 and 0.005, respectively. The correlation between aggregate manager sentiment and firm-specific sentiment is 0.068 (p-value<0.028). Table 9 presents the results.

<Insert Table 9 Here>

From column 1 and 2 of the table we can see that the impact of aggregate manager sentiment on the likelihood of using fully cash and higher proportion of cash remain positive and

²⁰ Word counts are available at https://sraf.nd.edu/sec-edgar-data/lm_10x_summaries/

significant after controlling for firm-specific sentiment. From column 3 and 4 we can see that the impact of aggregate manager sentiment on the likelihood of using higher proportion of stock is negative and significant whereas we do not find robust result in case of fully stock payment. In our analysis, we do not find any significant result about the impact of firm-specific sentiment on the choice of M&A payment method, suggesting that acquiring firms are influenced by the aggregate manager sentiment rather than their own sentiment while choosing the payment method in takeover activities. Therefore, we find robust statistical evidence in support of our hypothesis 1 that aggregate manager sentiment has a positive (negative) and significant impact on the likelihood of using cash (stock) as means of M&A payment method. As an additional robustness test, we redefine our dependent variables in table 10. Following Karampatsas et al. (2014) we define our dependent dummy to be 1 if the M&A payment consists of more than 50 percent in cash and 0 if the M&A payment consists of more than 50 percent in stock. The Probit regression results with this dummy variable are presented in column 1 of table 10. In column 2, following Faccio and Masulis (2005) we run Ordered Probit regression by redefining our dependent variable to be 2 if the payment consists of 100 percent cash, 1 if the payment includes mixed methods and 0 if the payment consists of 100 percent stock.

<Insert Table 10 Here>

From column 1 of table 10 we can see that aggregate manager sentiment is positively associated with the dependent variable, indicating that the likelihood of using cash as opposed to stock increases following periods of high aggregate manager sentiment. The average marginal effect of aggregate manager sentiment is 0.019, indicating that one standard deviation increase in aggregate manager sentiment corresponds to 1.7 percent increase in the probability of using fully cash as oppose to fully stock as a choice of M&A payment method. Consistent with the prior findings, we can see that aggregate manager sentiment dominates over investor sentiment in this case as well. From column 2 of the table we can see that aggregate manager sentiment is still positive and significant in this regression. Moreover, we also find significant impact of investor sentiment. Other control variables also show consistent results. Therefore, considering the above, we can say that aggregate manager sentiment plays a significant role in driving individual acquiring firm's choice of M&A payment method. Consistent with prior literature from psychology, sociology and behavioral finance fields, our findings suggest that individual firm's certain corporate finance decisions are shaped and influenced by the aggregate sentiment of their affiliates.

4.3.2 Robustness Checks for Board and CEO Characteristics

To check the robustness of our findings on the role of board and CEO characteristics, we re-estimate our regressions presented in table 6 and 7 using an Ordered Probit regression model and redefine our dependent variables as follows. The new dependent variable is equal to 2 if the payment consists of 100 percent cash, 1 if the payment includes mixed methods and 0 if the payment consists of 100 percent stock. Table 11 presents the results.

<Insert Table 11 Here>

From column 1 of the table we can see that the interaction between aggregate manager sentiment and board size variable generates significant positive signs, which are consistent with our previous finding. Thus, we find robust evidence that board size enhances the impact of aggregate manager sentiment on individual firm's choice of M&A payment method. Column 2 shows that the interaction between aggregate manager sentiment and board independence level variable does not generate any statistically significant result. Hence, we do not find any robust evidence that acquiring firm's board independence level enhances the impact of aggregate manager sentiment on the choice of M&A payment method. From column 3 and 4 we can see that consistent with previous findings, the interaction between aggregate manager sentiment and CEO variables generate negative signs where the interaction between aggregate manager sentiment and CEO age variable generates statistically significant result. On the other hand, the coefficient of interaction between aggregate manager sentiment and CEO tenure is still statistically insignificant here. Thus, we find further statistical evidence that higher CEO age attenuates the impact of aggregate manager sentiment on the choice of M&A payment method, while the role of CEO tenure does not provide any statistical evidence in support of our related hypothesis.

5 Conclusion

In this study, we find that aggregate manager sentiment is an important factor in determining the acquiring firms' choice of payment method during their takeover activities. It provides additional information beyond the existing investor sentiment and other determinants of M&A payment methods that prior literature documented over the last several decades. Specifically, we find that acquiring firms are more likely to pay using cash following periods of high aggregate manager sentiment whereas they are less likely to pay using stock following such periods of high sentiment to their respective targets. Our findings are robust to various forms of dependent variables that define the acquiring firm's choice of M&A payment and inclusion

of different market-level as well as firm-specific sentiment variable. In addition, we find that certain board structures and CEO characteristics of acquiring firms play significant roles on the impact of aggregate manager sentiment in determining the respective firm's choice of M&A payment method. Particularly, we find that larger board size enhances whereas higher CEO age attenuates the positive impact of aggregate manager sentiment on the likelihood of using cash and negative impact of such sentiment on the likelihood of using stock as means of M&A payment method. Acquiring firms need to take care that they are not paying more cash or less stock than the optimum amount in takeover deals just because their affiliates are optimistic in general at certain periods of time; rather they are selecting effective payment method that will increase the value of the firm in the post-merger period. Future research can, hence, look into the effects of sentiment induced M&A payment choices on subsequent acquiring firm performance.

