Three essays on acquisition and CSR choices and firm value: Role of managerial traits and actions

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ABSTRACT

Three essays on acquisition and CSR choices and firm value: Role of managerial traits and actions

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This thesis consists of three essays that examine the role of managerial traits (specifically managerial conservatism, interest alignment with shareholders and debtholders, beliefs about firm value and hubris) on their firms' acquisition and CSR choices and their valuation effects. All the essays use hand-collected pension plan data.

The first essay finds support for a managerial conservatism explanation for acquirer acquisition choices and M&A price effects. More conservatively managed acquirers are more likely to use cash as the method of payment and to target less risky firms (e.g. being public or having lower leverage or managerial conservatism). We find that acquirers experience poorer price effects for stock versus cash payment even after controlling for the equity price effect and that these price effects monotonically deteriorate with increasing managerial conservatism, consistent with the agency problems associated with managerial conservatism. These results remain robust using propensity score matching, a four- or five-factor model, the BHAR methodology, top five executives instead of CEO when measuring managerial conservatism, and the inclusion of various controls (e.g., multiple or single acquirers, policy uncertainty, business cycle, managerial hubris, firm mispricing and Republican orientation).

The second essay finds that managerial interest alignment with shareholders (debtholders) of acquirers is positively related to the likelihood of using stock (cash) as the M&A payment method, positively (negatively) related with M&A acquirer equity price effects, and negatively (positively) related with M&A acquirer bond price effects. While managerial conservatism is positively related with an acquirer's CSR ranking it is negatively related with an acquirer's M&A price effects. Information about an acquirer's misvaluation contained in pre-announcement short selling by investors and the abnormal trading of its executives also affects the acquirer's choice of payment method and M&A price effects.

In the third essay, we conduct a comprehensive examination of the dynamic relations among CSR composite rankings, firm undervaluation, executive compensation and corporate governance. Our measure of firm undervaluation based on insider trading captures information not captured by commonly used mispricing measures. We use system-GMM and 3SLS for a system of four simultaneous equations to control for endogeneity and simultaneity. Our evidence indicates that a firm's future CSR ranking is positively related to firm undervaluation and negatively related to managerial conservatism. We find that the trading of managers reveals informed information about the "error-in-expectations" embedded in firm valuations.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

This thesis consists of three essays that examine the role of managerial traits (specifically managerial conservatism, interest alignment with shareholders and debtholders, beliefs about firm value and hubris) on their firms' acquisition and CSR choices and their valuation effects. All the essays use hand-collected pension plan data.

The first essay (**Chapter 2**) focuses more on managerial conservatism, which is proxied primarily by two managerial pension-related metrics. The primary objective of the essay is to examine whether managerial conservatism, is (1) an important determinant of acquisition choices such as target risk level and method of payment; and (2) can account for differences in the announcement and post-announcement price effects of M&As on acquirers. Thus, this paper also addresses a topic identified for further research in Sundaram and Yermack (2007); namely, the effect of executive pension plans as a form of managerial compensation on managerial conservatism and firm behavior.

The first essay differs from previous studies in a number of other ways. First, we examine a time period which captures the mandated changes in the disclosure of executive and director compensation in the aftermath of the passage of the Sarbanes–Oxley Act (SOX) of 2002 (including the mandated requirements under the Dodd-Frank Wall Street Reform). Second, we not only examine announcement returns but we also examine post-announcements returns using benchmark models that are more robust and commonly used in current research. Third, with a less dated sample we capture the effects of the Global Financial Crisis, and thus, are better able to make a more timely contribution to the ongoing debate on the driving forces behind returns on and after M&A announcements and to the more general literature of corporate governance, director and executive compensation and firm performance. Fourth, we appear to be the first to use PBHAR (Pure Buy-and-Hold Abnormal Returns) as an alternative measure to account for issue price effects when examining the (post-) announcement price effects for acquirers using the stock method of payment.

The first essay finds support for a managerial conservatism explanation for acquirer acquisition choices and M&A price effects. More conservatively managed acquirers are more likely to use cash as the method of payment and to target less risky firms (e.g. being public or having lower leverage or managerial conservatism). Our results from both time-series and cross-sectional panel logistic regressions support the conclusion that firms with higher inside debt and compensation leverage are more likely to use cash versus stock as the method of payment over the next two years. We observe a monotonic increasing (decreasing) relation between the quartile assignments of pension-related metrics and the managerial acquisitiveness with cash (stock) as the method of payment. The results are not weakened by the inclusion of a number of other control variables with statistical power such as the relative differences of the two pension plan metrics and debt-to-assets between the acquirer and the target, CEO age, hubris, political orientation, expected CEO tenure, announcement returns, stock price, market capitalization, and cash flow risk.

We find that acquirers experience poorer price effects for stock versus cash payment even after controlling for the equity price effect and that these price effects monotonically deteriorate with increasing managerial conservatism, consistent with the agency problems associated with managerial conservatism. Without first adjusting for any equity issue effect, our CAR (Cumulative Abnormal Return) results for the announcement window [-1, 1] days based on the five-factor (Fama and French, 2015) and four-factor (Carhart, 1997) models confirm previous findings that acquirers using stock (cash) as the method of payment significantly underperform (outperform) their pricing benchmarks. With such an adjustment (Golubov, Petmezas and Travlos, 2016), we find that the Pure CAR (PCAR) for [-1, 1] for acquirers using stock are still negative but now are insignificant. For the three post-announcement windows, the (P)Alpha are insignificantly positive (significantly negative) for acquirers using cash (stock) as the method of payment. When we differentiate by method of payment and pension-related metric we observe that the PCAR and PAlpha monotonically worsen with increasing inside debt (i.e., greater managerial conservatism). The announcement price effects using the factor models are robust when we add various control variables that have been identified as being significant determinants of such effects. The announcement and post-announcement price effects using the five (or four) factor models also are robust when we measure price effects using the BHARs or PBHARs.

The first essay makes a number of contributions to the executive behavior, executive compensation and M&A literatures. First, we show that managerial conservatism is a plausible alternative explanation for explaining various acquisition choices and associated price effects. Second, we contribute to the ongoing and lively debate dealing with perceptions of a disconnect between executive compensation and firm performance. We contribute by examining the effects of the components of CEO and board compensations and the duration of such compensations (i.e., immediate or deferred). Third, we contribute to the literature that reports that older CEOs are associated with less risky firm investment policies (Serfling, 2014), that CEOs with shorter horizons are associated with more agency costs, lower firm valuation and higher levels of information risk (Antia, Pantzalis and Park, 2010), and that managerial political orientations (as proxied by Republican-supporting managers) are associated with conservative corporate policies (e.g., Hutton, Jiang and Kumar, 2014) and firm tax avoidance (Christensen, Dhaliwal, Boivie and Graffin, 2015). Fourth, we contribute to the literature on managerial hubris (overconfidence) where M&As are used to fulfil desires for large firm size (Jensen, 1986) or to build empires (Baumol, 1959; Mueller, 1969).

The second essay (**Chapter 3**) finds that managerial interest alignment with shareholders (debtholders) of acquirers, which is the focus of this essay, is positively related to the likelihood of using stock (cash) as the M&A payment method and is positively (negatively) related with M&A acquirer price effects. The essay has four major objectives. The first objective is to examine the effects of managerial interest alignment with its shareholders (*MIAwEQ*) and with its debtholders (*MIAwDBT*) that we introduce to the literature, informativeness of executive insider trading about their firm's value as captured by their abnormal net purchase ratio (*CANIPR*) that compliments the measure of (Akbulut, 2013), managerial conservatism measured by pension-related metrics (e.g., *InsDbt*) and corporate social responsibility ranking (*CSRcom*) on M&A method-of-payment choices and (post-) announcement price effects. The second objective is to assess the determinants of the announcement price effects when the price effects are after the removal of the equity issue effect associated with the stock method of payment for not only shareholders but also bondholders (Golubov, Petmezas and Travlos, 2016). The third objective is to use the two-stage regression model of Mitchell, Pulvino and Stafford (2004) with additional determinants of the price effects to examine the portion of the mean price effect attributable to arbitrage short selling and to use two covariance decomposition methodologies to

examine the proportional explanatory power of each determinant in the second-stage estimation. The fourth and final objective is to extend the literature by being the first to identify the determinants of managerial interest alignment with its shareholders and with its debtholders, informativeness of executive insider trading about their firm's value as captured by their abnormal net purchase ratio, managerial conservatism measured by one of the two pension-related metrics and corporate social responsibility ranking in a simultaneous five-equation model estimated using three stage least squares (3SLS).

Using Probit regressions, we observe that the likelihood that stock is chosen as the method of payment increases with greater managerial interest alignments with shareholders and decreases with greater managerial interest alignments with debtholders. The likelihood of cash (stock) being used as the method of target payment is higher with lower (higher) acquirer misvaluation (consistent with Ben-David, Drake and Roulstone, 2015), and is higher (lower) with higher managerial conservatism, proportion of institutional ownership, acquirer leverage, managerial relative incentive ratio, and volatility of returns. Only the choice of cash payment is related (positively) to a firm's CSR ranking.

When we single sort the pure stock price effects for acquirers by method of payment that is adjusted for the equity issue effect, we obtain a result similar to that of Golubov, Petmezas and Travlos (2016) that the mean price effect decreases substantially in magnitue for the acquirers using stock as the method of payment. To examine equity issue effects for bondholders, we first single sort the pure bond price effects for acquirers by method of payment that is adjusted for the equity issue effect. We find that the mean positive price effect decreases substantially in magnitue and becomes insignificant for the acquirers using stock as the method of payment, and that the pure price effects are significantly superior for the stock versus cash payment method for the announcement window and the three post-announcement windows. For all double sorts, we observe that both the announcement and post-announcement price effects for acquirers improve as the pre-announcement managerial interest alignment with its debtholders (shareholders) increases (decreases).

We continue by examining whether various factors identified in the literature can explain the pure price effects for acquirers for M&A announcements. As expected, pure price effects for acquirers are monotonically more positive (negative) for greater firm managerial interest alignments with shareholders (debtholders). We apply the two-stage regression model of

Mitchell, Pulvino and Stafford (2004) to gauge the impact of arbitrage short-selling on the pure stock price effects during the M&A announcement window. We find strong evidence for the importance of short selling in explaining the pure stock price effects for acquirers for M&A announcements, and for the explanatory power importance of managerial interest alignment with its shareholders and bondholders, and for acquirer misvaluation as perceived pre-announcement by the general market based on their short-selling behavior or the executives of the acquirer based on their trading behavior.

Among our many findings based on the simultaneous five-equation model, we find that: (i) pre- to post-M&A changes in managerial interest alignment with shareholders (debtholders) are negatively (positively) related with changes in managerial conservatism, and both are related with changes in CSR ranking; (ii) pre- to post-M&A changes in the cumulative abnormal net insider purchase ratio is positively associated with changes in CSR, managerial incentive, and managerial interest alignment with debtholders (only when the method of M&A payment is stock); (iii) the pre- to post-M&A changes in the CSR composite rankings are positively related to changes in the cumulative abnormal net insider purchase ratio, managerial conservatism measured by the pension-related metrics, managerial incentive, institutional ownership, managerial interest alignment with both its shareholders and bondholders, and residual analyst coverage; and (iv) the pre- to post-M&A changes in managerial conservatism are positively related to changes in compensation leverage, CSR ranking, managerial incentive, institutional ownership, and managerial interest alignment with debtholders. This essay makes a number of contributions to the literature on managerial interest alignment and managerial conservatism, informed investor trading, and corporate social responsibility (CSR).

The third essay (**Chapter 4**) reports the estimates for a four-equation system using system-GMM and 3SLS that addresses a more comprehensive set of possible endogeneity issues among four dependent variables (CSR, firm undervaluation, executive compensation, and firm governance). Our evidence indicates that a firm's future CSR ranking is positively related to firm undervaluation and negatively related to managerial conservatism. We find that the trading of managers reveals informed information about the "error-in-expectations" embedded in firm valuations.

To provide tests of the "errors-in-expectations" hypothesis for the undervaluation of firm CSR performance, we develop and use an undervaluation metric that is based on the findings of

various studies that insiders tend to be better informed about the true values of their firms, and such insider trades by managers are profitable. We provide evidence that the four dependent variables are dynamic and endogenous as are some of the control variables. As a result, we employ a dynamic system-GMM estimator to our panel data to quantify the dynamic and simultaneous relationships between these four variables. The inferences from the dynamic system-GMM estimations are then compared with those from 3SLS estimations of the four-equation system. We examine previously untested proxies for two of our dependent variables; namely, inside debt and compensation leverage as proxies for executive conservatism, and insider trade behavior for firm undervaluation.

The third essay contributes to the literature in six distinct ways. First, we test dynamic and simultaneous relations among CSR, firm undervaluation, executive compensation and corporate governance. Second, our evidence that firm undervaluation is positively associated with a firm's future CSR ranking provides new avenues of enquiry for both insider trading and firm misvaluation research. Third, we show that two metrics based on executive pension plans (i.e., inside debt and compensation leverage) have corporate effects that differ from those from firm leverage. Fourth, this study contributes to the corporate mispricing literature in that our insider trading based undervaluation metric identifies a unique mispricing component that is not captured by the commonly used mispricing measures in the literature. It also has significant explanatory power for explaining a firm's future CSR ranking, executive compensation and corporate governance. Fifth, this essay contributes to the literature by further emphasizing the need to examine the relations among independent and dependent variables and their relations with CSR rankings and to the need to use more sophisticated econometric techniques (such as system-GMM and 3SLS) to estimate simultaneous systems of equations to control for endogeneity and simultaneity. Sixth, this essay contributes to the literature on the asymmetric effects of various regressors.

CHAPTER TWO

ACQUISITION CHOICES AND PRICE EFFECTS FOR ACQUIRERS: ROLE OF MANAGERIAL CONSERVATISM

2.1. INTRODUCTION

The mergers and acquisitions (M&A) literature contains many papers addressing acquisition choices.[1] The search for *growth opportunities* (e.g. Servaes, 1991; Rousseau, 2009) as proxied by Tobin's Q or some other measure is given as a motive for acquisitions.[2] Acquirer misvaluation is one of the explanations for an acquirer's choice of stock versus cash as the method of payment.[3] While various studies find that the price effects for acquirers are poorer for the stock versus cash method of payment, [4] Golubov, Petmezas and Travlos (2016) find that the difference between the two is no longer significant when the estimates of the M&A price effects reflect the price effects associated with equity offerings when the M&A method of payment is stock.

Since acquisition choices and their price effects may be associated with different risks (e.g., Kim, 2014) and managerial risk tolerance, managerial conservatism is expected to play an important role in the choice of targets and payment methods, and the immediate and longer-term price effects associated with M&A announcements (Hirshleifer and Thakor, 1992; May, 1995; Milidonis and Stathopoulos, 2014). Indirect debt (present value of executive pension benefits divided by total firm assets) is one measure that is associated with conservative firm policies (e.g., Wei and Yermack, 2011) and with agency issues that destroy firm value (Eisdorfer, Giaccotto, and White, 2015). Whether indirect debt and another pension-related measure called compensation leverage (i.e., present value of executive pension benefits divided by total executive compensation) play a significant role in explaining acquisition choices and their price effects for acquirers remains untested.

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[1] We use the term M&As since the terms mergers and acquisitions are often used interchangeably in the literature (e.g. Mitchell, Pulvino, and Stafford, 2004; Boehmer and Zhang, 2008; Liu and Wu, 2014).

[2] Dybvig and Warachka (2015) criticize the use of Tobin's Q as a measure of firm performance, and suggest two new measures of operating efficiency.

[3] Examples include Shleifer and Vishny (2003), Rhodes-Kropf and Viswananthan (2004), Dong, Hirshleifer, Richardson, and Teoh (2006).

[4] Examples include Loughran and Vijh (1997); Rau and Vermaelen (1998); Mitchell, Pulvino, and Stafford (2004) for acquirers using stock as the method of payment due to M&A arbitrage price pressure; and Akbulut (2013) due to overvaluation.

Thus, the primary objective of this paper is to examine whether managerial conservatism, which is proxied primarily by the two managerial pension-related metrics, is (1) an important determinant of acquisition choices such as target risk level and method of payment; and (2) can account for differences in the announcement and post-announcement price effects of M&As on acquirers. Thus, this paper also addresses a topic identified for further research in Sundaram and Yermack (2007); namely, the effect of executive pension plans as a form of managerial compensation on managerial conservatism and firm behavior.

Our paper also differs from previous studies in a number of other ways. First, we examine a time period which captures the mandated changes in the disclosure of executive and director compensation in the aftermath of the passage of the Sarbanes–Oxley Act (SOX) of 2002 (including the mandated requirements under the Dodd-Frank Wall Street Reform). One such change is the amendments adopted by the SEC in 2006 to the disclosure requirements for "executive and director compensation, related party transactions, director independence and other corporate governance matters and security ownership of officers and directors" (SEC, 2006). Second, we not only examine announcement returns but we also examine post-announcements returns using benchmark models that are more robust and commonly used in current research. Third, with a less dated sample we capture the effects of the Global Financial Crisis, and thus, are better able to make a more timely contribution to the ongoing debate on the driving forces behind returns on and after M&A announcements and to the more general literature of corporate governance, director and executive compensation and firm performance. Fourth, we appear to be the first to use PBHAR (Pure Buy-and-Hold Abnormal Returns) as an alternative measure to account for issue price effects when examining the (post-) announcement price effects for acquirers using the stock method of payment.

Our results from both time-series and cross-sectional panel logistic regressions support the conclusion that firms with higher inside debt and compensation leverage are more likely to use cash versus stock as the method of payment over the next two years. Based on the logistic marginal effects of inside debt for year $t - 1$, the probability that cash will be the M&A method-of-payment is 4.8% higher (with one-unit increase) for the highest versus lowest inside debt quartile. We observe a monotonic increasing (decreasing) relation between the quartile assignments of pension-related metrics and the managerial acquisitiveness with cash (stock) as

the method of payment.[5] The logistic marginal effect of inside debt for the highest quartile is 4.0% lower with a one-unit increase than that for firms in the lowest quartile of inside debt when stock is the method of payment. The results are not weakened by the inclusion of a number of other control variables with statistical power such as the relative differences of the two pension plan metrics and debt-to-assets between the acquirer and the target, CEO age, hubris, political orientation, expected CEO tenure, announcement returns, stock price, market capitalization, and cash flow risk.

Without first adjusting for any equity issue effect, our CAR (Cumulative Abnormal Return) results for the announcement window [-1, 1] days based on the five-factor (Fama and French, 2015) and four-factor (Carhart, 1997) models confirm previous findings that acquirers using stock (cash) as the method of payment significantly underperform (outperform) their pricing benchmarks. With such an adjustment (Golubov, Petmezas and Travlos, 2016), we find that the PCAR for [-1, 1] for acquirers using stock are still negative but now are insignificant. For the three post-announcement windows, the (P)Alpha are insignificantly positive (significantly negative) for acquirers using cash (stock) as the method of payment. When we differentiate by method of payment and pension-related metric we observe that the PCAR and PAlpha monotonically worsen with increasing inside debt (i.e., greater managerial conservatism).[6]

The announcement price effects using the factor models are robust when we add various control variables that have been identified as being significant determinants of such effects. The announcement and post-announcement price effects using the five (or four) factor models also are robust when we measure price effects using the BHARs or PBHARs.

We make a number of contributions to the executive behavior, executive compensation and M&A literatures.

First, we show that managerial conservatism is a plausible alternative explanation for explaining various acquisition choices and associated price effects. The finding of improving

[5] We report results for both inside debt and compensation leverage quartiles in Table 4. For all the subsequent tests, our results using compensation leverage are unreported for brevity purposes as they are similar to those for inside debt. All of these results are available upon request.

[6] PAlpha where the P refers to pure are the estimated intercepts (commonly referred to as Jensen alphas) obtained when a four- or five-factor model, such as the Fama and French (2015) model, are estimated for post-announcement windows and then adjusted to account for the equity issue effect as detailed in Appendix B if the M&A method of payment is stock.

announcement and post-announcement price effects with higher CEO and board compensations is consistent with the notion that existing executive compensation practices appear to reward decision-making productivity. However, since announcement and post-announcement price effects improve with less deferred compensation (lower inside debt), this implies that the duration of the compensation package determining managerial conservatism is an important determinant of these price effects. [7]

Second, we contribute to the ongoing and lively debate dealing with perceptions of a disconnect between executive compensation and firm performance that has led to repeated calls for changes in corporate compensation structures including say on pay which is required under Section 951 of the Dodd-Frank Act of 2010. Among the studies that examine the association of M&A decisions with CEO or board compensations, Morck, Shleifer, and Vishny (1990) find that acquirers perform more poorly when their CEOs have small equity stakes. We contribute by examining the effects of the components of CEO and board compensations and the duration of such compensations (i.e., immediate or deferred).

Third, we contribute to the literature that reports that older CEOs are associated with less risky firm investment policies (Serfling, 2014), that CEOs with shorter horizons are associated with more agency costs, lower firm valuation and higher levels of information risk (Antia, Pantzalis and Park, 2010), and that managerial political orientations (as proxied by Republican-supporting managers) are associated with conservative corporate policies (e.g., Hutton, Jiang and Kumar, 2014) and firm tax avoidance (Christensen, Dhaliwal, Boivie and Graffin, 2015). In contrast to the significant effect of CEO tenure, we find that neither managerial political orientation nor CEO age are significant determinants of the announcement price effects for acquirers.

Fourth, we contribute to the literature on managerial hubris (overconfidence) where M&As are used to fulfil desires for large firm size (Jensen, 1986) or to build empires (Baumol, 1959; Mueller, 1969). Consistent with the findings of Roll (1986), we find that the announcement price effects for acquirers are significantly and negatively related with hubris (overconfidence) for both stock and cash M&A methods of payment. Our finding of a significantly negative relation

[7] Our findings appear to be inconsistent with the conjecture that inside debt in practice is optimal (e.g., Edmans and Liu, 2010; Sundaram and Yermack, 2007; Anantharaman, Fang, and Gong, 2010; Campbell, Galpin, and Johnson, 2016).

between managerial overconfidence and announcement price effects is consistent with the findings of Goel and Thakor (2008) that firm value declines beyond a certain point with increasing managerial overconfidence. Furthermore, by controlling for the convexity of managerial compensation (i.e., proportion of compensation-based compensation) by including inside debt or alternatively compensation leverage, our finding is consistent with a prediction of the theoretical model of Gervais, Heaton and Odean (2011) that more highly convex managerial compensation is required to motivate increasingly overconfident managers to undertake valuable risky projects.

The remainder of the paper is organized as follows: Section 2 develops the research hypotheses. Section 3 describes the sample and data. Section 4 reports and analyses the empirical findings that examine the impact of managerial conservatism on the acquisition choices of acquirers and the price effects of their acquisitions. Section 5 concludes the paper.

2.2. RESEARCH HYPOTHESES

Hirshleifer and Thakor (1992) find that the incentive for managers to build their reputations results in conservatism and distorts the investment policies of firms in favor of relatively safe projects. May (1995) claims that managers consider personal risk when making decisions that affect firm risk. Milidonis and Stathopoulos (2014) find that risk-averse CEOs reduce firm risk, even in the presence of strong risk-taking incentives. Kim (2014) finds that acquirers with conservative CEOs are more likely to use cash as the method of payment for M&As. Thus, our first two testable hypotheses are:

H_0^1: Acquirers with more conservative managers are more likely to acquire less risky (e.g., public) firms.[8]

H_0^2: Acquirers with more conservative managers are more likely to choose cash as the method of payment.

Low (2006) finds that the decrease in firm risk is concentrated among firms with low managerial equity-based incentives. Theory predicts that CEOs holding large amounts of inside debt (i.e., present value of executive pensions divided by total assets) will display lower levels of risk-seeking behavior (Jensen and Meckling, 1976). In general, the literature suggests that

[8] Pension-related compensation is examined for CEOs and Total or cash compensation is examined for the CEOs and directors throughout this paper to maintain consistency with most of the literature.

managers who are heavily compensated with debt-based instruments, such as pensions, tend to manage the firm more conservatively because they are more exposed to default risk (Sundaram and Yermack, 2007). Further, Cassell, Huang, Sanchez, and Stuart (2012) report that the inside debt holdings of CEOs expose the CEOs to default risk similar to that faced by outside creditors, since such claims are generally unsecured and unfunded firm liabilities. Cassell et al. (2012) provide evidence that CEOs with large inside debt holdings manage the firm more conservatively. This leads to the expectation that the choice of cash as the method of payment by acquirers depends on whether the CEO's compensation is more immediate (such as cash compensation) or more distant (such as pension fund entitlements). Thus, our third hypothesis is:

H_0^3: The relative importance of pension obligations to the firm (i.e., inside debt) and pension compensation to firm executives (i.e., compensation leverage) is positively related to the choice of cash as the method of payment by acquirers.

Dybvig and Warachka (2015) provide compelling evidence that the relationship between firm performance and Tobin's Q is confounded by endogeneity. Managerial inefficiency due to conservative underinvestment lowers firm performance but increases Tobin's Q. Although Eisdorfer, Giaccotto, and White (2015) find that the pension plans of top executives are associated with agency problems and negatively affect future firm performances, some scholars find evidence that inside debt could be optimal and efficient.[9] Hegde and Mishra (2017) demonstrate that value is created when risk takers acquire risk-avoiding target firms, but this value is destroyed when bidders with a conservative investment policy acquire risk-taking target firms. We expect announcement and post-announcement returns of acquirers who use different methods of payment will be impacted by the managerial conservatism associated with managerial pension-related compensation. In particular, we expect that announcement and post-announcement returns worsen with an increasing reliance on pension plan compensation. Thus, our fourth hypothesis is:

H_0^4: The (post-) announcement CAR (and BHAR) adjusted for the equity issue effect for both cash and stock financed M&As deteriorate as the ratio of pension plan obligations to total assets increases.

[9] See e.g. Edmans and Liu (2010), Sundaram and Yermack (2007), Anantharaman, Fang, and Gong (2010), Campbell, Galpin, and Johnson (2016).

Our conjecture is based on the findings that managerial and director compensations can be related to future firm performance.[10] The productivity (or optimal contracting) view argues that pay effectively rewards scarce decision-maker (executive or director) talent and productivity since pay is the result of efficient bargaining between shareholders and managers that aims to best mitigate the principal-agent problem.[11] In contrast, the entrenchment (or managerial power) view argues that current pay practices are inefficient wealth transfers from shareholders to decision makers due to the discretion that the latter exercise over setting their own pay (Bebchuk, Fried, and Walker, 2002; Bebchuk and Fried, 2003). Several studies report that board effectiveness is adversely affected by informational asymmetry problems between management and the board, and by board cultures that discourage constructive criticism (e.g., Jensen, 1993). Other studies find that higher managerial compensation levels are associated with interlocking boards of directors (Hallock, 1997), and that CEO compensation is related to a CEO's risk-aversion and time preference (Graham, Harvey and Puri, 2013). Among the studies that examine the relation between executive compensation and firm performance (e.g., Jensen and Murphy, 1990; Core, Guay and Larcker, 2003), excess compensation of directors and/or CEOs generally is found to be related to poor future firm stock market performance (Brick, Palmon, and Wald, 2006; Cooper, Gulen and Rau, 2014).[12] In contrast, Nguyen and Nielsen (2014) find that the executive pay-contribution relationship is stronger for higher levels of compensation and that the labor market is effective in sorting executive pay with executive performance. On the other hand, total compensation when more immediate is also expected to have a different impact on acquirer returns than when it is more distant (or when pension fund entitlements are more dominant). Thus, our fifth hypothesis is:

H_0^5: The (post-) announcement CAR (and BHAR) adjusted for the equity issue effect for both cash and stock financed M&As improve with increasing total executive compensation.

Mitchell, Pulvino and Stafford (2004) document that the announcement returns of stock deals is positive once the price pressure from M&A arbitrageurs is controlled for. Savor and Lu (2009) document that stock acquirers do not underperform a well-chosen control group (i.e., bidders that

[10] See e.g. Murphy (1999), Brick, Palmon, and Wald (2006), and Agrawal and Chadha (2006).
[11] This view began with Lucas (1978) and has been extended by Tervio (2008), Gabaix and Landier (2008), amongst others. See Fernandes, Ferreira, Matos, and Murphy (2013) for an excellent discussion on the evolution of what we know about executive compensation.
[12] Cooper, Gulen and Rau (2014) report largely similar results when they eliminate firms making acquisitions during the year prior to portfolio formation.

subsequently cancel announced stock transactions for some exogenous reason). Officer, Poulsen and Stegemoller (2009) report significantly higher acquirer returns for stock-swap acquisitions of difficult-to-value targets. Golubov, Petmezas and Travlos (2016) document that once the equity issue effect is controlled for, the value effect of stock-deals and cash-deals are not statistically different. Nevertheless, we expect superior (post-) announcement price effects for acquirers using cash versus those using stock as the method of payment when we control for relative managerial conservatism and the equity issue effect. Thus, our sixth hypothesis is:

H_0^6: The (post-) announcement price effects are superior for acquirers using cash versus those using stock as the method of payment after controlling for relative managerial conservatism and the equity issue effect.

2.3. SAMPLE AND DATA

We collect our initial sample of mergers and acquisitions (M&As) announced from 1992 to 2014 from the Thomson Securities Data Company (SDC) database. M&As retained for further analysis are those for deal values of at least $1 million where the acquirer seeks to acquire more than 50% of the shares of the target to own 100% of the target's equity at the completion of the transaction, were completed within 1000 days to avoid look-ahead bias, and were publicly traded domestic acquirers with return data available in the CRSP data base and share prices exceeding $1 on the day before the announcement date. We also removed acquirers that are ADRs, REITs, Closed-end funds, and otherwise not standard common equity as in Diether, Lee and Werner (2009). We hand-collect additional information on the pension plans of all firm executives (typically five per firm-year) and on the M&As such as withdrawn dates, methods of payment, and closing dates.[13]

We obtain accounting data from 1991 to 2014 from the COMPUSTAT Annual File, market data (e.g. shares outstanding and returns) from the Center for Research in Security Prices (CRSP), institutional holdings from Thomson Financial (based on 13F filings), and CEO age and compensation data for senior managers and directors from Standard and Poor's Execucomp if available for the year prior to the M&A announcement. For some of our analyses, we use the initial sample of firms in Compustat and CRSP. After dropping some M&As with acquirers

[13] The size of our sample is comparable to other studies that use hand-collected data on M&A deals (e.g., Boone and Mulherin, 2007, 2008; Liu and Wu, 2014). As previously found by Liu and Wu (2014), we identify some incorrect method of payment entries in the M&A data available from the Thomson Security Data Company database.

whose data are missing in either COMPUSTAT or Execucomp, our final sample has 11,417 M&A announcements involving 6598 unique acquirers. The method of payment is stock for 2344 M&As, cash for 5645 M&As, and mixed stock and cash for 3428 M&As.

[Insert Table 2.1 here]

Panel A of Table 2.1 presents summary statistics for all of our variables measured one year prior to the M&A announcements for the firm-year observations for our initial sample. Panel B presents similar statistics for the 11,417 M&A announcements (involving 6598 unique firms and 8189 unique acquirer-year observations) in our final sample. Acquirers in our final sample have average inside debt and compensation leverage of 0.624 and 0.093, respectively, after both have been multiplied by 1000 for expositional purposes throughout the paper.[14] The acquirers have a mean director total compensation of $110,564, a mean CEO total compensation of $7,166,570, a mean institutional ownership fraction of 0.510, a mean market capitalization of $3.011 billion, a mean annual share turnover of 1.564, and a mean price of about $26. We find that acquirers generally have higher mean CEO and director total compensations than those of the initial sample (see Panel A of Table 2.1). The average acquirer is larger in size with higher sales, higher share turnover and share price, more positive past returns, and higher institutional ownership and market capitalization. Benchmarked against the sample that also includes nonacquirers, the average acquirer has a lower cash flow risk and debt/asset ratio (0.040 and 0.241, respectively, compared to 0.061 and 0.297 for the benchmark sample). Panel C reports summary statistics for the sample of SEO firms that are available from the Thompson Financial SDC New Issues Database that are used when estimating the equity issue effect associated with an M&A acquirer using the stock method of payment.

[Insert Table 2.2 here]

Panels A and B of Table 2.2 report correlations between the director and executive compensation variables for the initial and final sample of acquirers, respectively, for which such data are available. All correlations are consistent with previous studies. Compensation leverage

[14] The methods for computing inside debt and compensation leverage are described in Appendix A.

and inside debt are correlated at 0.603 in the initial sample and at 0.576 in the final sample. Nevertheless, any multicollinearity problem among variables is generally slight, as the values of the variance inflation factors (VIFs) are low enough to be very acceptable.[15]

2.4. EMPIRICAL RESULTS

Unless stated otherwise, the presence of an endogeneity problem with the variables used in the regressions in this section of the paper is rejected using a Hausman-Wu test. We report results using the characteristics of the CEO, and generally only report results that are different when we replace CEO characteristics with those of the top five executives.

2.4.1 Managerial Conservatism, Target Riskiness and Debt Payment

Since our concern is with the effect of managerial conservatism, we begin by examining the determinants of managerial conservatism and how managerial conservatism changes post-acquisition for single and multiple acquirers (i.e., acquirers who make more than one acquisition during the examined period). For this purpose, we compute the change in compensation leverage as $\Delta CompLev = CompLev_{post} - CompLev_{pre}$. We compute the change in inside debt in three ways; namely, $\Delta InsDebt1 = [PVB_{post} / TA_{post}] - [PVB_{pre} / TA_{pre}]$; $\Delta InsDebt2 = [PVB_{post} - PVB_{pre}] / TA_{pre}$; and $\Delta InsDebt3 = [PVB_{post} / (TA_{post} - TA_{acquired})] - [PVB_{pre} / TA_{pre}]$, where $\Delta InsDebt2$ uses the same total assets pre- and post-announcement, and $\Delta InsDebt3$ removes the total assets of the acquired when computing the inside debt post-announcement. The summary statistics for the full sample, the subsample of acquirers and the subsample of non-acquirers are presented in panels A, B and C, respectively, of Table 2.3. We observe quite different results for the two subsamples. All the means and medians are negative and significant for the acquirers. In contrast, all the means and medians are positive insignificant. The magnitudes of these averages, however, are quite small.

[Insert Table 2.3 here]

To identify the determinants of the pre-to-post announcement changes in these proxies for managerial conservatism, we run a series of cross-sectional regressions for each acquisition date

[15] In all the regressions throughout this paper, the rule of thumb used to check for troublesome multicollinearity is that the variance inflation factor (VIF) is ten or greater. However, whenever the VIF exceeds four and is below ten, other factors that affect the stability of the estimates are examined to ensure the consistency of the estimations. See, e.g., Belsley (1984) and O'Brien (2007) for more details.

and report their time-series averages in Table 2.4. Based on these results, we observe the relations for single acquirers, multiple acquirers and non-acquirers with their high and low managerial conservatism terciles where the terciles assignments are based on either the InsDebt or CompLev values for the pre-announcement period. We observe that the change in managerial conservatism generally is negative and significantly related with both single and multiple acquirers in both the low and high terciles of pre-announcement managerial conservatism. We also observe that the magnitude and significance of the mean estimated coefficients is almost always higher for single versus multiple acquirers. A number of other variable have a significant effect on managerial conservatism for all eight regression tabulations in Table 2.4. The effects are significantly negative for cash mergers, low GDP growth (LGG), a Republican Party orientation of managers (MGR) and policy uncertainty (PUI) and significantly positive for equity market capitalization (CAP), more than 67% of CEO's stock options in the money (Hubris), mispricing measure (MP-FM) and return run up (Return).