Our study is limited to a sample of domestic M&As announced by US public firms. Findings may be different in case of M&As announced by firms in other countries where the accounting standards and disclosure requirements are different than those in US. In addition, the results may vary in case of M&As in countries where the extent of social interactions among the affiliates are limited because of the cultural aspects. Future research can look into the impact of cultural differences on sentiment driven M&A activities.

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Tables

Table 1: Distribution of M&As by Year

The table shows the year-wise total number and respective percentage of domestic M&As in our sample announced by 1,236 unique non-financial non-utility US public firms between April 2003 and December 2017.

Year	Frequency	Percentage
2003	187	5.44
2004	355	10.33
2005	287	8.35
2006	312	9.08
2007	239	6.95
2008	198	5.76
2009	145	4.22
2010	288	8.38
2011	365	10.62
2012	278	8.09
2013	193	5.62
2014	182	5.30
2015	178	5.18
2016	113	3.29
2017	117	3.40
Total	3,437	100.00

Table 2: Summary Statistics

The table reports the descriptive statistics of the variables that we use in this study. Here, Cash Dummy, equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, Stock Dummy, equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Cash and stock proportions are measured by the percentages of cash and stock paid respectively in M&A deals. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. Other market-level variables are the averages of the respective variables over 3-month period prior to the M&A announcement. Monthly total M&A value are smoothed using a three-month moving average and presented after transforming them into their natural logarithm. Aggregate cash holding variable is also presented after transforming them into its natural logarithm. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. Board and CEO characteristic variables are measured at the end of year preceding the M&A announcement. All firm level variables, relative value as well as all board and CEO characteristic variables are winsorized at 1st and 99th percentiles. Detail description of all the variables are provided in the data section.

Variable	Mean	Standard Dev.	P10	P50	P90	N
Panel A: M&A Payment Variables						
Cash Dummy	0.695	0.461	0.000	1.000	1.000	3,437
Stock Dummy	0.043	0.204	0.000	0.000	0.000	3,437
Cash Proportion	84.759	29.115	34.424	100.000	100.00	3,437
Stock Proportion	9.431	24.860	0.000	0.000	42.901	3,437
Panel B: Monthly Total M&A Deal Value						
All Deal	11.058	0.477	10.501	11.072	11.668	177
Fully Cash Deal	10.530	0.538	9.676	10.633	11.099	177
Fully Stock Deal	7.533	1.355	5.651	7.650	8.963	177
Panel C: Sentiment Variables						
Manager Sentiment	0.018	0.913	-1.064	0.198	0.904	3,437
Investor Sentiment	-0.218	0.293	-0.680	-0.205	0.145	3,437
Panel D: Market-level Variables						
CAPE Ratio	24.056	2.966	20.342	25.032	26.917	3,437
CRSP Index	0.010	0.023	-0.019	0.013	0.034	3,437
Aggregate Cash Holding	4.713	0.318	4.307	4.661	5.244	3,437
Panel E: Firm Level Characteristics						
Ln(Size)	7.726	2.044	4.606	7.196	10.109	3,437
ROA	0.080	0.118	-0.019	0.091	0.193	3,437
Book Leverage	0.207	0.185	0.000	0.184	0.459	3,437
Cash to Total Asset	0.187	0.180	0.014	0.128	0.459	3,437
Market to Book Ratio	2.044	1.114	1.075	1.719	3.426	3,437
Cumulative Return	0.230	0.423	-0.220	0.191	0.703	3,437
Panel F: Deal Level Characteristics						
Relative Value	0.111	0.133	0.006	0.064	0.295	3,437
Hostile Dummy	0.004	0.061	0.000	0.000	0.000	3,437
Challenge Dummy	0.016	0.127	0.000	0.000	0.000	3,437
Diversifying Dummy	0.363	0.481	0.000	0.000	1.000	3,437
Panel G: Board Characteristics						
Size	8.829	2.378	6.000	9.000	12.000	3,203
Independence	0.825	0.094	0.667	0.857	0.909	3,203
Panel H: CEO Characteristics						
Age	55.557	7.465	46.000	56.000	65.000	3,056
Tenure	13.213	9.927	2.100	10.900	27.900	2,208