[Insert Table 2.4 here]

We continue with a test of our first hypothesis (H_0^1) by examining if more conservative managers are more likely to acquire less risky targets.[16] We use five measures of target riskiness as dependent variables in Table 2.5. The first is a dummy variable equal to 1 for targets that are public (0 otherwise) in columns 1 to 3 of Table 2.5 since public targets are considered to be less risky than private ones (Kim, 2014).[17] The next three dependent variables are the relative differences between the acquirer and the target for each of three metrics in columns 4 to 6 to measure the relative riskiness of the target compared to the acquirer. The choice of these metrics is based on the conjecture that more conservative acquirers will choose targets with values of debt-to-assets or the two pension-related metrics that are lower compared to their own values. The final dependent variable is the debt payment ratio based on the conjecture that acquirer conservatism leads to a higher proportion of the use of debt to finance the method of M&A payment.

[16] In our many untabulated specifications, we include two or three of unreported variables (e.g., CEO CComp, Director CComp, Adv/Assets, Inv/Assets, CEO Chair, CEO Gender, CEO Tenure, Ins Ownership, %Internal, Internal CEO, Price, R&D/Assets, ROA, and Volatility) each time to examine the robustness of our results when we exhibit less concern about multicollinearity. For brevity purposes, these results are not reported unless the inclusion of these variables materially changed our reported findings.

[17] The sample in Table 5 includes all announcements with available data on firm governance, CEO and other firm characteristics.

[Insert Table 2.5 here]

Inside debt and compensation leverage are included as our primary explanatory variables. Their values for each year for this and subsequent sections of this paper are sorted into quartiles (I lowest and IV highest) since their effect on managerial conservatism may not be monotonic. As discussed in Section 1, the literature also reports that manager conservatism is positively associated with the age of a manager, political orientation (Republican or Democrat), expected CEO tenure, and debt-to-assets; and negatively associated with manager hubris. A number of previous studies argue that M&A activities are associated with firm misvaluation (Rhodes-Kropf & Viswanathan, 2004; Mitchell, Pulvino & Stafford, 2004; Akbulut, 2013). We include these explanatory variables and CEO and board compensation and various other firm, CEO, director and governance characteristics as control variables (see Appendix 2.A for their detailed definitions).[18]

The results reported in columns 1 to 3 in Table 2.5 are based on logistic regressions and those in columns 4 to 7 on cross-sectional regressions. Statistical significance is based on standard errors that are clustered conservatively at the industry level since those clustered by industry and year produce lower standard errors. We now discuss the most notable results in Table 2.3. We observe similar effects of various independent variables and controls on the propensity of acquirers to acquire a less risky target and to finance the M&A cash payment using debt. To illustrate, we observe that acquirers with higher levels of inside debt (and similarly for compensation leverage) are more likely to target a public firm (columns 1 to 3), to prefer a target with a greater relative difference in the debt-to-assets ratio between themselves and the target (column 4), to prefer a target with a greater relative difference in the two pension-related metrics between themselves and the target (columns 5 and 6), and to choose to finance the M&A transaction by using more debt (column 7).

As expected, the results reveal a monotonically increasing positive relation for all model specifications between each of the five dependent variables and the quartile assignments of the pension-related metrics as proxies for managerial conservatism. Consistent with the expected impact, we find an increased likelihood of acquirers targeting a public firm or a firm with relatively lower debt-to-assets and/or pension-related metrics with increased managerial

[18] Many of these control variables are used by, e.g., Brick, Palmon and Wald (2006).

conservatism. The magnitude of the effect is large and significant, as the difference in the coefficients between the first and the fourth quartile for the pension-related metrics is statistically significant at conventional levels.

When the dependent variable is the public target dummy variable and quartiles of the two pension-related variables and CEO age interacted with each pension-related metric are included, we find that the Pseudo R^2 becomes 0.133 in column 2 compared to 0.059 in column 1 of Table 2.5, the significances of the estimated coefficients of the interacted CEO age become even more significant, and all the estimated coefficients for the quartiles of the pension-related metrics are significantly positive. Furthermore, the estimated coefficients for past return, cash flow risk, and debt-to-assets are generally lower in magnitude and the coefficients for the announcement returns are higher in magnitude.[19] Thus, the effects of the pension-related metrics on the choice of a public target are not subsumed by the inclusion of the other firm and governance variables.

With regard to the other control variables, the likelihood that the acquirer will target a public firm or a firm with lower relative values of debt-to-assets and the pension-related metrics is significantly higher for firms with an older CEO, Republican Party orientation, higher announcement returns, higher cash flow risk, and longer expected CEO tenure; and significantly lower for a hubris CEO, poor macroeconomic conditions, higher mispricing, higher policy uncertainty,[20] higher past average return, and higher market capitalization. These findings are consistent with previous evidence that Republican-supporting managers maintain more conservative corporate policies (Hutton, Jiang and Kumar, 2014; Christensen, Dhaliwal, Boivie and Graffin, 2015), that older CEOs adopt less risky policies (Serfling, 2014), that a shorter CEO tenure horizon is associated with a higher level of risk taking (Antia, Pantzalis and Park, 2010), that firms hold liquid assets when financing costs are high during poor macroeconomic conditions (Erel, Jang, Minton, and Weisbach, 2017), and that hubris managers are less risk averse due to their overconfidence (Baumol, 1959; Mueller, 1969; Roll, 1986). More importantly, we find that when firm mispricing (MP-HP) is included that hubris (overconfidence) becomes insignificant or marginally significant for two dependent variables, suggesting that the former

[19] In our untabulated results, we obtain similar changes for the magnitudes of the coefficients and the Pseudo R^2 when we include the same independent variables except for the two pension-related metrics.
[20] This finding appears to support the finding by Gulen and Ion (2016) that policy uncertainty depresses corporate investment.

generally captures most of the effects of the latter.[21] A plausible explanation is that a firm's CEO is more likely to exhibit hubris (overconfidence) during periods of higher firm MP-HP. Based on untabulated results, the likelihood that the acquirer will target a firm of a lower relative debt-to-assets ratio or a lower pension-related metric level is significantly and positive related with the interactions of the pension-related metrics with CEO age. Thus, the likelihood of acquirer risk taking is lower with greater managerial conservatism as captured by the interaction of CEO age with the pension-related metrics. Finally, our conclusions remain unchanged when data for the top five executives replace that for the CEO (i.e., pension-related metrics, manager age, political orientation and expected tenure).

To summarize, our findings in this section support the first hypothesis (H_0^1) and the third hypothesis (H_0^3) in that acquirers with more conservative managers and those using cash as the method of payment are more likely to acquire less risky firms, i.e., public firms, firms of lower relative debt-to-assets ratios or lower relative pension-related metrics, and are more likely to choose debt to fund cash M&A payment. In addition, we find that more immediate compensation, i.e., CEO (and director) total compensation and cash compensation, is not associated with the acquirer's propensity to consider riskiness when choosing a target. These findings are consistent with our expectation that managerial conservatism and risk tolerance in M&A activities depend on whether the compensation is more distant (such as pension fund entitlements) or more immediate (such as cash compensation). In addition, managers exhibit more hubris when their firms are more overvalued as indicated by the relations involving the mispricing measure MP-HP.

2.4.2 Likelihood of Choosing Each Method of Payment with Higher Pension-related Metrics

In this section, we conduct logistic regression tests of our second and third hypotheses to determine if an acquirer firm is more likely to use cash (stock) as the method of payment with increases in the levels of its pension-related metrics. Thus, the dependent variable is set to 1 if a firm makes at least 1 M&A bid with cash (or alternatively stock) payment in year *t*, and 0

[21] Our untabulated results for all seven model specifications presented in Table 5 show that hubris mostly loses significance when our measure of mispricing (MP-HP) is included. When MP-HP is excluded from the regression when the dependent variables are Debt/Assets-Rel, InsDebt-Rel, and CompLev-Rel, the estimated coefficients for Hubris are -3.71, -6.03, and -17.42, respectively, and are all significant at the 1% level. When DebtP is the dependent variable and MP-HP is included, the estimated coefficient of Hubris is an insignificant -1.79.

otherwise. We estimate logistic regressions first using the time series of M&A announcements and then using a cross-sectional analysis.

2.4.2.1 Time-series analysis

Panel A of Table 2.6 reports the logistic regression results separately with explanatory variables measured at year *t*–1 and at year *t*–2 relative to the M&A announcement year *t* for all firms with available governance data even if they never made an M&A bid in year *t.* Once again, we observe a monotonically increasing positive relation for all model specifications between the quartile assignments of the pension-related metrics and managerial acquisitiveness using cash payment, which suggests that firms with more conservative managers are also more likely to choose cash as the method of payment, in support of H_0^2. The differences in the estimated coefficients between the first and the fourth quartiles for inside debt and compensation leverage are statistically significant at the 5% or better level for both firm years. The monotonically positive relations between the dependent variable and both pension-related metric quartile levels are visually illustrated in Panel A of Figure 2.1. The likelihood of choosing cash payment changes by 4.8% [i.e., exp(0.04716) -1] and 9.8% [i.e., exp(0.09353) -1] based on the estimated coefficients for the differences in the coefficients between the highest and lowest quartiles for a one-unit increase in inside debt and compensation leverage, respectively, for year t–1 reported in column (2) of Panel A of Table 2.6. We obtain support for our third hypothesis (H_0^3) based on the significantly positive relationship between the likelihood of choosing cash as the method of payment and the debt-to-assets ratio.

[Insert Table 2.6 and Figure 2.1 here]

We find that many of the other independent variables are similarly associated in terms of signs with the acquirer's choice of cash payment. In particular, the likelihood of cash payment is higher for acquirers in periods with higher relative debt-to-total assets, higher pension-related metrics, higher debt-to-assets, older CEOs, Republican Party orientation, single acquirers, and longer expected CEO tenure; and significantly lower for higher cash flow risk, higher past average returns, hubris CEO, poor macroeconomic conditions, multiple acquirers, higher policy uncertainty, higher firm mispricing (MP-HP) which tends to subsume the effect of CEO Hubris when both are included, higher announcement returns, and larger firm size. Interaction of CEO age with the pension-related metrics leads to a greater effect of managerial conservatism on

choice of cash as the method of payment. Interestingly, while cash flow risk positively affects the likelihood of an acquirer choosing a less risky firm (Table 2.5), it negatively affects the acquirer's choice of cash as the method of payment.

Panel B of Table 2.6 reports results on whether an acquirer using stock as the method of payment is significantly related to the quartile level of the pension-related metrics. Previous studies find negative post-announcement price pressure for M&As using stock as the method of payment.[22] We observe a monotonic decrease in the likelihood with an increase in the quartile level of the pension-related metrics, as is visually illustrated in Panel B of Figure 2.1. The likelihood of choosing stock payment changes by -4.0% [i.e., exp(-0.04128) -1] and -13.2% [i.e., exp(-0.14199) -1] based on the estimated coefficients for the differences in the coefficients between the highest and lowest quartiles for a one-unit increase of inside debt and compensation leverage, respectively, for year t–1 reported in column (2) of Panel B of Table 2.6. With regard to the control variables, the likelihood that stock will be the method of M&A payment is significantly higher with poor macroeconomic conditions, multiple acquirers, higher policy uncertainty,[23] higher Q, higher sales, higher stock return, higher MP-HP, and hubris manager,[24] and significantly lower for firms with higher debt/asset ratio, higher announcement return, older CEO, single acquirers, and Republican Party orientation. Although the interaction of CEO age with the pension-related metric is significantly and negatively related with the likelihood that the acquirer will choose stock as the method of payment, we find that the relative differences in debt-to-assets, inside debt, and compensation leverage between the acquirer and target, and expected CEO tenure are all not significantly associated with the likelihood of the acquirer choosing stock as the method of payment.

A firm's Q and sales were not associated significantly in the cross-sectional regressions with the likelihood of an acquirer targeting a less risky firm in a previous section and in the time-series regressions for the choice of cash as the payment method in this section. However, both

[22] Examples include Mitchell, Pulvino, and Stafford (2004), Loughran and Vijh (1997), Rau and Vermaelen (1998), and Akbulut (2013).

[23] This finding appears to be consistent with Nguyen and Phan (2017) who find that policy uncertainty motivates acquirers to use stock as the method of payment, and with Baker, Bloom and Davis (2016) who find that policy uncertainty is associated with greater stock price volatility and reduced investment.

[24] Our findings are mostly consistent with previous studies that use the same variables. For example, Martin (1996) finds that the likelihood of a M&A using stock as the payment method increases with higher pre-acquisition market cap, stock returns and growth opportunities, and decreases with higher cash holdings, block and institutional holdings.

regressors are positively associated with an acquirer's choice of stock as the method of payment in the time-series tests. In addition, the acquirer's likelihood of choosing cash (stock) as the method of payment is significantly affected negatively (not significantly affected) by firm size.

Thus, the evidence is consistent with hypotheses H_0^2 in that the probability of using cash (stock) as the M&A payment method is higher (lower) during periods with higher quartile levels of pension-related metrics. These probabilities are not associated with CEO total compensation. These findings are consistent with our expectation that the managerial acquisitiveness involving cash (stock) as the method of payment depends on whether the compensation is more distant (such as pension fund entitlements) or more immediate (such as cash compensation).

2.4.2.2 Cross-sectional analysis

The results from the time-series logistic regressions reported in the previous section indicate that firms are more likely to use the cash method of payment if they have higher levels of the pension-related metrics. In this section, we test if these results are robust using cross-sectional logistic regressions. Table 2.7 reports the cross-sectional results for the initial sample when the dependent variable is equal to 1 if the method of payment is 100% cash and 0 otherwise. As in previous tables to maintain some brevity in presentation, the estimated coefficients for some independent variables are not reported. Consistent with the time-series logistic regression results, acquirers in quartiles with higher pension-related metrics use cash more often as the method of payment (columns 2, 4 and 5). This effect is generally more pronounced in the cross-section as the difference in the coefficients for the two extreme pension-related quartiles is larger than that from the time-series tests. The likelihood of choosing cash payment changes by 4.5% [i.e., exp(0.04379) -1] and 16.7% [i.e., exp(0.15443) -1] based on the estimated coefficients for the differences in the coefficients between the highest and lowest quartiles for a one-unit increase of inside debt and compensation leverage, respectively, for year t–1 reported in column (2) of Table 2.7. The likelihood of choosing cash payment changes by 4.6% [i.e., exp(0.04531) -1] and 14.9% [i.e., exp(0.13911) -1] based on the estimated coefficients for the differences in the coefficients between the highest and lowest quartiles for inside debt and compensation leverage, respectively, for year t–2 reported in column (4) of Table 2.7.

[Insert Table 2.7 here]

2.4.2.3 Summary

The results from the logistic regression estimations using the time-series (or cross-section) of M&A announcements are consistent with our second and third hypotheses (H_0^2 and H_0^3) using the quartiles of the two pension-related metrics. These results find that the quartile levels of the pension-related metrics are positively (negatively) and significantly related to the choice of cash (stock) as the method of payment by acquirers, and that acquirers in higher quartiles of the pension-related metrics are more (less) likely to choose cash (stock) as the method of payment.[25] The results are robust to the inclusion of a number of firm and governance variables. Although our findings do not exclude the possibility that decision-maker "excess" pension plans could also be associated with firm overvaluation and future poor performance, our results are strongly consistent with the inference that the pension plans of decision-makers (e.g., CEOs) contain information about the managerial choice of method of payment for future M&As.

2.4.3 (Post-) announcement M&A Returns Differentiated by Method of Payment

In this section, we first examine the CAR without and with an adjustment for the equity issue effect for the M&A announcement window [-1, +1] differentiated by the method of payment (i.e., stock, mixed, cash, and long stock & short cash) reported in the top rows of Panel A and B of Table 2.8. These CARs are estimated in a second step using the estimated parameters of the five-factor Fama-French (2015) model in the first step (greater details are provided in Appendix 2.B). [26] Our results for the announcement window are consistent with those reported in the literature of significantly negative and positive average CAR using stock and cash as the method of payment, respectively, when no adjustment is made for the equity issue announcement effect. Consistent with the findings of Golubov, Petmezas and Travlos (2016), the average CAR for [-1, +1] for M&As using stock as the method of payment that are a significantly -281.12 bps in Panel A become an insignificant -18.71 bps in Panel B for PCAR which accounts for the equity issue announcement effect. However, this is significantly lower by 34.73 bps than the significant mean of 16.02 bps for M&As using cash as the method of payment which does not need to account for the equity issue effect. More notably, these results are somewhat different using the CAR from the Carhart (1997) four-factor model. As tabulated in Panel B of Online Table O.3, the average PCAR for [-1, +1] for M&As using stock as the method of payment which accounts for the

[25] These conclusions are qualitatively unchanged using Probit regressions, which are available on request.
[26] The announcement and post-announcement CARs from the four-factor model of Carhart (1997) tabulated in Online Table O.3 are not materially different.

equity issue announcement effect is a significant -19.97 bps and is significantly lower by 37.27 bps than the significant mean PCAR of 17.31 bps for M&As using cash as the method of payment that does not need to account for the equity issue effect.[27]

[Insert Table 2.8 here]

We now examine the results for the three post-announcement periods. Here we examine the post-announcement Alpha and PAlpha of the time-series of equally-weighted portfolios of acquirers differentiated on the method of payment (i.e., stock, mixed, cash, and long stock & short cash) that are formed in calendar time. Each monthly portfolio in the time series, which consists of a minimum of five firms that made acquisitions in the previous month, remains unchanged until the last day in the evaluation window as in Mitchell and Stafford (2000).[28] The (P)Alpha of each of these static, equally-weighted portfolios are estimated in-sample using the Fama-French five-factor model over subsequent windows of [2, 64], [2, 124] and [2, 250] days. Based on a comparison of the PAlpha in Panel B with the Alpha in Panel A of Table 2.8, we observe that their estimates for the three post-announcement windows when stock is the method of payment are diminished in magnitude in Panel B but remain significantly negative at the 0.05 level or better when they reflect the equity issue effect. All of the post-announcement Alpha in Panel A and PAlpha in Panel B are statistically negative. The average Alpha and PAlpha in Panel A and B, respectively, for the post-announcement windows for M&As using cash as the method of payment are positive but insignificant. They are significantly better than those for their M&A counterparts using stock as the method of payment for all post announcement windows.