Table 3: Aggregate Manager Sentiment and Market-Level M&A Activities

The table represents the Newey-West regression results about the impact of aggregate manager sentiment on market-level M&A activities. Here, the dependent variables in column 1, 2 and 3 are the monthly total value of all domestic deals regardless of their payment method, fully cash domestic deals and fully stock domestic deals, respectively. All dependent variables are smoothed using a three-month moving averages to remove the seasonality. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement month. Other market-level control variables are the averages of the respective variables over 3-month period prior to the M&A announcement. The dependent variables and aggregate corporate cash holding variable are transformed into their natural logarithm and we use a maximum lag of 3 in the regression. P-values are provided in the parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	All Deal (1)	Fully Cash Deal (2)	Fully Stock Deal (3)
Manager Sentiment	0.032 (0.705)	0.156* (0.082)	-0.330** (0.041)
Investor Sentiment	0.620** (0.018)	0.788*** (0.000)	-0.160 (0.753)
CAPE Ratio	0.025 (0.200)	0.001 (0.977)	0.150*** (0.000)
CRSP Index	1.915 (0.260)	4.583* (0.091)	2.520 (0.595)
Aggregate Cash Holding	0.102*** (0.000)	0.054 (0.112)	0.250*** (0.002)
Constant	9.337*** (0.000)	10.004*** (0.000)	0.859 (0.523)
F-Statistics	8.240*** (0.000)	6.840*** (0.000)	6.190*** (0.000)
Adj. R-Square	0.329	0.361	0.218
No. of Observation	177	177	177

Table 4: Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment

The table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.141*** (0.000)	—	-0.090** (0.011)
Investor Sentiment	—	-0.435** (0.015)	+	-0.119 (0.547)
Ln(Size)	+	0.093*** (0.000)	—	-0.034 (0.345)
ROA	+	2.053*** (0.000)	—	-2.260*** (0.000)
Book Leverage	—	-0.210 (0.282)	+	0.354 (0.228)
Cash to Total Asset	+	0.128 (0.354)	—	-0.376* (0.053)
Market to Book Ratio	—	-0.156*** (0.000)	+	0.051* (0.085)
Cumulative Return	—	0.100 (0.238)	+	0.166** (0.020)
Relative Value	—	-2.629*** (0.000)	+	1.200*** (0.000)
Hostile Dummy	+	0.649 (0.173)	—	-0.265 (0.596)
Challenge Dummy	+	-0.042 (0.805)	—	0.127 (0.685)
Diversifying Dummy	+ / —	-0.117** (0.042)	+ / —	0.008 (0.929)
Constant		-0.637* (0.088)		-0.822** (0.011)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.161		0.143
No. of Observation		3,420		2,806

Table 5: Aggregate Manager Sentiment and Proportion of Cash and Stock Payment

The table reports the Tobit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash Proportion measured by the percentage of cash paid in M&A deals. The dependent variable in the regression reported in column (2) is Stock Proportion measured by the percentage of stock paid in M&A deals. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	Cash Proportion		Stock Proportion	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	1.761*** (0.002)	—	-1.980*** (0.000)
Investor Sentiment	—	-2.230 (0.314)	+	1.497 (0.459)
Ln(Size)	+	0.961** (0.011)	—	-0.197 (0.523)
ROA	+	65.311*** (0.000)	—	-50.067*** (0.000)
Book Leverage	—	-4.108 (0.387)	+	3.195 (0.369)
Cash to Total Asset	+	2.971 (0.338)	—	-0.842 (0.586)
Market to Book Ratio	—	-4.510*** (0.000)	+	3.659*** (0.000)
Cumulative Return	—	1.465 (0.412)	+	0.398 (0.769)
Relative Value	—	-45.291*** (0.000)	+	37.806*** (0.000)
Hostile Dummy	+	8.745 (0.342)	—	-7.629 (0.298)
Challenge Dummy	+	0.221 (0.956)	—	4.651 (0.231)
Diversifying Dummy	+ / —	-1.495 (0.173)	+ / —	0.617 (0.586)
Constant		62.254*** (0.000)		30.890*** (0.000)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.023		0.020
No. of Observation		3,437		3,437