2.4.4 (Post-) announcement PCAR and PAlpha for Acquirers Doubled Sorted by Method of Payment and Each Pension-related Metric

In this section, we examine the announcement PCAR and post-announcement PAlpha for acquirers doubled sorted by method of payment and pension-related metric type. The results reported in Table 2.9 and depicted in Figure 2.2 from the five-factor model of Fama and French

[27] The latter is likely to be overstated if the acquirer issues debt and/or equity to fund a cash acquisition. We also show in Online Table O.4 that the estimates of the equity issue effect for both the five- and four-factor models are considerably larger in magnitude using the linear prediction method, and that they have the largest magnitudes among the propensity scoring based estimates using 1 to 1 matching.

[28] More details about this methodology are found in Andrade, Mitchell, and Stafford (2001) and Mitchell and Stafford (2000).

(2015) are not materially different from those for the four-factor model of Carhart (1997) tabulated in Online Table O.5 and depicted in Figure 2.2. For interpretative purposes, it is important to remember that managerial conservatism increases with an increasing quartile level for inside debt and decreases with an increasing quartile level for total compensation. Holding the method of payment and the window constant, the results are consistent with our fourth and fifth hypotheses. The mean PCAR and PAlpha reported in Panels A and B deteriorate monotonically as inside debt moves from quartile I to quartile IV (i.e., towards higher managerial conservatism), and in all comparisons the differences between these two quartiles is significant. The only mean that is positive (and significant) for all quartiles is the PCAR for the [-1, 1] window for M&As using cash as the method of payment, and all the other means are significantly negative in quartile IV. As expected, the means reported in Panels D and E improve monotonically as total compensation moves from quartile I to quartile IV (i.e., towards lower managerial conservatism), and in all comparisons the differences between these two quartiles is significant. The only mean reported in Panels D and E that is positive (and significant) for all quartiles is for the [-1, 1] window for M&As using cash as the method of payment, all the other reported means are significantly negative in quartile I, and all the means are significantly positive in quartile IV.

[Insert Table 2.9 and Figure 2.2 here]

As a test of the sixth hypothesis, we compare corresponding cells in Panel A with those in Panel B and those in Panel D with those in Panel E of Table 2.9 with the exception of those cells in the column headed by I-IV. In all cases we observe that the PCAR for the [-1, 1] window and the PAlpha for the other three windows for acquirers using cash as the method of payment are superior to those using stock as the method of payment. Thus, we still observe a material difference by M&A method of payment even when we carefully control for the equity issue effect and relative managerial conservatism.

2.4.5 Results for Regressions between Announcement PCAR and Managerial Conservatism for M&A Acquirers

The double-sorted results reported in the previous section in Table 2.9 provided some initial evidence that the PCAR (i.e., CAR after adjusted for the equity issue effect) for window [-1, 1] for inside debt quartile I (lowest quartile of managerial conservatism) are significantly positive

and negative for acquirers using cash and stock method of payment, respectively; and that the PCAR monotonically deteriorate so that the differences between inside debt quartile I and quartile IV (the lowest and highest quartiles of managerial conservatism, respectively) are significantly positive. This result implies that managerial conservatism has similar effects on the PCARs for window [-1, 1] for M&As using the stock and cash methods of payment. We now examine if this initial implication is robust by running cross-sectional regressions including other determinants of M&A PCAR identified in the M&A and corporate governance literatures (e.g., stock return, stock volatility, market capitalization, stock price, Q, sales and ROA).[29] All the independent variables are measured at year *t*-1 to deal with possible endogeneity.

Summary regression results are reported in Table 2.10 for the 3-day PCAR from the five-factor Fama and French (2015) model for M&As using the following methods of payment: stock, cash, and stock or cash.[30] In columns 1-4 of Table 2.10, we observe a monotonic more negative (less positive) and significant relation between the M&A PCARs for acquirers and the inside debt quartiles when stock (cash) is the method of payment. This is consistent with our fourth hypothesis H_0^4. Interestingly, if no differentiation is made between the method of payment (see columns 5 and 6 of Table 2.10), we observe results that are consistent with those reported earlier in section 4.4. Consistent with the results differentiated by method of payment, the M&A announcement PCARs of the acquirers are significantly and positively related with CEO and board compensation, relative inside debt (InsDebt-Rel) and relative compensation leverage (CompLev-Rel), which is consistent with H_0^4. These results are consistent with the conjecture that the agency problems associated with the pension-related compensations of top executives are interpreted by the market with an M&A announcement as negative indicators of future firm performance (Eisdorfer, Giaccotto, and White, 2015). As we found in the previous section, we still observe a material difference in PCAR for the announcement window for issuers differentiated by M&A method of payment even when we not only control for the equity issue effect and relative managerial conservatism but also for other factors that are known to be determinants of announcement window PCAR.

[29] Fuller, Netter, and Stegemoler (2002), Moeller, Schlingemann and Stulz (2004), Berry, Bizjak, and Lemmon (2006), Brick, Palmon and Wald (2006), Chen, Harford, and Li (2007), and Masulis, Wang, and Xie (2007).
[30] The corresponding summary regression results reported in Online Table O.6 for the 3-day PCAR from the four-factor Carhart (1997) model for M&As using the various methods of payment are not materially different. Standard errors are clustered at the industry level in all our tests, and they are tighter when clustered by industry and year.

[Insert Table 2.10 here]

As expected and consistent with former studies,[31] the PCAR[-1, 1] for acquirers are related positively with expected CEO tenure (ExpTenure), relative debt-to-assets (DA-Rel), poor macroeconomic conditions,[32] policy uncertainty and price run-up (Return),[33] and negatively with market capitalization, multiple acquirer[34] stock price, stock mispricing (MP-HP), and managerial hubris. Although a managerial orientation to the Republican Party is used as a proxy for managerial conservatism in the literature, MGR Rep is not significant in any of the results reported in Table 2.10. Furthermore, the [-1, 1] PCAR for acquirers is significantly and negatively related with the acquisition of public targets when the method of payment is stock. The positive relation of the [-1, 1] PCAR for acquirers with the relative differences in the pension-related metrics and the debt-to-assets ratio of the acquirers relative to that of their targets is consistent with our previous findings. This preference by more conservative managers for safer targets appears to be indirectly consistent with the previous findings in the literature that value may be destroyed if a conservative acquirer acquires a risk-taking target (Hegde and Mishra, 2017) and that managerial M&A objectives can affect the premiums paid (Morck, Shleifer and Vishny, 1990).

2.4.6 Additional Robustness Test: (Post-) announcement PBHARs

We use the procedure detailed in Appendix 2.B to compute the (post-) announcement PBHARs (i.e., BHAR corrected for the equity issue effect) for the sample of acquirers. The mean PBHARs for different quartiles of inside debt of the acquirers using stock and cash as the method of payment over the four windows are reported in Table 2.11.[35] These results are strikingly quite similar to those obtained earlier using the PCAR. To further test the robustness of our inferences for the sixth hypothesis, we compare corresponding cells in Panel A with those in Panel B and those in Panel D with those in Panel E of Table 2.11 with the exception of those cells in the

[31] For these firm characteristic variables, see e.g. Akbulut (2013), Mitchell, Pulvino and Stafford (2004), and Blau, Fuller and Wade (2014).
[32] This is consistent with the findings that announcement abnormal returns increase with poor macroeconomic conditions (Wann and Lamb, 2016; Erel, Jang, Minton and Weisbach, 2017).
[33] This is consistent with the finding by Nguyen and Phan (2017) that acquirers gain greater shareholder value from M&A transactions during periods of higher policy uncertainty.
[34] This finding appears to support evidence reported by Ismail and Abdallah (2013) that returns for frequent acquirers decrease constantly.
[35] Unlike a portfolio matching approach, the BHAR firm matching approach avoids a skewness bias when individual firm returns are more positively skewed than portfolio returns.

column headed by I-IV. In all cases we observe that the mean PBHAR for acquirers using cash as the method of payment are superior to those using stock as the method of payment. Thus, we still observe a material difference by M&A method of payment even when we carefully control for the equity issue effect, relative managerial conservatism and the method for estimating the abnormal returns for the acquirers for the (post-) announcement windows. Thus, our inferences for the fourth, fifth and sixth hypotheses based on the PCAR are unchanged using the PBHARs.

[Please insert Table 2.11 here]

2.5. CONCLUSIONS

In this paper, we report empirical evidence that supports a managerial conservatism explanation for the likelihood of various acquisition choices of acquirers and the (post-) announcement price effects on acquirers. With regard to acquisition choices, we find that acquirers with more conservative managers are more likely to target less risky firms, to use cash as the method of payment, and to target public firms or firms with relatively lower ratios of debt-to-assets and/or pension-related metrics. We also find that managers exhibit more hubris when their firms are in periods of higher firm mispricing.

With regard to M&A price effects for acquirers, we find that the negative (positive) price effects for acquirers using stock (cash) as the method of payment remain when we account for the equity issue effect and that both sets of price effects deteriorate monotonically with greater managerial conservatism. These results remain robust when we use either a four- or five-factor model or the BHAR methodology to estimate the price effects. We conjecture that our results differ from Golubov, Petmezas and Travlos (2016) because we rely on multi-factor instead of single-factor models in estimating the price effects for a different (more recent) time period (1992-2014 versus 1985-2009).

Our findings are consistent with the conjecture of Eisdorfer, Giaccotto, and White (2015) about the impact of the agency problems associated with greater managerial conservatism, and the findings of Hegde and Mishra (2017) that demonstrate that value is created when risk takers acquire risk-avoiding target firms, but is destroyed when more conservative risk takers acquire more risk-taking targets.

CHAPTER THREE

ACQUIRER CHOICES AND PRICE EFFECTS: ROLE OF MANAGERIAL INTEREST ALIGNMENT, VALUE BELIEFS, CONSERVATISM AND CSR RANKINGS

3.1. INTRODUCTION

Managerial attributes and actions can have significant impacts on a firm's choices and performance. Managerial conservatism affects the choice of payment method and the price effects associated with M&A announcements (Hirshleifer and Thakor, 1992; May, 1995; Milidonis and Stathopoulos, 2014). Acquirers with more conservative managers are more likely to use the cash method of payment (Kim, 2014) and to have lower M&A price effects (Phan, 2014). Managerial conservatism when proxied by inside debt (i.e., present value of executive pension benefits divided by total firm assets) is associated with conservative firm policies (e.g., Wei and Yermack, 2011) and firm-value destroying agency issues (Eisdorfer, Giaccotto, and White, 2015).

Since managers are more likely to know the true value of their firms due to their informational advantage (Jeng, Metrick and Zeckhauser, 1999; Seyhun, 1988), managers of overvalued acquirers tend to choose stock as the method of payment (e.g., Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004) that appears to lead to value destruction. Measures of overvaluation used in this literature include the market-to-book (*MB*) ratio;[36] long-run abnormal returns (e.g., Loughran and Vijh, 1997), pre-M&A annnouncement abnormal insider trades (Akbulut, 2013), or just assuming that some degree of overvaluation is present in all stock-financed M&As (e.g., Savor and Lu, 2009). The price effects and long-term operating performance for acquirers also are related to a firm's corporate social responsibility (CSR) ranking (Deng, Kang and Low, 2013), which is determined to some material extent by managerial attributes and actions. Much of the negative announcement price effects for acquirers using the stock method of payment has been attributed to price pressure induced by M&A arbitrage short-selling, which is measured using monthly and SHO daily short interest data in

[36] Dong, Hirshleifer, Richardson, and Teoh (2006) use the ratio of price to book value of equity (MB) and the ratio of price to residual income value, whereas Rhodes-Kropf, Robinson and Viswanathan (2005) use a decomposition of MB to obtain misvaluation measures at the firm and industry levels. All proxies for misvaluation are noisy. For example, the MB ratio may also capture growth opportunities, risk or managerial discipline (Mitchell and Stafford, 2000; Loghran and Ritter, 2000).

Mitchell, Pulvino and Stafford (2004) and Liu and Wu (2014), respectively. Furthermore, most of the price effect for the joint takeover/equity-issue event is attributable to the equity-issue component when the method of payment is stock (Golubov, Petmezas and Travlos, 2016).

The above literature concentrates on only a subset of the above determinants, does not sufficiently address their joint effects and only deals with managerial interest alignments with shareholders (debtholders) when it coincides with managerial conservatism and does not examine what affects some of these more important determinants. Thus, this paper has four major objectives. The first objective is to examine the effects of managerial interest alignment with its shareholders (*MIAwEQ*) and with its debtholders (*MIAwDBT*) that we introduce to the literature, informativeness of executive insider trading about their firm's value as captured by their abnormal net purchase ratio (*CANIPR*) that compliments the measure of (Akbulut, 2013), managerial conservatism measured by pension-related metrics (e.g., *InsDbt*) and corporate social responsibility ranking (*CSRcom*) on M&A method-of-payment choices and (post-) announcement price effects. We also include other determinants such as short-selling due to its relation with the arbitrage price effect (Mitchell, Pulvino and Stafford, 2004; Liu and Wu, 2014) and/or firm misvaluation (Ben-David, Drake and Roulstone, 2015) and commonly used determinants of misvaluation discussed above. The second objective is to assess the determinants of the announcement price effects when the price effects are after the removal the equity issue effect associated with the stock method of payment for not only shareholders but also bondholders (Golubov, Petmezas and Travlos, 2016).

The third objective is to use the two-stage regression model of Mitchell, Pulvino and Stafford (2004) with additional determinants of the price effects to examine the portion of the mean price effect attributable to arbitrage short selling and to use two covariance decomposition methodologies to examine the proportional explanatory power of each determinant in the second-stage estimation. The fourth and final objective is to extend the literature by being the first to identify the determinants of managerial interest alignment with its shareholders and with its debtholders, informativeness of executive insider trading about their firm's value as captured by their abnormal net purchase ratio, managerial conservatism measured by one of the two pension-related metrics and corporate social responsibility ranking in a simultaneous five-equation model estimated using three stage least squares (3SLS).

We now briefly summarize our findings. Using Probit regressions, we observe that the likelihood that stock is chosen as the method of payment increases with greater managerial interest alignments with shareholders and decreases with greater managerial interest alignments with debtholders. The likelihood of cash (stock) being used as the method of target payment is higher with lower (higher) acquirer misvaluation (consistent with Ben-David, Drake and Roulstone, 2015), and is higher (lower) with higher managerial conservatism, proportion of institutional ownership, acquirer leverage, managerial relative incentive ratio, and volatility of returns. Only the choice of cash payment is related (positively) to a firm's CSR ranking.

When we single sort the pure stock price effects for acquirers by method of payment that is adjusted for the equity issue effect, we obtain a result similar to that of Golubov, Petmezas and Travlos (2016) that the mean price effect decreases substantially in magnitue for the acquirers using stock as the method of payment. While the pure price effects are significantly inferior for the stock versus cash payment method for the announcement window, they are significantly superior for the three post-announcement windows. We double sort quartiles of pure price effects for the announcement and three post-announcement windows first by method of payment and then separately by either pre-announcement managerial interest alignment with shareholders, managerial interest alignment with debt holders, abnormal insider trading by acquirer executives, or CSR ranking. For all double sorts, we observe that both the announcement and post-announcement price effects for acquirers improve as the pre-announcement managerial interest alignment with its shareholders (debtholders) increases (decreases), as the pre-announcement abnormal net purchase ratio of the executives of the acquirer increases, which implies that these insiders consider the acquirer to be undervalued, and as the pre-announcement average of the combined CSR scores of strengths minus concerns for the acquirers increases.

To examine equity issue effects for bondholders, we first single sort the pure bond price effects for acquirers by method of payment that is adjusted for the equity issue effect. We find that the mean positive price effect decreases substantially in magnitue and becomes insignificant for the acquirers using stock as the method of payment, and that the pure price effects are significantly superior for the stock versus cash payment method for the announcement window and the three post-announcement windows. We also double sort quartiles of pure price effects for the announcement and three post-announcement windows first by method of payment and then separately by either pre-announcement managerial interest alignment with shareholders or with

debt holders. For all double sorts, we observe that both the announcement and post-announcement price effects for acquirers improve as the pre-announcement managerial interest alignment with its debtholders (shareholders) increases (decreases).

We continue by examining whether various factors identified in the literature can explain the pure price effects for acquirers for M&A announcements. As expected, pure price effects for acquirers are monotonically more positive (negative) for greater firm managerial interest alignments with shareholders (debtholders). The pure price effects also are positively related to the cumulative abnormal net insider net purchase ratio, the misvaluation measure, CSR ranking (consistent with Deng, Kang and Low, 2013), and total executive compensation (consistent with the pay-for-performance hypothesis); and they are negatively related to the change in the ratio of short volume to total trading volume for the announcement window relative to its previous level, size of the acquirer, proportion of stock (but not cash) in the M&A payment (consistent with Mitchell, Pulvino and Stafford, 2004; Akbulut, 2013), and pre-announcement standard deviation of daily returns for the acquirer (consistent with Travlos, 1987). Interestingly, the commonly used measures of managerial conservatism (inside debt and compensation leverage) become insignificant at conventional levels when our measure of managerial interest alignment with debtholders is included in the estimation.

We apply the two-stage regression model of Mitchell, Pulvino and Stafford (2004) to gauge the impact of arbitrage short-selling on the pure stock price effects during the M&A announcement window. We extend their methodology by not only examining the portion of the mean stock price effect that can be attributed to arbitrage short selling when determinants of the price effects are added to the second-stage estimation but by also using two covariance decomposition methodologies to examine the proportional explanatory power of each determinant in the second-stage estimation. We find strong evidence for the importance of short selling in explaining the pure stock price effects for acquirers for M&A announcements, and for the explanatory power importance of managerial interest alignment with its shareholders and bondholders, and for acquirer misvaluation as perceived pre-announcement by the general market based on their short-selling behavior or the executives of the acquirer based on their trading behavior.

Among our many findings based on the simultaneous five-equation model, we find that: (i) pre- to post-M&A changes in managerial interest alignment with shareholders (debtholders) are negatively (positively) related with changes in managerial conservatism, and both are related with changes in CSR ranking; (ii) pre- to post-M&A changes in the cumulative abnormal net insider purchase ratio is positively associated with changes in CSR, managerial incentive, and managerial interest alignment with debtholders (only when the method of M&A payment is stock); (iii) the pre- to post-M&A changes in the CSR composite rankings are positively related to changes in the cumulative abnormal net insider purchase ratio (consistent with the "errors-in-expectations" argument of Derwall, Koedijk and Horst, 2011), managerial conservatism measured by the pension-related metrics, managerial incentive, institutional ownership, managerial interest alignment with both its shareholders and bondholders, and residual analyst coverage; and (iv) the pre- to post-M&A changes in managerial conservatism are positively related to changes in compensation leverage, CSR ranking, managerial incentive, institutional ownership, and managerial interest alignment with debtholders.