Table 6: Aggregate Manager Sentiment, Board Characteristics and M&A Payment

Panel A of the table reports the Probit model regression results about the role of acquiring firms' board size and board independence on the impact of aggregate manager sentiment on their choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Board size and board independence are measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of board size and board independence. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	-0.064 (0.584)	-0.276 (0.121)	0.201 (0.188)	0.006 (0.996)
Investor Sentiment	-0.429** (0.018)	-0.430** (0.017)	-0.124 (0.507)	-0.160 (0.346)
Board Size	0.027** (0.031)		-0.016 (0.626)	
MS * Board Size	0.024* (0.093)		-0.032* (0.064)	
Board Independence		0.524 (0.161)		-1.441* (0.093)
MS * Board Independence		0.515** (0.017)		-0.076 (0.915)
Constant	-0.581 (0.174)	-0.891** (0.042)	-0.864** (0.018)	0.169 (0.821)
Firm-Level Control	Yes	Yes	Yes	Yes
Deal-Level Control	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.160	0.160	0.153	0.159
No. of Observation	3,187	3,187	2,600	2,600
Panel B				
10 th Percentile	0.024* (0.075)	0.020 (0.160)	0.001 (0.903)	-0.005 (0.583)
25 th Percentile	0.030*** (0.006)	0.037*** (0.001)	-0.002 (0.651)	-0.005 (0.184)
50 th Percentile	0.043*** (0.000)	0.047*** (0.000)	-0.007* (0.077)	-0.005 (0.369)
75 th Percentile	0.055*** (0.000)	0.052*** (0.000)	-0.012** (0.018)	-0.005 (0.460)
90 th Percentile	0.061*** (0.001)	0.054*** (0.000)	-0.015** (0.018)	-0.005 (0.507)

Table 7: Aggregate Manager Sentiment, CEO Characteristics and M&A Payment

Panel A of the table reports the Probit model regression results about the role of acquiring firms' CEO age and CEO tenure on the impact of aggregate manager sentiment on their choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. CEO age and CEO tenure are measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of CEO age and CEO tenure. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	0.558*** (0.009)	0.140*** (0.008)	-0.804** (0.022)	-0.257** (0.046)
Investor Sentiment	-0.428** (0.044)	-0.544*** (0.009)	-0.134 (0.493)	0.102 (0.678)
CEO Age	0.004 (0.110)		-0.001 (0.873)	
MS * CEO Age	-0.008** (0.044)		0.013** (0.031)	
CEO Tenure		0.006 (0.163)		-0.002 (0.843)
MS * CEO Tenure		-0.001 (0.785)		0.013 (0.125)
Constant	-0.832** (0.045)	-0.614 (0.199)	-0.548 (0.372)	-0.488* (0.075)
Firm-Level Control	Yes	Yes	Yes	Yes
Deal-Level Control	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.157	0.159	0.152	0.172
No. of Observation	3,043	2,191	2,490	1,790
Panel B				
10 th Percentile	0.061*** (0.000)	0.041*** (0.005)	-0.016** (0.019)	-0.019** (0.039)
25 th Percentile	0.052*** (0.000)	0.041*** (0.003)	-0.011** (0.032)	-0.016** (0.036)
50 th Percentile	0.039*** (0.001)	0.039*** (0.002)	-0.004 (0.249)	-0.010** (0.037)
75 th Percentile	0.030** (0.014)	0.037*** (0.003)	0.001 (0.979)	-0.000 (0.945)
90 th Percentile	0.019 (0.218)	0.035*** (0.009)	0.006 (0.387)	0.008 (0.486)

Table 8: Aggregate Manager Sentiment and Cash and Stock M&A Payment With Additional Market-level Variables

The table reports the Probit model and Tobit model regression results with three additional market-level variables about the choice of M&A payment method. The dependent variable in the regression reported in column (1) and (2) are Cash Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise, and Cash Proportion measured by the percentage of cash paid in M&A deals, respectively. On the other hand, the dependent variable in the regression reported in column (3) and (4) are Stock Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise, and Stock Proportion measured by the percentage of stock paid in M&A deals, respectively. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. Additional market-level variables are the averages of the respective variables over 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash		Stock	
	Fully Cash (1)	Proportion (2)	Fully Stock (3)	Proportion (4)
Manager Sentiment	0.117*** (0.001)	1.684*** (0.001)	-0.087*** (0.004)	-1.746*** (0.000)
Investor Sentiment	-0.255* (0.088)	-0.751 (0.620)	-0.278 (0.137)	-0.619 (0.741)
CRSP Index	0.800 (0.602)	25.026 (0.226)	-3.278** (0.030)	-17.109 (0.266)
CAPE Ratio	-0.030 (0.196)	-0.224 (0.466)	0.027 (0.147)	0.342 (0.166)
Ln(Aggregate Cash)	0.014 (0.850)	0.080 (0.946)	-0.072 (0.560)	-0.123 (0.940)
Ln(Size)	0.093*** (0.000)	0.955** (0.012)	-0.034 (0.332)	-0.195 (0.532)
ROA	1.988*** (0.000)	64.811*** (0.000)	-2.219*** (0.000)	-49.328*** (0.000)
Book Leverage	-0.194 (0.331)	-4.040 (0.400)	0.380 (0.210)	3.002 (0.405)
Cash to Total Asset	0.111 (0.406)	2.824 (0.353)	-0.376* (0.058)	-0.678 (0.666)
Market to Book Ratio	-0.144*** (0.000)	-4.416*** (0.000)	0.042 (0.122)	3.521*** (0.000)
Cumulative Return	0.127 (0.128)	1.654 (0.345)	0.147** (0.049)	0.112 (0.934)
Relative Value	-2.600*** (0.000)	-45.066*** (0.000)	1.167*** (0.001)	37.450*** (0.000)
Hostile Dummy	0.599 (0.214)	0.562 (0.366)	-0.238 (0.636)	-7.127 (0.338)
Challenge Dummy	-0.033 (0.850)	0.190 (0.962)	0.109 (0.738)	4.605 (0.234)
Diversifying Dummy	-0.108** (0.042)	-1.431 (0.181)	-0.003 (0.976)	0.516 (0.642)
Constant	0.075 (0.931)	67.458*** (0.000)	-1.160 (0.236)	22.862* (0.086)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.163	0.023	0.147	0.020
No. of Observation	3,420	3,437	2,806	3,437

Table 9: Aggregate Manager Sentiment and Cash and Stock M&A Payment With Firm-Specific Sentiment Level

The table reports the Probit model and Tobit model regression results with individual acquiring firm's sentiment level about the choice of M&A payment method. The dependent variable in the regression reported in column (1) and (2) are Cash Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise, and Cash Proportion measured by the percentage of cash paid in M&A deals, respectively. On the other hand, the dependent variable in the regression reported in column (3) and (4) are Stock Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise, and Stock Proportion measured by the percentage of stock paid in M&A deals, respectively. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. Firm-specific sentiment is measured by subtracting the total number of negative words from the total number of positive words and then dividing the resulting value by the total number of word counts in firm's 10-K and 10-Q filings prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash		Stock	
	Fully Cash (1)	Proportion (2)	Fully Stock (3)	Proportion (4)
Manager Sentiment	0.149*** (0.000)	1.277** (0.021)	-0.054 (0.447)	-1.423** (0.040)
Investor Sentiment	-0.374** (0.017)	-3.278 (0.117)	0.258 (0.302)	3.980 (0.162)
Firm-Specific Sentiment	15.538 (0.175)	152.745 (0.422)	-3.237 (0.893)	172.662 (0.375)
Ln(Size)	0.117*** (0.000)	1.280** (0.011)	-0.080* (0.100)	-0.171 (0.736)
ROA	1.756*** (0.000)	59.163*** (0.000)	-2.115*** (0.000)	-53.713*** (0.000)
Book Leverage	-0.274 (0.411)	-6.736 (0.241)	0.522 (0.181)	3.376 (0.542)
Cash to Total Asset	0.181 (0.608)	-2.624 (0.583)	-0.489 (0.374)	5.252 (0.223)
Market to Book Ratio	-0.147*** (0.000)	-4.210*** (0.000)	0.104** (0.022)	3.560*** (0.000)
Cumulative Return	0.060 (0.454)	1.262 (0.272)	0.086 (0.423)	-0.752 (0.704)
Relative Value	-2.516*** (0.000)	-39.273*** (0.000)	0.735 (0.168)	31.834*** (0.000)
Hostile Dummy	-0.941 (0.296)	-21.790 (0.238)	0.913 (0.319)	20.354 (0.275)
Challenge Dummy	0.571 (0.247)	10.338 (0.342)	0.051 (0.944)	-2.982 (0.777)
Diversifying Dummy	-0.233*** (0.007)	-2.658* (0.075)	-0.124 (0.378)	1.079 (0.484)
Constant	-0.396 (0.238)	62.545*** (0.000)	-0.894 (0.227)	26.434*** (0.005)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.173	0.028	0.176	0.025
No. of Observation	1,023	1,055	778	1,055

Table 10: Aggregate Manager Sentiment and Fully Cash Versus Fully Stock M&A Payment

The table reports the Probit and Ordered Probit model regression results about the choice of M&A payment method. The dependent variable in the Probit regression reported in column (1) is Cash Vs Stock Dummy, which equals 1 if the payment for an M&A deal is more than 50 percent in cash and 0 if the payment for an M&A deal more than 50 percent in stock. On the other hand, the dependent variable in the Ordered Probit regression reported in column (2) is Cash Vs Mixed Vs Stock Dummy, which equals 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	Cash Versus Stock		Cash Versus Mixed Versus Stock	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.142*** (0.000)	+	0.131*** (0.000)
Investor Sentiment	—	-0.121 (0.458)	—	-0.317* (0.054)
Ln(Size)	+	0.020 (0.419)	+	0.082*** (0.000)
ROA	+	2.706*** (0.000)	+	1.991*** (0.000)
Book Leverage	—	-0.140 (0.595)	—	-0.241 (0.218)
Cash to Total Asset	+	0.145 (0.274)	+	0.170 (0.171)
Market to Book Ratio	—	-0.207*** (0.000)	—	-0.124*** (0.002)
Cumulative Return	—	-0.045 (0.482)	—	0.025 (0.755)
Relative Value	—	-2.060*** (0.000)	—	-2.176*** (0.000)
Hostile Dummy	+	0.886* (0.090)	+	0.529 (0.233)
Challenge Dummy	+	-0.167 (0.451)	+	-0.080 (0.569)
Diversifying Dummy	+ / —	-0.047 (0.580)	+ / —	-0.095* (0.096)
Constant		0.548 (0.172)		-
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.184		0.134
No. of Observation		2,982		3,437