We make a number of contributions to the literature on managerial interest alignment and managerial conservatism. First, we provide measures of interest alignment with shareholders and with bondholders that have significant power in explaining the choice of M&A payment method and acquirer price effects associated with M&As for both shareholders and bondholders. Second, we show that the two pension-related metrics used to proxy for managerial conservatism (Wei and Yermack, 2011) become insignificant determinants of acquirer equity price effects when we account for managerial interest alignment with its debtholders. Third, we show that both managerial conservatism and managerial interest alignment are related (positively and negatively) with the likelihood of a specific method of payment (cash and stock respectively). Fourth, we find that managerial interest alignment (and not managerial conservatism) has a significant effect on the acquirer price effects for the M&A announcement window when we extend the M&A arbitrage analysis of Mitchell, Pulvino and Stafford (2004). Fifth, we find that while pre-to-post M&A changes in managerial conservatism are significantly related to managerial interest alignment with both shareholders and debtholders over the M&A announcement window, such changes in managerial interest alignment with debtholders (not shareholders) are significantly related to managerial conservatism over the M&A announcement window.

We make a number of contributions to the informed investor trading literature (e.g., Loughran and Vijh, 1997; Moeller, Schlingemann, and Stulz, 2005; Song, 2007). First, our measure of insider net trading for acquirers is not only a significant determinant of the choice of M&A payment method and the pure price effects (post-) announcement but it exhibits low correlations with a similar measure by Akbulut (2013) and with other commonly used measures of misvaluation. Second, using the five-equation simultaneous model, we find that the pre- to post-M&A changes in the cumulative abnormal net insider purchase ratio are affected by changes in CSR ranking and managerial interest alignment with shareholders and debtholders only when the method of payment is stock, but not with managerial conservatism.

We make a number of contributions to the corporate social responsibility (CSR) literature. First, we provide evidence that an acquirer's CSR ranking is related (positively) to the choice of cash and not stock as the method of payment. Second, we extend the findings of Deng, Kang and Low (2013) to show that acquirer equity price effects improve monotonically with an increase in the pre-announcement quartile means of the combined CSR scores of strengths minus concerns for the acquirers. Third, we extend the M&A arbitrage analysis of Mitchell, Pulvino and Stafford (2004) by showing that the CSR ranking of the acquirer and the difference in the CSR rankings of the acquirer and target have a significant positive and negative effect, respectively, on the acquirer price effects for shareholders for the M&A announcement window. Fourth, we document the effects that pre-M&A changes in managerial interest alignments, commitments and incentives have on the changes in the CSR rankings of acquirers over the M&A announcement window. Fifth, we find that managerial interest alignment with shareholders and with debtholders have different acquirer price effects for shareholders and debtholders.

The remainder of the paper is organized as follows. Section 2 presents measures of managerial interest alignments and of the informativeness of executive insider trading about their firm's value. Section 3 develops the hypotheses. Section 4 provides a description of the data and sample. Section 5 presents and discusses our empirical results. Section 6 concludes.

3.2. MEASURES OF MANAGERIAL INTEREST ALIGNMENTS AND EXECUTIVE BELIEFS ABOUT THEIR FIRM'S VALUE

3.2.1 Measures of Managerial Interest Alignments

Ross and Said (2015) define managerial commitment as an obligation to serve an interest even if that interest is distinct from one's self-interest, so that the interests and actions of committed managers are aligned with those for which they have an obligation to serve. Managerial interest alignment is related to a manager's "skin in the game", which can be captured by their equity(-like) or debt(-like) claims in their firms (similar argument in Wang, Xie, and Xin, 2017). Traditionally, managerial interest alignment is measured by the percentage of the firm's equity owned by the executives (e.g., CEO or typically the five top executives in the aggregate). Our measure of managerial interest alignment with equity holders (*MIAwEQ*) for firm *i* is given by the proportion of equity (*Stock*) and stock option value (*Options*) held by the executives:[37]

$$MIAwEQ_{i,J,t} = \left(Stock_{i,J,t} + Options_{i,J,t}\right)/EqBk_{i,t} \quad (1)$$

where J refers to the firm's top executive(s), and $EqBk_{i,t}$ to the book value of firm equity.

Managers also have "skin in the game" through their holdings of corporate debt instruments (*Debt*) and debt-like instruments such as the present value of their pensions (*PVP*) and deferred compensation (*DefComp*). Since pension benefit claims are firm obligations that are unfunded and unsecured, the value of this type of inside debt is at risk with firm default. Thus, executives and external creditors are exposed to similar default risk concerns (Edmans and Liu, 2011). Given a firm's book value of long-term liabilities (*LTLBk*), our measure of managerial interest alignment with debt holders (*MIAwDBT*) is given by:

$$MIAwDBT_{i,J,t} = \left(Debt_{i,J,t} + PVB_{i,J,t} + DefComp_{i,J,t}\right)/LTBk_{i,t} \quad (2)$$

We use these two metrics whose calculation details are provided in Appendix 3.A separately since their directional effects are likely to differ. Greater *MIAwEQ (MIAwDBT)* increases the alignment of the interests of executives with equity holders (debtholders) and increases (reduces) their incentives to expropriate debtholders through asset substitution (Jensen and Meckling, 1976; Edman and Liu, 2011).

3.2.2 Measure of the Informativeness of Executive Insider Trading about their Firm's Value

[37] Palia (2001), for example, also includes stock options.

Given their better access to private firm-specific information (Jeng, Metrick and Zeckhauser, 1999; Seyhun, 1988), executives are more likely to trade more opportunistically when their true-value estimates differ sufficiently from those of other investors. Furthermore, various studies find that the trades of corporate insiders have predictive power as they are informative about future changes in firm fundamentals (e.g., Tavakoli, McMillan and McKnight, 2012; Cziraki, Lyandres and Michaely, 2017) and that insiders make positive abnormal returns (e.g., Agrawal and Nasser, 2012). We use a modified version of the measure of Akbulut (2013) whose estimation is described in Online Supplementary Appendix 1 (henceforth Appendix S1) to test if the beliefs of an acquirer's executives about their firm's true value as revealed by their insider trades is related to the M&A method of payment choice and (post-) announcement price effects.

The consensus belief of the executives of an acquirer about their firm's value is measured using their abnormal net insider purchase ratio (*ANIPR*) cumulated over the two quarters prior to the M&A announcement day (*CANIPR*) which is positive when aggregate purchases exceed aggregate sales. When implementing the estimation procedure described in Appendix S1, we only use insider open-market purchases and sales and option exercise purchases (i.e., codes P, S and m, respectively) after excluding all amended and inconsistent filings (code A according to Blau, Fuller and Wade, 2014), all transactions by executives who left the combined firms, and all insider transactions by trusts, large individual shareholders, non-executive directors and institutional shareholders. Unlike Akbulut (2013), we use propensity score instead of characteristic cell matching to correct for sample selection bias due to observable differences between the treatment and comparison groups (e.g., Dehejia and Wahba, 2002) and estimate *CANIPR* using dynamic panel regressions instead of a series of cross-section regressions to address endogeneity concerns (e.g., Wintoki, Linck and Netter, 2012). We also add proxies for short selling and corporate governance based on the literature findings that they are significantly related to insider trading.

The results for the estimations used in measuring abnormal insider trading *CANIPR* are reported in an online supplementary appendix (see Table S1.1) for 12,342 manager-announcement quarters involving 7102 managers, 802 acquirers and the 1566 M&A

announcements. [38] Except for share turnover which is a regressor in the model of Akbulut (2013), the coefficients of the other determinants of abnormal insider trading are significant at the 1% level with their expected signs in all but a few estimations. The estimated coefficients for the regressors included in our estimations but not in Akbulut (2013), which are *CG*, *CGbroad*, and *ShortO*, are always significant at the 1% level or better. While the estimated coefficient for prior trading has its expected sign, its value is much lower than the one obtained by Akbulut (2013).

We examine if our *CANIPR* measure of the informativeness of executive insider trading about their firm's value differs from the following misvaluation measures used in the literature: Prior abnormal insider trading (*PAIT*) measure as in Akbulut (2013); the three components of the decomposed MB of Rhodes-Kropf, Robinson and Viswanathan (2005) [RKRV];[39] the RKRV valuation model estimate (*RKRV-HP*) obtained using the three-step regression procedure of Hoberg and Phillips (HP) (2010) on an unbalanced, rolling ten-year panel with firm fixed effects for all the firms in each industrial sector; and the market-to-book (*MB Ratio*) equity ratio (e.g., Dong, Hirshleifer, Richardson, and Teoh, 2006, as a proxy for misvaluation, growth opportunities, and agency problems). We find that all the correlations for *CANIPR* with the misvaluation measures are positive and significant at the 1% level or better but small in magnitude with the highest correlation in magnitude being 0.2671 with PAIT. The other correlations are 0.1845 with *RKRV-HP*, 0.1675 with RKRV (2005) firm-specific error component (RKRV_FIRM), 0.1530 with RKRV (2005) long-run pricing to book component (*RKRV_LONG*), 0.1307 with RKRV (2005) time-series sector error component (*RKRV_TIME*) and 0.1103 with the market-to-book ratio (*MB Ratio*). This indicates that *CANIPR* captures something that is not captured by any of these other measures although they share some common features.

3.3. HYPOTHESES DEVELOPMENT

The literature generally finds that managers who are heavily compensated through debt-based instruments, such as pensions, are likely to manage the firm more conservatively because they

[38] The variance inflation factors (VIF) indicate that multicollinearity is acceptable since the highest VIF for a control variable is 5.132 (ratio of equity to total compensation or *#Equity*) and the VIF for the variable of interest (previous trading or $InsTrd_{j,t-1}$) is only 1.422. Allisson (2012) shows that a VIF below 10 for a control variable will not impair the performances of the control variables as long as the VIF of the variable of interest is acceptable.
[39] The ratio decomposition is based on the 12 industrial sectors used by Liu and Wu (2014).

are more exposed to default risk (Sundaram and Yermack, 2007; Cassell, Huang, Sanchez, and Stuart, 2012). Kim (2014) finds that acquiring firms with more conservative CEOs are more likely to choose cash to finance their M&As. These findings lead to the expectation that managers with greater interest alignments with shareholders (debtholders) will prefer stock (cash) as the method of M&A payment. Thus, our first hypothesis is:

H_1: Managers with greater interest alignments with shareholders (debtholders) prefer stock (cash) as the method of M&A payment.

The finding of Kabir, Li and Veld-Merkoulova (2013) that bond yield spreads are negatively and positively related with defined benefit pensions and stock plus option holdings of managers, respectively, suggests that debt-like and equity-like payments may have different directional impacts on M&A (post-) announcement price effects. Thus, our second hypothesis is: [40]

H_{2a}: Managerial interest alignment with shareholders (debtholders) is positively (negatively) related to M&A (post-)announcement equity price effects.

H_{2b}: Managerial interest alignment with shareholders (debtholders) is negatively (positively) related to M&A (post-)announcement bond price effects.

Inside debt holdings may be beneficial in constraining aggressive managerial behaviors due to their effect on managerial conservatism (Wei and Yermack, 2011). However, such holdings are associated with agency conflicts, lower pay-for-performance sensitivity and firm value destruction (Eisdorfer, Giaccotto, and White, 2015). While Phan (2014) reports that the likelihood of value-destroying M&As is reduced with greater CEO inside debt holdings, such holdings may deter managers from engaging in risky transactions that contribute to the wealth maximization of shareholders. Thus, we expect that managerial conservatism as captured by executive holdings of debt-like claims negatively (positively) affects shareholders' (debtholders') wealth. Thus, our third hypothesis is:

H_3: An acquirer's (post-)announcement stock (bond) price effects are negatively (positively) related to managerial commitment.

[40] The literature provides strong evidence that insider short selling negatively impacts a firm's M&A (post-) announcement price effects (e.g., Liu and Wu, 2014; Mitchell and Stafford, 2000; Mitchell, Pulvino and Stafford, 2004).

Akbulut (2013) finds that overvalued equity measured using insider trades causes managers to destroy shareholder value by their choice of stock as the method of payment. Blau, Fuller and Wade (2014) find that the negative post-announcement price effects for acquirers are orthogonal to the level of post-announcement short selling. Using short interest as a misvaluation measure that distinguishes itself from the Q-theories, Ben-David, Drake and Roulstone (2015) report that misvaluation is a strong motive for M&A decisions, and that it can explain under- (over-) performance of stock (cash) acquirers. With interests more aligned with shareholders (debtholders), executives should be more (less) motivated by firm misvaluation in their M&A decision making when firm misvaluation is an important determinant of such decisions. We expect that the strength of an acquirer's managerial interest alignment with shareholders (debtholders) is positively (negatively) related to the acquirer's overvaluation pre-announcement as measured by our misvaluation measures when the method of payment is stock and selection bias is controlled for. Thus, our fourth hypothesis is:

H_4: The strength of the alignment of an acquirer's executives with its shareholders (debtholders) is positively (negatively) associated with the acquirer's overvaluation pre-M&A when the method of payment is stock.

While the agency view of CSR considers CSR as being value destroying, the risk mitigation channel, grounded in stakeholder-based theory, implies that CSR is positively related to a firm's value since the risk reduction associated with CSR is value enhancing. Furthermore, CSR activities may produce goodwill or moral capital for shareholders,[41] and preserve financial performance by providing an insurance-like reduction in a firm's risk exposure (Godfrey, 2005; Godfrey, Merrill and Hansen, 2009). Ferrell, Liang and Renneboog (2016) find that well-governed firms suffer less from agency concerns and engage more in CSR. They find a positive relation between CSR and value, and that CSR attenuates the negative relation between managerial entrenchment and value. We expect an acquirer's CSR ranking to be positively related to the interest alignment of its executives with both its shareholders and debtholders. Thus, our fifth hypothesis is:

[41] Godfrey (2005) finds many benefits associated with CSR, including greater legitimacy among communities and regulators, more effective employee commitment, greater trust by suppliers, and enhanced brand and credibility with customers. Other benefits include less severely impacted by a crisis (Bouslah, Kryzanowski and M'Zali, 2016), a greater decoupling of the effects of negative events from the rest of the firm (Bansal and Clelland, 2004), and less intense scrutiny from regulators (Luo and Bhattacharya, 2009).

H_5: *An acquirer's CSR ranking is positively related with its managerial interest alignment with its shareholders and debtholders.*

Higher executive compensation can increase the level of informational asymmetry between management and the board, and may lead to board cultures that discourage constructive criticism (e.g., Jensen, 1993). Several studies find that higher managerial compensation is related to interlocking boards of directors (Hallock, 1997), and that pay-performance sensitivity decreases with risk-aversion and that differences in time preference are related to compensation patterns (Graham, Harvey and Puri, 2013). Studies find that a firm's CSR ranking is negatively related with executive compensation (e.g., Callan and Thomas, 2011; Miles and Miles, 2013). CSR is significantly related with total and cash compensation (Cai, Jo and Pan, 2011) and with total compensation that includes stock options (Rekker, Benson and Faff, 2014). We expect that a firm's CSR ranking is negatively related to the total compensation of its executives. Thus, our sixth hypothesis is:

H_6: *An acquirer's total compensation of its executives is negatively related with its CSR ranking.*

As discussed above, the findings of Kabir, Li and Veld-Merkoulova (2013) suggest that managerial interest alignment with its shareholders and with its debtholders will have different directional relations with managerial conservatism. Thus, our seventh hypothesis is:

H_7: Managerial conservatism is negatively (positively) associated with managerial interest alignment with their firm's shareholders (debtholders).

3.4. SAMPLE, DATA AND SUMMARY STATISTICS

Our initial sample consists of both completed and withdrawn M&As announced between August 1, 2009 and December 31, 2015 for NYSE- and NASDAQ-listed firms. Following former studies (e.g., Mitchell, Pulvino and Stafford, 2004; Liu and Wu, 2014), a record from SDC's Mergers & Acquisitions database is retained in our sample if M&A documents are available, deal value is not less than $20 million, acquirers are publicly traded domestic firms with CRSP database coverage, the percent of shares sought by the acquirer is more than 50%, and share price is above $1 on the day before the announcement date. As in Diether, Lee and

Werner (2009), transactions involving REITs, ADRs and Closed-end funds are removed. We hand-collect various information about the M&As, such as announcement dates, withdrawn dates, closing dates, exchange ratios, pricing periods, and methods of payment.[42] To avoid time overlap for some of the tests, we keep only the first announcement for acquirers with multiple announcements in a year. Our final sample for these tests that includes data for all variables consists of 1,566 M&A announcements that involve 882 unique acquirers, 951 unique target firms, 1,498,876 stock-day observations, and cash, stock, cash&stock and other methods of payment for 1089, 259, 208 and 10 M&As, respectively.[43]

We obtain data on CEO and top executive compensations from Standard and Poor's Execucomp, insider trading data from the Thomson Financial Insiders Database (e.g., trading amounts, date and type of managerial trade, and managerial position code), short sales data from Finra, [44] equity ownerships of unaffiliated institutional holders with aggregated holdings exceeding 5% from CDA/Spectrum 13 (f) filings, number of analysts following a firm from the Institutional Brokers Estimation Services (I/B/E/S) database, accounting data from the COMPUSTAT Annual File,[45] and shares outstanding and returns from the Center for Research in Security Prices (CRSP), and bond prices and returns from the TRACE database. Aggregation of the intraday short sales data during regular trading sessions into daily data allows us to

[42] Boone and Mulherin (2007a, 2008) and Liu and Wu (2014) also use hand-collected information for comparable sample sizes. We identify and correct some incorrect reports dealing with the method of payment in the filings available from SDC, as by Liu and Wu (2014). For example, the SDC document indicates that shareholders of Chattem Inc were entitled to receive cash in lieu of fractional shares and 0.71 shares of Sanofi-Aventis SA Class A common stock for each common share of Chattem Inc. While SDC listed the consideration as HYBRID (i.e., a combination payment of cash and stock, dated on Dec 21, 2009), the correct payment method is stock swap. Similarly, in the proxy statement in SEC file (S-4), To approve and adopt the Agreement and Plan of Merger, dated June 16, 2010 between Covidien Ltd, and Somanetics Corp., we find that each common share of Somanetics Corp outstanding immediately before the merger is convertible into (i) $21.00 in cash, with shareholders being allowed to choose payment in all stock, all cash, or a combination of stock and cash in one of the two following choices: 50% stock/50% cash or 80% stock/20%cash; or (ii) 0.3213 share (subject to adjustment) of Covidien Ltd common stock. SDC categorizes the payment as "stock only" while the payment is a mix of stock and cash. Other examples are available if requested.