Table 11: Aggregate Manager Sentiment, Board and CEO Characteristics, and M&A Payment

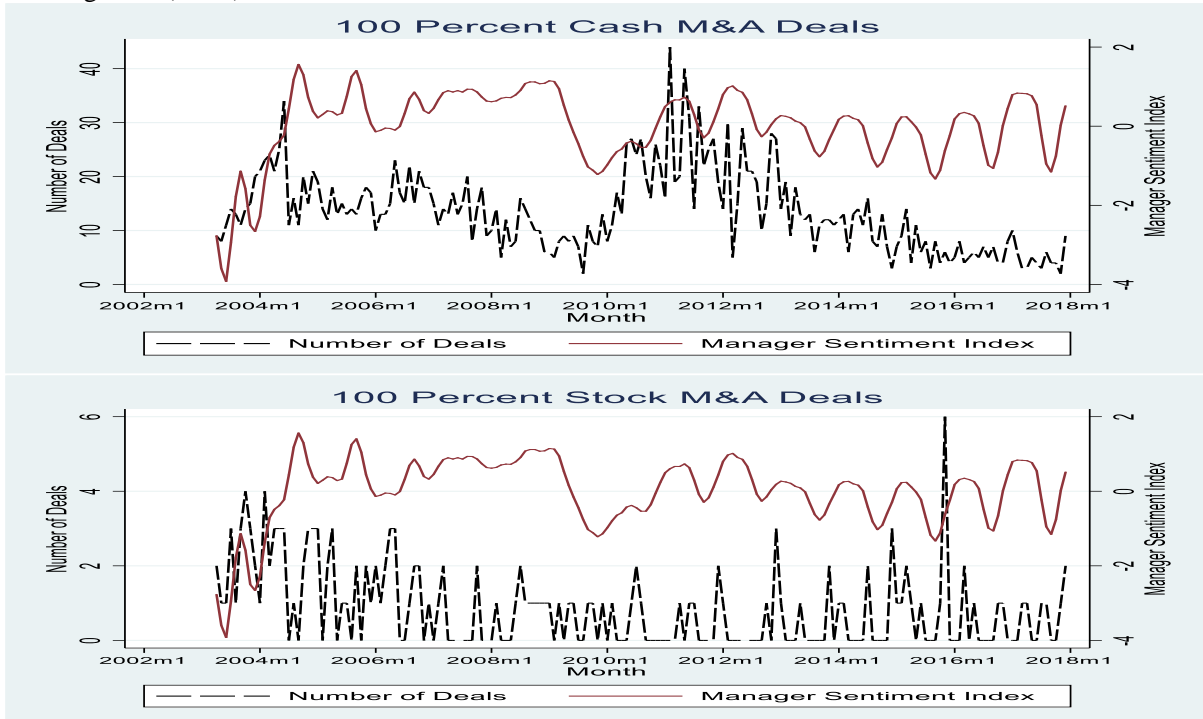
The table reports the Ordered Probit model regression results about the role of acquiring firms' board size and board independence in column 1 and 2, respectively as well as CEO age and CEO tenure in column 3 and 4, respectively on the impact of aggregate manager sentiment on their choice of M&A payment method. Here, the dependent variable is Cash Vs Mixed Vs Stock Dummy, which equals 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock. Board and CEO characteristics are measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Board Characteristics		CEO Characteristics	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.077 (0.433)	-0.207 (0.363)	0.605*** (0.003)	0.167*** (0.000)
Investor Sentiment	-0.324* (0.061)	-0.320 (0.140)	-0.322* (0.061)	-0.451** (0.020)
Board Size	0.025** (0.020)			
MS * Board Size	0.024** (0.041)			
Board Independence		0.669 (0.111)		
MS * Board Independence		0.418 (0.140)		
CEO Age			0.003 (0.202)	
MS * CEO Age			-0.009** (0.021)	
CEO Tenure				0.006 (0.185)
MS * CEO Tenure				-0.003 (0.233)
Ln(Size)	0.054*** (0.006)	0.064*** (0.001)	0.073*** (0.000)	0.076*** (0.001)
ROA	2.112*** (0.000)	2.118*** (0.000)	1.966*** (0.000)	1.823*** (0.000)
Book Leverage	-0.348** (0.024)	-0.325** (0.033)	-0.375** (0.022)	-0.468*** (0.003)
Cash to Total Asset	0.148 (0.320)	0.126 (0.413)	0.135 (0.365)	0.099 (0.571)
Market to Book Ratio	-0.135*** (0.000)	-0.131*** (0.000)	-0.138*** (0.000)	-0.117*** (0.000)
Cumulative Return	0.036 (0.664)	0.034 (0.667)	0.060 (0.475)	0.015 (0.862)
Relative Value	-2.138*** (0.000)	-2.162*** (0.000)	-2.202*** (0.000)	-2.207*** (0.000)
Hostile Dummy	0.207 (0.543)	0.226 (0.538)	0.199 (0.570)	-0.062 (0.905)
Challenge Dummy	-0.024 (0.841)	-0.037 (0.762)	-0.009 (0.950)	0.052 (0.815)
Diversifying Dummy	-0.098* (0.089)	-0.095* (0.083)	-0.083 (0.128)	-0.121* (0.072)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.133	0.134	0.132	0.136
No. of Observation	3,203	3,203	3,056	2,208

Figures

Figure 1: Time Series Variations of M&A Deals and Manager Sentiment Index

The figure shows the monthly total number of fully cash M&A domestic deals (top panel) and fully stock M&A domestic deals (bottom panel) announced by non-financial and non-utility US public firms between April 2003 and December 2017 along with the 3-month moving average of the updated version of manager sentiment index of Jiang et al. (2019).



Appendix Tables

Table A1: Correlation and VIF

The table reports the correlation coefficients among the variables that we use in this study. Here, the dependent variable, Cash Dummy (Stock Dummy), equals 1 if the payment for an M&A deal is fully in cash (stock) and 0 otherwise. On the other hand, the dependent variable, cash (stock) proportion is the percentage of cash (stock) payment in M&A deal. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006) respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and relative value variable are winsorized at 1st and 99th percentiles. P-values are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	VIF
(1) Cash Dummy	1.000																
(2) Stock Dummy	—	1.000															
(3) Cash Proportion	—	—	1.000														
(4) Stock Proportion	—	—	—	1.000													
(5) Manager Sentiment	0.049*** (0.005)	-0.055*** (0.001)	0.061*** (0.000)	-0.080*** (0.000)	1.000												1.57
(6) Investor Sentiment	-0.047*** (0.006)	-0.036** (0.037)	0.002 (0.906)	-0.014 (0.402)	0.590*** (0.000)	1.000											1.60
(7) Ln(Size)	0.202*** (0.000)	-0.085*** (0.000)	0.162*** (0.000)	-0.109*** (0.000)	0.019 (0.266)	-0.002 (0.909)	1.000										1.38
(8) ROA	0.241*** (0.000)	-0.215*** (0.000)	0.306*** (0.000)	-0.266*** (0.000)	0.080*** (0.000)	0.056*** (0.001)	0.247*** (0.000)	1.000									1.25
(9) Book Leverage	-0.045*** (0.008)	0.042** (0.014)	-0.049*** (0.004)	0.050*** (0.004)	-0.003 (0.859)	0.043** (0.012)	0.217*** (0.000)	-0.057*** (0.001)	1.000								1.48
(10) Cash to Total Asset	-0.034** (0.045)	0.021 (0.215)	-0.063*** (0.000)	0.054*** (0.002)	-0.016 (0.357)	-0.060*** (0.001)	-0.209*** (0.000)	-0.133*** (0.000)	-0.386*** (0.000)	1.000							1.63
(11) M/B Ratio	-0.036** (0.038)	0.015 (0.380)	-0.074*** (0.000)	0.071*** (0.000)	0.042** (0.014)	0.072*** (0.000)	-0.039** (0.021)	0.182*** (0.000)	-0.163*** (0.000)	0.355*** (0.000)	1.000						1.47
(12) Cum. Return	-0.005 (0.772)	0.034** (0.050)	-0.009 (0.615)	0.031* (0.067)	0.006 (0.732)	0.004 (0.818)	-0.136*** (0.000)	0.072*** (0.000)	0.008 (0.632)	0.051*** (0.003)	0.253*** (0.000)	1.000					1.15
(13) Relative Value	-0.297*** (0.000)	0.110*** (0.000)	-0.246*** (0.000)	0.230*** (0.000)	-0.017 (0.308)	0.032* (0.063)	-0.186*** (0.000)	-0.145*** (0.000)	0.164*** (0.000)	-0.081*** (0.000)	-0.165*** (0.000)	-0.017 (0.310)	1.000				1.20
(14) Hos. Dummy	-0.000 (0.985)	0.010 (0.552)	-0.009 (0.614)	0.017 (0.354)	-0.019 (0.259)	0.020 (0.237)	0.016 (0.354)	-0.014 (0.399)	0.022 (0.189)	0.006 (0.707)	-0.000 (0.998)	0.018 (0.288)	0.099*** (0.000)	1.000			1.08
(15) Cha. Dummy	-0.035** (0.043)	0.018 (0.298)	-0.031* (0.068)	0.052*** (0.002)	-0.027 (0.119)	-0.006 (0.718)	0.061*** (0.000)	-0.006 (0.743)	0.047*** (0.005)	0.004 (0.809)	0.020 (0.242)	-0.000 (0.992)	0.138*** (0.000)	0.217*** (0.000)	1.000		1.09
(16) Div. Dummy	-0.020 (0.235)	-0.003 (0.854)	0.001 (0.950)	-0.009 (0.586)	0.019 (0.264)	0.061*** (0.000)	0.035** (0.038)	0.021 (0.224)	0.005 (0.752)	-0.084*** (0.000)	-0.051*** (0.003)	-0.020 (0.253)	-0.014 (0.408)	-0.037** (0.032)	-0.040** (0.020)	1.000	1.15