[43] The status of the targets is 818 public targets, 492 private targets, 248 subsidiary targets and 8 other targets. The status of the deals is 1432 are completed, 16 are pending, 113 are withdrawn, and 5 are other.

[44]The Regulation SHO program requires the exchanges to publish data which contains transaction-level short trades. See the website: http://www.finra.org/industry/trf/trf-regulation-sho-2015. Although the SHO data does not indicate when short sales are covered or a short transaction is conducted by a market maker, the latter may not be important as less than 1% of traded volume involves market makers. The average and median time between the transaction and reporting dates for our full sample is 23 and 9 days, respectively.

[45]Since the relationship between analyst coverage and firm mispricing or executive compensation may be spurious due to the relation of analyst coverage with various firm characteristics, we use the residual value of analyst coverage to mitigate this concern as in Yu (2008).

implement more accurate examinations than are possible using short interest data at a monthly frequency.

Table 3.1 presents some summary statistics for various characteristics (as defined in Appendix 3.A) of our final M&A sample and the sample that also includes acquirers with missing data in Compustat or Execucomp. Based on Panel A, the mean number of public bidders is 1.161 and the mean percentage of stock (cash) as payment across all the different payment methods is 20.649% (79.351%). About 53.1% of the M&As are conglomerate based on the dummy variable *Congl* which is one when the 4-digit SIC code of the acquirer and target differ. Based on Panel B for our final sample using data for the multi-day announcement window [-1, 1], the mean share (Turnover) and short turnovers (*%ShortO*) are 2.223 times and 26.112 percent, respectively, the mean market capitalization is $20.365 billion, the mean pure announcement stock return (*PCAR*) is 0.151%, the mean pure announcement abnormal bond return (*PCABR*) is -0.063%, and the average price of the acquirers is $43.78.[46]

[**Insert Table 3.1 here**]

Based on Panel C for the final M&A sample using data for the multi-day pre-announcement window [-200, -41], acquirers have mean inside debt and compensation leverage of 0.531 and 0.086, respectively.[47] The acquirers have a mean executive total compensation of $6.021 million, a mean proportional institutional ownership of 48.303%, a mean market capitalization of $21.565 billion, a mean annual share turnover ratio of 0.796, a mean price of about $42.35, and average return and stock price volatilities of 1.601% and 2.501%, respectively, and average return and bond price volatility of 0.572% and 0.662%, respectively.[48] Furthermore, 79.6% of the outstanding shares are traded on average daily and shorts on average represent about 23.002% of the shares outstanding. The mean short-selling ratios of 28.103% and 30.102% for the full period and the announcement windows (Panels C and B, respectively) are comparable to the findings of Diether, Lee & Werner (2009).

[46]Except for PCAR, the reported means are the cross-sectional averages across all the acquirers of the time-series averages over the three-day window [-1, 1] for each acquirer.
[47]The formulas for computing inside debt and compensation leverage are described in Appendix A.
[48] The reported means are the cross-sectional averages across all the acquirers of the time-series averages over the multi-day pre-announcement window [-200, -41] for each acquirer.

Panel D reports summary statistics for the larger M&A sample using data for the multi-day pre-announcement window [-200, -41]. This larger sample also includes acquirers with missing data in Compustat or Execucomp. The means for acquirers in this larger sample are generally smaller than those for our final sample. This includes size ($2.786 vs $21.565 billion), share price ($36.25 vs $42.35), institutional ownership (43.203% vs 48.303%), and total compensation ($5.739 billion versus $6.021 billion). They are larger only for debt/assets (0.341 vs 0.313), leverage (0.233 vs 0.229) and return volatility (1.701% vs 1.601%).

We partition the M&As into four subgroups according to their choice of payment method and test the characteristic differences between the 259 pure stock M&As versus the 1089 pure cash M&As. At a 5% or better level for the t-tests, we observe in Table 3.2 that an acquirer with a higher insider net purchase ratio, compensation leverage and inside debt, and a lower leverage, price volatility, ratio of short sales volume to shares outstanding and change in this short sales ratio in the days following the day prior to a M&A announcement is more likely to have chosen cash as the method of payment.[49] Most of the median differences for these characteristics are significant at the 5% significance level based on the Wilcoxon signed-rank test (Column 8).

[**Insert Table 3.2 here**]

3.5. EMPIRICAL RESULTS

In this section, we conduct a series of tests to examine whether managerial interest alignments with its shareholders (*MIAwEQ*) or debtholder (*MIAwDBT*), managerial conservatism, CSR ranking, the informativeness of executive insider trading about their firm's value (*CANIPR*) and firm misvaluation (*RKRV-HP*) are related to the acquirer's choice of the method of payment and what are their effects on equity and bond prices for M&A announcements.[50]

3.5.1 Sorts by Managerial Interest Alignments with Shareholders and Debtholders

We present the mean acquirer and target characteristics for quartiles based on the interest alignments of the managers of the acquirers with their shareholders (*MIAwEQ*) and with their bondholders (*MIAwDBT*) where quartile I (IV) reflects the lowest (highest) interest alignments.

[49] Similar results are obtained using the short ratio.
[50] Ben-David, Drake and Roulstone (2015) find that previously documented underperformance of stock acquirers and the overperformance of cash acquirers can be attributed to misvaluation as captured by short selling.

We observe that most of the mean characteristic differences between quartiles I and IV for *MIAwEQ* in Panel A and for *MIAwDBT* in Panel B of Table 3.3 are significant at a 5% or better level for the t-tests and the Wilcoxon signed-rank tests. Based on Panel A and the t-test results for a significance level of 5% or better, we observe the expected result that only compensation leverage, inside debt, probability of cash as the method of payment, executive total compensation, and pure bond price effects (*PCABR*) are lower for the quartile with the highest managerial interest alignment with shareholders to that with the lowest. Except for the target is a subsidiary, the means for a specific characteristic increase or decrease monotonically as we move from the lowest quartile (I) of managerial interest alignment with shareholders to that with the highest alignment (IV).

[**Insert Table 3.3 here**]

Based on t-values significant at the 5% or better level in Panel B, we observe that only cash holdings, leverage, % of acquirers that pay with stock, pure announcement stock price effects for acquirers, stock price volatility, ratio of short volume to shares outstanding and the change in this short ratio after the day prior to the M&A announcements are lower for the quartile with the highest managerial interest alignment with debtholders to that with the lowest. Although more exceptions exist in Panel B compared to Panel A, the means for a specific characteristic in Panel B increase or decrease monotonically as we move from the lowest quartile (I) of managerial interest alignment with debtholders to that with the highest alignment (IV). This provides some initial qualified support for our second hypothesis.

There are a number of interesting takeaways from these results. First, higher managerial interest alignments with shareholders (*MIAwEQ*) have opposite associations with the pure stock price effects (*PCAR*), and pure bond price effects (*PCABR*) of M&As compared to those from higher managerial interest alignments with debtholders (*MIAwDBT*). Specifically, the pure stock price effects increase monotonically from -0.01% for quartile 1 to 0.30% for quartile 4 for *MIAwEQ* and they decrease monotonically from 0.28% for quartile 1 to 0.07% for quartile 4 for *MIAwDBT*. Similarly, the pure bond price effects decrease monotonically from -0.051% for quartile 1 to 0.082% for quartile 4 for *MIAwEQ* and they increase monotonically from -0.072% for quartile 1 to -0.043% for quartile 4 for *MIAwDBT*. Second, the decrease (increase) in compensation leverage and inside debt with increasing managerial alignment with shareholders

(debtholders) is consistent with their effect on managerial conservatism due to their effect on executive default risk exposure (Cassell, Huang, Sanchez, and Stuart, 2012). Third, increases in the ratio of short volume to share outstanding, changes in this short ratio from the day prior to the M&A announcements and the use of only stock as the method of payment with an increase (decrease) in *MIAwEQ* (*MIAwDBT*) suggest that overvalued stock is more likely to be used when managerial interests are more (less) aligned with shareholders (debtholders). Fourth, the appetite for public targets decreases with higher *MIAwEQ* and increases with higher *MIAwDBT*. This result is consistent with the finding of Kim (2014). Fifth, consistent with our fifth hypothesis, CSR strengths exceed concerns for more firms with an increasing managerial interest alignment with either shareholders or debtholders.

3.5.2 Changes in Managerial Interest Alignments Post-M&A and their Determinants

In this section, we begin by examining how managerial interest alignments change pre-to-post-acquisition. The changes are computed in three ways (full details in Appendix 3.A) where the first method uses the actual total long-term liabilities or assets pre- and post-announcement, the second method uses the pre-announcement total long-term liabilities or assets pre- and post-announcement, and the third method removes the total long-term liabilities or assets of the acquired when computing the interest alignments post-announcement. Based on untabulated summary statistics for the full sample, and the subsamples of acquirers and non-acquirers available as Table S4.1 in Online Supplementary Appendix S4, we observe that all the mean and median changes for the acquirers are significantly negative for *MIAwEQ* and significantly positive for *MIAwDBT*. In contrast, all the mean and median changes for the nonacquirers are insignificant.

To identify the determinants of the pre-to-post announcement M&A changes in these proxies for managerial interest alignment, we run a cross-sectional regression for each acquisition date and report their time-series averages in Table 3.4. We observe that the changes in managerial interest alignment with debtholder (shareholders) is negative (positively) and significantly related with multiple (single) acquirers when the pre-announcement managerial interest alignments of the acquirer are in the low tercile, and positively (negative) and significantly related with multiple (single) acquirers when the pre-announcement managerial interest alignments of the acquirers are in the high terciles. Cash flow and cash hold consistently have a

significant effect on managerial interest alignment. Inside debt, compensation leverage, and firm leverage have significantly positive (negative) effects on managerial interest alignment with debtholder when the pre-announcement managerial interest alignments of acquirers are in the low (high) tercile. In contrast, inside debt, compensation leverage, and firm leverage have negative and significant effects on both managerial interest alignments for both high and low pre-announcement managerial interest alignment terciles. The mispricing (*RKRV-HP*) effect on both managerial interest alignments is positive when pre-announcement managerial interest alignments of acquirers are in the low tercile. In contrast, the effects are positive (negative) on managerial interest alignment with debtholders (shareholders) when pre-announcement managerial interest alignments of acquirers are in the high tercile.

[**Insert Table 3.4 here**]

3.5.3 Sorts by Cumulative Abnormal Insider Purchase Ratios (CANIPR)

We present the mean acquirer and target characteristics for quartiles based on the cumulative abnormal insider purchase ratios (*CANIPR*) for stocks where quartile I (IV) reflects the lowest (highest) level of this ratio. We observe that most of the mean characteristic differences between quartiles I and IV reported in Table 3.5 are significant at a 5% or better level for the t-tests and the Wilcoxon signed-rank tests. Based on the t-test results for a significance level of 5% or better, we observe that cash flow, compensation leverage, inside debt, CSR ranking*Pay%Cash*, *PCAR*, proportion of cash M&As, bond price volatility, and target CAR are higher for the quartile with the highest versus lowest *CANIPR*. The means for over 60% of the characteristics increase or decrease monotonically as we move from the lowest quartile (I) to the highest *CANIPR* quartile (IV).

[**Insert Table 3.5 here**]

There are a number of interesting takeaways from these results. First, the cumulative abnormal insider net purchase ratios (*CANIPR*) for stock are negatively associated with pure bothn the bond price effects (*PCABR*) and positively associated with the pure stock price effects (*PCAR*). Second, the increase in compensation leverage and inside debt with an increasing cumulative abnormal insider net purchase ratio (*CANIPR*) for stocks is consistently with the conjecture that *ComLev* and *InsDebt* tend to negatively affect firm value. Third, the appetite for public targets decreases with higher *CANIPR* which is consistent with the findings that insider

trading is positively associated with acquirer undervaluation and managerial conservatism.[51] Fourth, CSR concerns exceed strengths for more firms with an increasing cumulative abnormal insider net purchase ratio (*CANIPR*).

3.5.4 Determinants for the Choice of Method of Target Payment

Panels A and B of Table 3.6 report the marginal effects (multiplied by 1000) from Probit regressions examining possible determinants of the choice of cash and stock, respectively, as the method of payment for targets using industry-clustered standard errors.[52] We observe monotonically decreasing (increasing) negative (positive) estimated coefficients for all specifications with increasing quartile assignments of managerial interest alignment with shareholders (debtholders) with cash (stock) as the method of target payment. This finding indicates that acquirers with greater managerial interest alignments with shareholders or *MIAwEQ* (debtholders or *MIAwDBT*) are less (more) likely to choose cash as the method of payment, which supports H_1. In contrast, the interaction of the debt and equity proportions held by the managers (Eq_t*LTL) has no predictive power.

[Insert Table 3.6 here]

We observe statistical significance for many other potential determinants. We find that a firm's CSR ranking (*CSRcom*) is significantly (and positively) related to only the choice of cash payment. The dummy variable for the abnormal trading of firm insiders (*DumCANIPR*) is significantly and positively (negatively) related to the likelihood of cash (stock) being used as the method of target payment. Their estimated coefficients become highly significant at the 1% level when both the misvaluation measure *RKRV-HP* and the ratio of short interest to shares outstanding *%ShortO* are excluded (columns 3 and 10), suggesting that *DumCANIPR* captures some of the relations between these two determinants and the dependent variables. However, *%ShortO* only becomes significantly related to the choice of payment method (negative for cash and positive for stock) when *DumCANIPR* and a number of other potential determinants are excluded from the estimation. In contrast, *RKRV-HP* is consistently negatively and positively related to the likelihood of cash (stock) being used as the method of target payment. Thus, these findings are somewhat consistent with the finding by Ben-David, Drake and Roulstone (2015)

[51] Kim (2014) finds that conservative managers are more likely to engage in the acquisitions of public targets.
[52] Clustering errors by industry and year yields tighter standard errors.

that firms with higher short sales and overvaluation are less likely to engage in cash acquisitions. Compensation leverage (*ComLev*), inside debt (*InsDbt*), proportion of institutional ownership (*%Insti*), acquirer leverage (*Leverage*), managerial relative incentive ratio (*RelIncentR*), single acquirers, and volatility of returns (*VolatR*) are positively (negatively) related with the likelihood of cash (stock) being used as the method of target payment. In contrast, cash flow (*CashFlow*), cash held (*CashHld*), poor macroeconomic conditions, multiple acquirers, higher policy uncertainty (*PUI*) and past returns (*PReturn*) are negatively (positively) related with the likelihood of cash (stock) being used as the method of target payment.[53] An acquiring firm's market capitalization is significantly (and negatively) related to only the choice of cash payment.

3.5.5 (Post-) announcement Price Effects for Acquirer Shareholders: Single and Double Sorts

Panels A and Panel B of Table 3.7 report equity price effects estimates from the Fama-French five factor model (2015) not adjusted (CAR) and adjusted (*PCAR*) for the equity issue effect, respectively, for the window [-1, 1] single sorted by method of payment (i.e., cash, stock, mixed and all). The significantly negative (positive) mean CAR for stock (cash) without controlling for the equity issue effect is generally consistent with the literature. As in Golubov, Petmezas and Travlos (2016), we observe that the mean price effect from the acquisition decreases substantially in magnitue for the acquirers using stock as the method of payment when we adjust for the equity issue effect. Specifically, the mean is a highly significant -325.41 bps in Panel A and a marginally significant -11.61 bps in Panel B. Even with the adjustment for the issue price effect, the mean (pure) price effect is a significant 35.96 bps lower for the acquirers using stock versus those using cash as the method of payment.This is considerably lower in magnitude than the 349.76 bps difference when no adjustment is made for the issue price effect.

[Inset Table 3.7 here]

We use the calendar-time approach of Mitchell and Stafford (2000) to examine the price effects for portfolios of acquirers sorted by the method of payment (i.e., stock, mixed, cash, and

[53] Our findings are mostly consistent with previous studies that use the same variables. For example, Martin (1996) finds that the likelihood of a M&A using stock as the payment method increases with higher pre-acquisition market cap, stock returns and growth opportunities, and decreases with higher cash holdings, block and institutional holdings. Our conclusion remains unchanged after replacing *CSRcom* with *DumCSR*, and *RKRV-HP* with each of the following in turn: *MB Ratio*, *PAIT*, *RKRV_FIRM*, *RKRV_TIME*, *RKRV_LONG*. These untabulated results are available upon request.

long stock & short cash) for three post-announcement periods of [2, 124], [2, 250] and [2, 498] days, which represent periods of about 6-, 12- and 24-month, respectively.[54] We form equally weighted portfolios monthly where each monthly portfolio requires a minimum of five acquirers with M&A announcements in the previous 124, 250 or 498 days depending on the post-announcement period being examined. The price effects or (*P*)*Alpha* for each calendar-time portfolio for each post-announcement window are estimated in-sample using the Fama-French five-factor model. In comparison to the significantly large negative mean Alpha estimate reported in Panel A of Table 3.7 for each post-announcement window, the mean *PAlpha* estimate (i.e., *Alpha* adjusted for the issue price effect) reported in Panel B for each post-announcement window when stock is the method of payment is significantly positive but small in magnitude. Similarly as reported in the last column of Table 3.7, acquirers using stock payment versus those using cash payment exhibit significantly inferior mean post-announcement *Alphas* (Panel A) but significantly superior post-announcement mean *PAlphas* (Panel B) for shareholders.

We now examine in Table 3.8 the quartiles of *PCAR* and *PAlphas* for shareholders doubled sorted first by method of payment and then separately by either managerial interest alignment with shareholders (*MIAwEQ*), managerial interest alignment with debtholders (*MIAwDBT*), abnormal insider trading by acquirer executives (*CANIPR*), or CSR ranking (*CSRcom*). The mean *PCAR* and *PAlphas* for shareholders are reported for acquirers with cash, stock and all payment methods for *MIAwEQ* and *MIAwDBT* in Panels A, B and C, respectively, and for *CANIPR* and *CSRcom* in Panels D, E and F, respectively.[55] Holding the method of payment and the window constant, these results are consistent with H_2. The mean *PCAR*[-1, 1] are positive (negative) across all quartiles for acquirers using cash (stock) as the method of payment. As one moves from quartile I to quartile IV, both the *PCAR*[-1, 1] and the three post-announcement *PAlpha* monotonically improve for *MIAwEQ*, *CANIPR* and CSRcom and monotonically deteriorate for *MIAwDBT* when either cash or stock is used as the method of payment.

[Insert Table 3.8 here]

[54] For more details about this approach, see, e.g., Andrade, Mitchell, and Stafford (2001) and Mitchell and Stafford (2000), and Appendix S2 in the separate document, Supplementary Appendices.

[55] Results using the four-factor model of Carhart (1997) are not materially different from the results reported in Table 3.8 using the five-factor model of Fama and French (2015). The results are untabulated for brevity and are available upon request.

We now summarize what we learn from this set of results. For all four sets of double sorts as captured by the columns I-IV, we observe that both the announcement and post-announcement stock price effects for acquirers improve as the pre-announcement managerial interest alignment with its shareholders (bondholders) increases (decreases), as the pre-announcement abnormal net purchase ratio of the executives of the acquirer (*CANIPR*) increases which implies that these insiders consider the acquirer to be undervalued, and as the average of the combined CSR scores of strengths minus concerns for the acquirer (*CSRcom*) pre-announcement increases.

3.5.6 (Post-) announcement Price Effects for Acquirer Bondholders: Single and Double Sorts

Panels C and D of Table 3.7 reports bond price effects estimates from the 5-factor bond model of Fama and French (1993) not adjusted (*CABR*) and adjusted (*PCABR*) for the equity issue effect for the window [-1, 1] and their counterparts BRAlpha and PBRAlpha for the three post-announcement periods of [2, 124], [2, 250] and [2, 498] days single sorted by method of payment (i.e., cash, stock, mixed and all). The mean CABR are significant 39.781 bps for stock and -8.381 bpd for cash (see Panel C). Consistent with previous results, the mean bond price effects become an insignificant 1.412 bps then adjusted for the equity issue effect (see Panel D). This mean pure bond price effect is still a significant 9.793 bps higher for the acquirers using stock versus those using cash as the method of payment. In comparison to the significantly positive mean *BRAlpha* estimates for the bond price effects reported in Panel C of Table 3.7 for each post-announcement window, the mean *PBRAlpha* estimates (i.e., *BRAlpha* adjusted for the issue price effect on bonds) reported in Panel D for each post-announcement window when stock is the method of payment is insignificant and small in magnitude. Furthermore, acquirers using stock payment versus those using cash payment exhibit significantly superior mean post-announcement *BRAlpha* (Panel C) for their bondholders and still significantly superior post-announcement mean *PBRAlpha* (Panel D).

We then examine the quartiles of *PCABR* and *PBRAlpha* doubled sorted first by method of payment and then separately by either managerial interest alignment with shareholders (*MIAwEQ*) or with debtholders (*MIAwDBT*). The mean *PCABR* and *PBRAlpha* are reported for acquirers with cash, stock and all payment methods for *MIAwEQ* and *MIAwDBT* in Panels A, B

and C, respectively.[56] Holding the method of payment and window constant, these results suggest that managerial interest alignment with shareholders (debtholders) is monotonically and negatively (positively) related with bond price effects. The mean *PCABR*[-1, 1] are negative across all quartiles for acquirers using cash as the method of payment, and mostly positive for acquirers using stock as the method of payment. With movement from quartile I to quartile IV, both the *PCABR*[-1, 1] and the three post-announcement *PBRAlpha* monotonically deteriorate for *MIAwEQ* and monotonically improve for *MIAwDBT* when either cash or stock is used as the method of payment.

[Insert Table 3.9 here]

We now summarize what we learn from this set of results. For all the double sorts, we observe that both the announcement and post-announcement bond price effects for acquirers deteriorate as the pre-announcement managerial interest alignment with its shareholders (bondholders) increases (decreases).

3.5.7 Determinants of the M&A Announcement Pure Stock Price Effects for Acquirers

In this section, we examine if the following factors identified in the literature can explain the pure price effects for acquirers for M&A announcements: abnormal firm size (*Size*), percentage of cash payment (*%Cash*), percentage of stock payment (*%Stock*), the volume of share turnover (*Turnover*), return volatility (*VolatR*), price volatility (*PriceVol*), and change in relative short selling (*Δ%ShortO*). To this set of potential determinants, we add our managerial interest alignments measures (*MIAwEQ* and *MIAwDBT*), our cumulative abnormal insider net purchase ratio (*CANIPR*) of executives, CSR composite (*CSRcom*), a commonly used misvaluation measure (*KRKV-HP*), managerial relative incentive ratio (*RelIncentR*), executive total compensation (*ComTotl*), inside debt (*InsDbt*) and compensation leverage (*ComLev*).[57] To examine if the explanatory power of these potential determinants varies by the width of the

[56] Our conclusion remains unchanged when replacing the five-factor bond model of Fama French (1993) with six-factor bond model of Elton et al. (1995), or two-factor bond model of Karafiath (1988). The results are untabulated for brevity purpose and are available on Online Appendix S.3.

[57] We also test for the effects of whether the M&A is a conglomerate (*Congl*), whether the M&A is finally completed (*Complete*), and whether the M&A is deemed as being hostile (*Hostile*), and for the effects of other variables such as *CashFlow*, *CashHld*, *Invest/Assets*, Q_{t-1}, *ROA*, *R&D/Assets* and *Sales*. To control for possible problems from multicollinearity, we repeat the tests after replacing *PriceVol* with each of these variables. We obtain similar conclusions as their estimated coefficients are not significant at conventional levels. For brevity purposes, these results are untabluated and are available upon request.

announcement window, we use windows from the day prior to the announcement -1 to day *j*, where $j = \{0, 1, 3, 10\}$. For specific details about each of these variables refer to Appendix 3.A. The Wu-Hausman test rejects the presence of an endogeneity problem with the inclusion of these variables and the values of the variance inflation factors (VIFs) indicate the absence of a material multicollinearity problem among the variables.

Table 3.10 presents the results controlling for conditional heteroscedasticity using stock or cash as the method of payment, and similar results are obtained when robust (clustered) standard errors are used for hypothesis testing. [58] A primary difference between the estimations is that the odd (even) numbered columns exclude the *MIAwEQ* (*MIAwDBT*) quartiles, *⊿%ShortO* and *RKRV-HP*. Consistent with our hypotheses H_2 and previously reported results, we observe a monotonic more positive (negative) and significant relation between the M&A *PCAR*s for the shareholders of acquirers and firm managerial interest alignments with its shareholders (debtholders) for all four windows. As expected, the acquirer *PCAR*s are significantly and negatively related to the change in the ratio of short volume to total trading volume for the announcement window relative to its previous level (*⊿%ShortO*).[59] As expected, the acquirer *PCAR*s for its shareholders are significantly and positively related to the cumulative abnormal net insider net purchase ratio (*CANIPR*) and the misvaluation measure (*RKRV-HP*) for all four windows. [60]

[Insert Table 3.10 here]

With regard to the other independent variables, the *PCAR* are significantly and positively related with total executive compensation (*ComTotl*) in all four windows, which is consistent with the pay-for-performance hypothesis. The two pension-related variables, *ComLev* and *InsDbt*, lose their significantly negative relation with *PCAR* in all four windows when our measure of managerial interest alignment with debtholders is included (see even numbered columns) which provides weak support at best for H_3 and the conjecture that greater managerial conservatism is value destroying (e.g., Wei and Yermack, 2011; Eisdorfer, Giaccotto, and White, 2015). As

[58] Our conclusions remain unchanged when the change in short turnover (*⊿%ShortO*) is replaced with the change in short interest (*⊿%Short*).

[59] We obtain similar results when we replace *RKRV-HP* with *PAIT*, *MB*, *RKRV_FIRM*, *RKRV_TIME* and *RKRV_LONG* successively in the various tests.

[60] In untabulated results, we find that *CANIPR* always becomes more significant when either *RKRV-HP* or *⊿%ShortO* are excluded from the estimation.

expected, the *PCAR* are significantly and negatively related with the size of the acquirer (*Size*) and the proportion of stock (but not cash) M&A payment (*Prop. Stock / Cash M&A*) for all four windows. The latter result is consistent with our previously reported results and the literature finding that acquiring firms using stock as their method of payment experience more negative announcement returns (see, e.g., Mitchell, Pulvino and Stafford, 2004; Akbulut, 2013). As expected, the *PCAR* are significantly and positively related with the acquirer's CSR ranking (*CSRcom*) for all four windows, which is consistent with the finding of Deng, Kang and Low (2013) that higher CSR acquirers realize higher M&A announcement returns. The PCAR are also significantly and positively related with policy uncertainty and poor macroeconomic conditions. The latter result is consistent with the findings that announcement abnormal returns increase with poorer macroeconomic conditions (Wann and Lamb, 2016; Erel, Jang, Minton and Weisbach, 2017). As expected, the *PCAR* are significantly and negatively related with the standard deviation of daily returns for the acquirer over window [-10, -2] for all four windows, which is consistent with the notion that acquirers with more volatile returns have greater negative price pressure (Travlos, 1987). The PCAR are also negatively related with multiple acquirers, which appears to support the evidence reported by Ismail and Abdallah (2013) that returns for frequent acquirers decrease constantly. Relations identified as being insignificant for all four windows include *PCAR* with the following: ratio of the proportional equity holdings of executives in the acquirer and target (*Eq*LTL*), institutional investor proportional holdings (*%Insti*), debt/equity ratio of the acquirer (*Leverage*), residual analyst coverage of the acquirer (*ResCov*) and single acquirers (SAQ).

3.5.8 Contribution of Specific Determinants to the Mean and Variability of the M&A Announcement Pure Price Effects for the Shareholders of Acquirers

When examining firm returns surrounding specific events, most traditional studies assume that excess demand curves are perfectly elastic (early exceptions include Shleifer, 1986; Harris and Gurel, 1986). Using monthly short-selling data, Mitchell, Pulvino and Stafford (2004) find that short interest is abnormally high surrounding M&A announcements, and that acquirers with the highest short interest exhibit the most negative post-announcement price pressures. They conclude that the effective supply of shares of acquirers increases so much from arbitrage-motivated short-selling that the excess demand curves for these stocks are downward sloping. Baker and Savasoglu (2002) argue that the returns from such M&A arbitrage also depend on the

post-announcement selling pressure experienced by acquirers. Diether, Lee and Werner (2009) report that M&A short-selling does not exert additional pressure on the decreasing prices of acquirers since M&A short sellers are generally contrarian traders. Using SHO daily short interest data, Liu and Wu (2014) report that the majority of the negative announcement returns can be attributed to price pressure induced by M&A arbitrage short-selling.

We first use the two-stage regression model of Mitchell, Pulvino and Stafford (2004) to determine what portion of the mean *PCAR*[-1, 1] can be attributed to M&A arbitrage short selling during the [-1, 1] window. Their two-stage regression model is:

$$\Delta\%ShortO = \begin{cases} b_0 + b_1 Hostile + b_2 Relsize & \text{if } StockM\&A \\ 0 & \text{Otherwise} \end{cases} \quad (3)$$

$$PCAR[-1, 1] = \beta_0 * CashM\&A + \beta_1 * StockM\&A + \beta_2 * Fit\Delta\%ShortO \quad (4)$$

All the terms are as previously defined. It is important to note that our results are obtained using the actual fixed exchange rate (ER) as in Liu and Wu (2014). Similar inferences are drawn using the relative size at deal completion as the ER proxy as in Mitchell, Pulvino and Stafford (2004).

Eq. (3) attempts to capture changes in daily relative short selling around M&A announcements that can be attributed to M&A arbitrage trading. The estimated parameters from the estimation of Eq. (3) in the first stage that are reported in Panel A of Table 3.11 are used to compute fitted values of $\Delta\%ShortO$ (i.e., $Fit\Delta\%ShortO$) that are used in the estimation of eq. (4) in the second-stage. The difference in the estimated β_1 for *StockM&A* when eq. (4) is estimated with and without the inclusion of $Fit\Delta\%ShortO$ that is reported in Panel B of Table 3.11 measures the effect from M&A arbitrage short selling on mean PCAR[-1, 1].

[Insert Table 3.11 here]

We expect to find that this proxy for short selling attributable to M&A arbitrage trading will explain a material proportion of the mean *PCAR*[-1, 1] based on the summary statistics for $\Delta\%ShortO$ over the 3-day window [-1, 1] presented earlier in Panel B of Table 3.1, where the daily average change of 112.4% is statistically significant (t-statistic = 6.73) for M&As using the stock method of payment while the corresponding change of 68.2% for M&As using cash as the method of payment is not significant (t-value = 0. 61). In Panel B of Table 3.11, we observe that all of the estimated coefficients for *StockM&A* and *CashM&A* are significant at the 0.05 level or

better and that the change in their estimated coefficients with the inclusion of *Fit⊿%ShortO* in eq. (4) is greater for *StockM&A* than for *CashM&A*. Specifically, the estimated coefficient for *StockM&A* changes by -55.13% from -11.61 bps when *Fit⊿%ShortO* is not included in eq. (4) to -5.21 bps when it is included. In contrast, the estimated coefficient for *CashM&A* changes by only 19.26% from 24.35 bps when *Fit⊿%ShortO* is not included in eq. (4) to 29.04 bps when it is included.

Since *Fit⊿%ShortO* is likely to be a noisy proxy for the short selling that is attributed to M&A arbitrage as it may include short selling of the acquirer without buying an offsetting position of the target, we now use a modified version of the two-stage regression methodology of Mitchell, Pulvino and Stafford (2004) to determine what portion of the variability of *PCAR*[-1, 1] can be attributed to arbitrage M&A short selling. To do so, we augment eq. (4) with the other determinants of *PCAR*[-1, 1] that we used in previous sections of this paper. We also include the difference in the values between the acquirer and its target for some variables whose monikers have a _Diff suffix attached to them (e.g., *CANIPR_Diff*). As in Bekaert, Hodrick and Zhang (2012), we use a variable reduction process where we eliminate insignificant variables before using two methods to gauge the relative importance of the various variables in explaining the variation in the *PCAR*[-1, 1]. The first is the method of Bekaert, Hodrick and Zhang (2012) that uses the sample analogue of the ratio of $cov\left(\hat{\beta}_i x_{it}, \widehat{PCAR}_t\right)/var\left(\widehat{PCAR}_t\right)$ where $\hat{\beta}_i$ is the estimated regression coefficient for independent variable x_i and $\widehat{PCAR}_t$ is the fitted value of the regression for PCAR. The second is the method of Lemmon, Roberts and Zender (2008) which divides the partial sum of squares for each independent variable by the aggregate partial sum of squares across all independent variables in the model. Using either approach, these ratios add to one by construction.

The results reported in Panel C of Table 3.11 reflect the inclusion of other independent variables in eq. (4). We find that the mean *PCAR*[-1, 1] for the stock and cash method of payments are now a significant -2.27 and 33.71 bps. Based on the covariance decomposition reported in the last two columns of Panel C of Table 3.11, the explanatory contributions of each independent variable is quite similar using either covariance decomposition method. Using the

LRZ method, *Δ%ShortO* by far has the largest explanatory contribution of 40.6%, followed by *CANIPR* at 8.1%, *MIAwEQ* at 7.9%, and *MIAwEQ_Diff* at 7.8%.[61]

To summarize, our results not only provide strong evidence for the importance of short selling in explaining the pure price effects for acquirers for M&A announcements but it also supports the explanatory importance of acquirer misvaluation as perceived by the general market or the executives of the acquirer and the managerial interest alignment with its shareholders and bondholders.

3.5.9 3SLS Estimations of a Simultaneous System of Equations

In the previous sections of this paper, both the acquirer choice of method of payment and the (post-) announcement stock price effects for acquirers were related to lagged values of the following: managerial interest alignment with its shareholders (*MIAwEQ*) and with its debtholders (*MIAwDBT*), informativeness of executive insider trading about their firm's value as captured by their abnormal net purchase ratio (*CANIPR*), managerial conservatism measured by pension-related metrics (e.g., *InsDbt*) and corporate social responsible ranking (*CSRcom*). In this section, we estimate a simultaneous system of equations containing these five variables as dependent variables to account for one form of endogeneity by testing if these five variables are simultaneously related, and to test if pre-to-post announcement changes in various potential regressors can explain the pre-to-post announcement changes in these five dependent variables. Previous studies using simultaneous equations models in empirical research strongly suggest that firm decisions such as M&As, characteristics such as managerial traits and governance, and performance such as social responsibility behavior are likely to be jointly determined (Lee, Liang, Lin and Yang, 2016).[62]

A typical equation in the five-equation simultaneous system is given by:

$$\Delta Y_t = \alpha + \beta \Delta Y_{t-1} + \gamma \Delta Y_t^* + \delta \Delta Z_t + \eta_t + \epsilon_t \quad (5)$$

[61] Our results appear to suggest that investor arbitrage is associated with acquirer misvaluation, which supports the argument by Liu and Wu (2014) that the relative size at deal completion is not a clean proxy for ER as it can also proxy for overvaluation.