Table A2: Aggregate Manager Sentiment and Market-Level M&A Activities

The table represents the Newey-West regression results about the impact of aggregate manager sentiment on market-level M&A activities. Here, the dependent variables in column 1, 2 and 3 are the monthly total value of all domestic deals regardless of their payment method, fully cash domestic deals and fully stock domestic deals, respectively. All dependent variables are smoothed using a three-month moving averages to remove the seasonality. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 6-month period prior to the M&A announcement month. Other market-level control variables are the averages of the respective variables over 6-month period prior to the M&A announcement. The dependent variables and aggregate corporate cash holding variable are transformed into their natural logarithm and we use a maximum lag of 3 in the regression. P-values are provided in the parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	All Deal (1)	Fully Cash Deal (2)	Fully Stock Deal (3)
Manager Sentiment	0.087 (0.374)	0.225** (0.020)	-0.432** (0.039)
Investor Sentiment	0.508* (0.073)	0.633** (0.019)	-0.204 (0.749)
CAPE Ratio	0.029 (0.205)	0.003 (0.899)	0.163*** (0.000)
CRSP Index	3.799* (0.098)	8.451*** (0.008)	-5.603 (0.387)
Aggregate Cash Holding	0.085** (0.015)	0.061* (0.090)	0.141 (0.213)
Constant	9.391*** (0.000)	9.768*** (0.000)	1.879 (0.230)
F-Statistics	8.350*** (0.000)	9.080*** (0.000)	4.210*** (0.001)
Adj. R-Square	0.297	0.388	0.175
No. of Observation	179	179	179

Table A3: Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment

The table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 6-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.158** (0.018)	—	-0.192*** (0.007)
Investor Sentiment	—	-0.530** (0.027)	+	0.153 (0.497)
Ln(Size)	+	0.097*** (0.000)	—	-0.044 (0.227)
ROA	+	1.455*** (0.000)	—	-1.411*** (0.000)
Book Leverage	—	-0.154 (0.473)	+	0.302 (0.353)
Cash to Total Asset	+	0.051 (0.664)	—	-0.132 (0.526)
Market to Book Ratio	—	-0.111*** (0.000)	+	-0.007 (0.839)
Cumulative Return	—	0.096 (0.331)	+	0.181** (0.050)
Relative Value	—	-2.472*** (0.000)	+	1.091*** (0.000)
Hostile Dummy	+	0.377 (0.367)	—	-0.130 (0.794)
Challenge Dummy	+	-0.013 (0.938)	—	0.165 (0.624)
Diversifying Dummy	+ / —	-0.117** (0.031)	+ / —	0.016 (0.855)
Constant		-0.682* (0.080)		-0.663* (0.052)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.153		0.129
No. of Observation		3,369		2,769

Table A4: Aggregate Manager Sentiment and Proportion of Cash and Stock Payment

The table reports the Tobit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash Proportion measured by the percentage of cash paid in M&A deals. The dependent variable in the regression reported in column (2) is Stock Proportion measured by the percentage of stock paid in M&A deals. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006) respectively over the 6-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Variable	Cash Proportion		Stock Proportion	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	2.541** (0.019)	—	-2.975*** (0.002)
Investor Sentiment	—	-4.907 (0.144)	+	4.395 (0.109)
Ln(Size)	+	1.020** (0.016)	—	-0.199 (0.533)
ROA	+	46.952*** (0.000)	—	-35.684*** (0.000)
Book Leverage	—	-3.013 (0.576)	+	2.224 (0.596)
Cash to Total Asset	+	0.133 (0.960)	—	1.558 (0.283)
Market to Book Ratio	—	-3.013*** (0.000)	+	2.391*** (0.001)
Cumulative Return	—	1.192 (0.577)	+	0.594 (0.719)
Relative Value	—	-43.400*** (0.000)	+	36.498*** (0.000)
Hostile Dummy	+	3.660 (0.677)	—	-3.840 (0.556)
Challenge Dummy	+	0.321 (0.938)	—	4.719 (0.247)
Diversifying Dummy	+ / —	-1.579 (0.139)	+ / —	0.708 (0.533)
Constant		60.442*** (0.000)		32.258*** (0.000)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.021		0.018
No. of Observation		3,386		3,386