[62] Many papers analyze the simultaneous interrelationships among a firm's investment, capital structure, and payout policy (see, e.g., Fama, 1974; Higgins, 1972; Switzer, 1984; Peterson and Benesh, 1983; Fama and French, 2002; Harford, Klasa and Maxwell, 2014; MacKay and Phillips, 2005). The interrelationship between board composition and/or ownership with firm performance is also widely examined using simultaneous equations (see, e.g., Woidtke, 2002; Demsetz and Villalonga, 2001; Prevost, Rao and Hossain, 2002; Bhagat and Black, 2002; Ye, 2012; Fich and Shivdasani, 2007).

where Δ refers to pre-to-post announcement change; ΔY_t is the dependent variable used in this equation chosen from *ΔMIAwEQ*, *ΔMIAwDBT*, *ΔInsDbt*, *ΔCANIPR* or *ΔCSRcom*; ΔY_t^* is a vector of one or more dependent variables other than ΔY_tincluded in the equation as a regressor; ΔZ_t is a vector of observable changes in other control variables whose choice is subsequently motivated for each equation; η_t is an unobservable firm effect; and ϵ_t is a random error term.

We now provide the rationale for the independent variables considered for inclusion in the first two equations in the system; namely, when *ΔMIAwEQ* and *ΔMIAwDBT* are the dependent variables. We expect changes in managerial interest alignment with shareholders (debtholders) to be negatively (positively) related with changes in managerial conservatism (e.g., *InsDbt*) and positively related with changes in CSR ranking based on the findings reported in Table 3.3 and in the Online Appendix Table S4.2, and our discussion in Section 3. We expect changes in *ComLev*, another proxy of managerial conservatism, to be similarly related to changes in managerial interest alignments. Based on the finding of Wei and Yermack (2011) that the managerial relative incentive ratio negatively (positively) influences returns for shareholders (bondholders), we expect a negative (positive) relation between changes in the relative incentive ratio (*RelIncentR*) and changes in managerial interest alignment with shareholders (debtholders). We expect that changes in leverage are positively (negatively) related to changes in managerial interest alignment with shareholders (debtholders) based on the findings that higher leverage is associated with higher profit efficiency (Berger and Patti, 2006) and the increased value of diversified firms (Ruland and Zhou, 2005). We expect changes in institutional ownership (*%Insti*) to be positively (negatively) related to changes in managerial interest alignment with shareholders (debtholders) given the finding that institutional ownership is positively related to managerial interest alignment with shareholders (Scholtz, 2009) and that active institutional investors can decrease anomalous comovement returns (Ye, 2012). We expect changes in managerial stock ownership (*%Eq*) to be positively (negatively) related to changes in managerial interest alignment with shareholders (debtholders) based on the argument that equity and debt based holdings of managers are related to agency costs (Jensen and Meckling, 1976), that earnings management declines after the adoption of mandatory stock ownership plans (Quinn, 2014), that managerial interest alignment is stronger with managerial equity ownership (Nyberg et al., 2010), and firm agency costs are negatively affected by managerial firm based wealth sensitivity (Belghitar and Clark, 2015). We expect changes in executive total compensation to be

negatively (positively) related to changes in managerial interest alignment with shareholders (debtholders) based on the finding that CEO pay is negatively related to future shareholder wealth changes (Cooper, Gulen and Rau, 2014).

We continue by providing the rationale for the independent variables considered for inclusion in the third equation in the system where *ΔInsDbt* is the dependent variable. We expect that changes in *InsDbt* are positively related with changes in *MIAwDBT* and *CSRcom*, and negative related with changes in *MIAwEQ* based on the findings reported in Table 3.3 and in the Online Appendix Table S4.2, and our discussion in Section 3. As another proxy for managerial conservatism, we expect changes in *ComLev* to be positively related with changes in *InsDbt*. We expect changes in return volatility (*VolatR*) and *InsDbt* to be negatively related based on the finding of an inverse relation between stock volatility and *InsDbt* (Wei and Yermack, 2011). Similarly, we expect changes in *RelIncentR* and *InsDbt* to be positively related, since *InsDbt* is the numerator of *RelIncentR*. We expect changes in *LGG* and *InsDbt* to be negatively related based on the finding that firms hold liquid assets to enhance their investment efficiency during poor macroeconomic conditions (Erel et al., 2017). We expect changes in managerial conservatism (*InsDbt*) and policy uncertainty (*PUI*) to be negatively related as managers become more conservative when facing policy uncertainty (e.g., Gulen and Ion, 2016, for lower corporate investment). We expect the changes in inside debt to be positively related to changes in institutional ownership, managerial equity ownership, stock past returns and leverage, and negatively related to changes in firm size based on various findings that include a positive (negative) relation between *InsDbt* and financial slack (financial constraints) (Yu-Thompson, Cho and Fu, 2015), positive relation between *InsDbt* and firm size, institutional holdings, CEO equity ownership, stock return and leverage (Cen, 2010), and a negative relation between *InsDbt* and firm size (Olsen and Zaman, 2013).

We continue by providing the rationale for the independent variables considered for inclusion in the fourth equation in the system where *ΔCANIPR* is the dependent variable. We expect *ΔCANIPR* to be negatively related with *ΔCSRcom*, and negatively (positively) related with *ΔMIAwEQ* (*ΔMIAwDBT*) when stock is the chosen method of M&A payment (i.e., *ΔMIAwEQ* × *StockM&A*) and *MIAwDBT* × *StockM&A*, respectively) based on the findings reported in Table 3.3 and in the Online Appendix Table S4.2, and our discussion in Section 3. We expect

ΔCANIPR to be positively related with *ΔVolatR* and *ΔRKRV-HP* based on the argument that informed insider trading leads to the choice of riskier investment projects to benefit from their increased volatility (Bebchuk and Fershtman, 1994) and the finding that insider buys are positively related to past volatility and the long-term MB ratio (Akbulut, 2013). We expect *ΔCANIPR* and changes in share turnover to be positively associated given that high turnover stock portfolios generate superior returns (e.g., Dey, 2005). We expect *ΔCANIPR* to be positively related to changes in institutional ownership given the finding that institutional investors start to accumulate positions in target firms 30 days before an M&A announcement (Li, 2011). Finally, we expect *ΔCANIPR* to be negatively (positively) related to multiple acquirers (single acquirers) given the finding that returns for frequent acquirers decrease consistently (Ismail and Abdallah, 2013).

We conclude by providing the rationale for the independent variables considered for inclusion in the last equation in the system where Δ*CSRcom* is the dependent variable. Based on the rationale provided previously, we expect Δ*CSRcom* to be positively associated with Δ*MIAwEQ*, Δ*MIAwDBT*, Δ*InsDbt*, and Δ*CANIPR*. We include Δ*ComLev* and Δ*ComTotl* as regressors as our previously discussion suggests that they are respectively positively and negatively related to firm CSR ranking. We expect Δ*CSRcom* to be positively related with changes in managerial incentive ratio. We also include various other controls based on the finding of Jo and Harjoto (2011) that CSR rankings are positively related to institutional ownership (*%Insti*), firm size (*Size*), analyst coverage (*ResCov*), State law (*StateLaw*), firm diversification (*Divers*), GIM index (*GIndex*), entrenchment index (*EntIndex*), CEO nomination committee (*CEOnom*), percent of shares owned by directors (*%Director*), and board independence (*%Board*), and negatively related to firm leverage, *ROA*, research and development (*R&D*), debt to assets (*Debt/Assets*). We also include changes in these variables as controls.

We begin our empirical analysis by conducting Hausman (1978) tests to examine if simultaneity bias is present in the OLS regression results. We find that not only the five dependent variables but most of variables capturing firm characteristic and environment factors are endogenous and jointly determined. [63] [64] Since our results from 2SLS indicate significant

[63] According to Gujarati (2003), the rank condition for identification is: Rank $A\Phi = G$-1, where Φ is an exclusion matrix (1 column for each restriction). The order condition is $K - k_i \geq g_i$, where K is the number of total exogenous variables including the constant term, and k_i is the number of exogenous variables included in equations i.

residual cross-correlations, the 3SLS estimation is more efficient than 2SLS estimation. 3SLS uses the disturbance cross-correlations and deals with both underlying endogeneity and cross correlations among equations if the system is correctly misspecified (Jackling and Johl, 2009), which is supported by our results from a Hausman test.[65]

There is a trade-off between strength and endogeneity when using instruments based on lagged dependent variables since shorter lags make the instruments stronger but more endogenous, and vice versa.[66] Based on test results using different lag lengths, we choose the 5th lag of the dependent variables as the instruments for the system of equations.[67] To test for endogeneity, we run the test of over-identifying constraints using GMM estimation. Based on the over-identifying test results reported in Panel A of Table S4.4 in the Supplementary Online Appendix, the J-statistics are insignificant, with a probability between 0.312 and 0.593 for the five equations, which implies that the differences in the J-statistics are all insignificant.[68] Thus we cannot reject the null hypothesis of the over-identifying constraints of using the 5th lag of the five dependent variables as instruments, which supports the strength of our instruments. The strength of the instruments and the consistency of the GMM estimates are also indicated by the Cragg-Donald statistic of 24.205 and 5.913 for the two stages (all above the 5% critical value), respectively,[69] as reported in Panel C of Table S4.4 in the Supplementary Online Appendix.

We execute the GMM endogeneity test to assess the validity of these five instrumental variables in dealing with underlying endogeneity; that is, to test whether an endogeneity problem

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[64] We exclude the exogenous variables from observable firm characteristics for each equation. If a suspect variable is insignificant in both the 2SLS and OLS equations, and no simultaneous equation bias is found using the Hausman test, we do not include that variable in our 3SLS estimation. We obtain similar results when including these exogenous variables in our simultaneous equations.

[65] See Table S4.3 of the Online Supplementary Appendix S4.

[66] Some previous studies use the 4th or the 6th lag as instruments (see, e.g., Wintoki, Linck and Netter (2012)).

[67] We collected data from August 2002 to July 2008 in order to test lags for the dependent variables as long as 6 years. Our model is similar to that of Pindyck and Rubinfeld (1998), p. 390. When replacing the lag length of 5 with that of 4 to repeat the test, we observe that the differences in J-statistic for equations [II] and [III] turned marginally significant at 0.091 and insignificant at 0.129, respectively, while equations [I], [IV], and [V] are insignificant at 0.251, 0.319, and 0.462, respectively. The Cragg-Donald statistic for the level and first differences are 19.425 and 3.59, respectively, all above 10% significance but below 5% significance (Stock and Yogo, 2005). Moreover, when replacing the lag of 5 with that of 6, we find that the Cragg-Donald statistic for the levels is 18.974 (above 10% significance), and 4.29 for the differences (above 5% critical value). Meanwhile, the differences in the J-statistics are all insignificant at 10% or better. These findings suggest that the 5th lag is the most appropriate length for the instruments in our simultaneous equations model.

[68] The probabilities of differences are 0.395, 0.516, 0.472, 0.388, and 0.423 for equations [I], [II], [III], [IV], and [V] respectively.

[69] See Stock and Yogo (2005).

is present among managerial interest alignment with shareholders and debtholders, managerial conservatism, cumulative abnormal trading of firm insiders, CSR composite, and their lags in our estimations. The results of the endogeneity tests based on the GMM estimations suggest that none of the differences in J-statistics are significant, which implies that our endogeneity test results do not reject the null hypothesis of no endogeneity. [70] To summarize, the GMM over-identifying and the endogeneity tests show that endogeneity is not a problem using the fifth lag of dependent variables as instruments and that the 3SLS procedure is efficient for our estimations.[71]

Table 3.12 presents the summary regression results using RATS where the dependent variable of each equation in the system heads one of the columns [I] through [V]. [72] Based on columns [I] and [II], we find that pre- to post-M&A changes in managerial interest alignment with shareholders (debtholders) are negatively (positively) related with changes in managerial conservatism (*ComLev* and *InsDbt*) and managerial incentive (*RelIncentR*), positively related to changes in CSR (*CSRcom*), positively (negatively) related to changes in institutional ownership (*%Inst*) and managerial equity ownership. The relations of managerial interest alignment with CSR and with managerial conservatism are consistent, respectively, with our fifth and seventh hypothesis (H_5 and H_7, respectively).

[Insert Table 3.12 about here]

[70] The results are reported in Panel B of Table S4.4. in the Online Supplementary Appendix.

[71] We also find another set of 0-lagged instrumental variables to repeat our tests. We assume that all the regressors are endogenous except for firm age, the year dummies, and family firm, Q-ratio, CEO tenure and BM ratio. While firm age, our instrumental variable for equation [1] with the dependent variable *ΔMIAwEQ*, is highly correlated with *ΔCSRcom*, it only influences *ΔMIAwEQ*, *ΔMIAwDBT*, *ΔCANIPR* and *ΔIndDbt* through *ΔCSRcom* (i.e., *firmage* has zero covariances with the residuals of the equations containing *ΔMIAwEQ*, *ΔMIAwDBT*, *ΔCANIPR* and *ΔIndDbt* as dependent variables). Family firm, our instrumental variable for equation [II] with *ΔMIAwEQ* as the dependent variable, is highly correlated with *ΔMIAwEQ* but only affects *ΔMIAwDBT*, *ΔCANIPR*, *ΔCSRcom* and *ΔIndDbt* through *ΔMIAwEQ* (i.e., *familyfirm* has zero covariances with the residuals of the equations with *ΔMIAwDBT*, *ΔIndDbt*, *ΔCANIPR*, and *ΔCSRcom* as the dependent variables). Applying similar criteria, we choose Q-ratio, CEO tenure and BM ratio as instrumental variables for equations [III], [IV] and [V] with *ΔIndDbt*, *ΔCANIPR*, and *ΔCSRcom* as the dependent variables, respectively. We obtain probabilities of difference of 0.291, 0.530, 0.449, 0.387, and 0.591 for equations [I], [II], [III], [IV], and [V], respectively, and Cragg-Donald statistic of 26.013 and 6.921 for the first and second stages, respectively. Our conclusions from using these specific instruments remain intact, and the results are available in Table S4.5 of Online Appendix S4.

[72] We first set the list of parameters using a set of *NONLIN* RATS instructions, create the formulas for the equations using *FRML*, set up the instrument list using *INSTRUMENTS*, and then estimate the model using the *NLSYTEM* (*INST*) routine.

Based on column [III] of Table 3.12, we find that the pre- to post-M&A changes in managerial conservatism (*InsDbt*) are positively related to changes in compensation leverage (*ComLev*), CSR ranking (*CSRcom*), relative managerial incentive (*RelIncentR*), institutional ownership (%*Insti*), firm leverage, past return, managerial equity ownership and interest alignment with debtholders (*MIAwDBT*). The relation becomes significantly negative for changes in poor macroeconomics conditions (*LGG*), policy uncertainty (*PUI*), firm size (*Size*), and return volatility (*VolatR*). Thus, the relation between managerial conservatism and managerial alignment with only debtholders (not shareholders) is consistent with the seventh hypothesis (H_7). Although the conclusions for the first three dependent variables are for the relations among the contemporaneous pre- to post-M&A changes, these conclusions support hypotheses H_4, H_5, H_6 and H_7.

Based on column [IV] of Table 3.12, the pre- to post-M&A changes in the cumulative abnormal net insider purchase ratio (*CANIPR*) is positively related with changes in CSR ranking (*CSRcom*), institutional ownership (*%Insti*), and managerial interest alignment with debtholders when the method of M&A payment is stock (*MIAwDBT* × *StockM&A*), and is negatively associated with changes in multiple acquirers (*MAQ*), managerial interest alignment with equity holders when the method of M&A payment is stock (*MIAwEQ* × *StockM&A*), firm misvaluation (*RKRV-HP*), single acquirers, share turnover, and return volatility (*VolatR*). The negative (positive) relation of *CANIPR* with managerial interest alignment with shareholders (debtholders) when the method of M&A payment is stock is consistent with the fourth hypothesis (H_4), and with the conjecture that overvalued acquirers are more likely to choose stock as the method of M&A payment (Akbulut, 2013; Ben-David, Drake and Roulstone, 2015). The significant and positive relation of pre- to post-M&A changes in the informativeness of executive insider trading (*CANIPR*) with changes in *CSRcom* and *RKRV-HP* (based on firm fundamentals) implies that the channels that determine investor "errors-in-expectations" are based on both tangible and intangible firm fundamentals (Derwall, Koedijk and Horst, 2011).

Based on column [V] of Table 3.12, we find that the pre- to post-M&A changes in the CSR composite ranking (*CSRcom*) are positively associated with changes in the cumulative abnormal net insider purchase ratio (*CANIPR*), managerial conservatism measured by pension-related metrics (*CompLev* and *InsDbt*), relative managerial incentive (*RelIncentR*), institutional ownership (%*Insti*), managerial interest alignment with both its shareholders and bondholders

(*MIAwEQ* and *MIAwDBT*), residual analyst coverage (*ResCov*), firm size (*Size*), state law (*StateLaw*), firm diversification (*Divers*), GIM index (*GIndex*), entrenchment index (*EntIndex*), CEO nomination committee (*CEOnom*), director share ownership (*%Director*), and board independence (*%Board*). In contrast, the pre- to post-M&A changes in the CSR composite ranking (*CSRcom*) are negatively related to changes in total executive compensation (*ComTotl*), firm leverage (*Leverage*), debt to assets, research and development (*R&D*), and *ROA*. The *CSRcom-ComTotl* relation is consistent with H_6 and similar findings by Callan and Thomas (2011) and Miles and Miles (2013)[73] and with the finding that executive compensation is associated with executive risk aversion and time preference (Graham, Harvey and Puri, 2013). Consistent with the "errors-in-expectations" argument of Derwall, Koedijk and Horst (2011), the positive *CSRcom-CANIPR* relation implies that increases in the abnormal net purchase ratio of insiders of acquirers precedes increases in the CSR rankings of their firms.

3.6. CONCLUSION

In this paper, we constructed a measure of managerial interest alignment with its shareholders (debtholders). We found that managerial interest alignment with its shareholders (debtholders) has a monotonically increasing (decreasing) likelihood of using stock (cash) as the method of payment in a future M&A, is negatively (positively) related to (post-) M&A announcement returns for shareholders, and is positively (negatively) related to (post-) M&A announcement returns for debtholders. Although both managerial conservatism and managerial interest alignment are related with the likelihoods of respectively the cash and stock methods of payment, only managerial interest alignment has a significant effect on acquirer equity price effects for the M&A announcement window using an extended version of the M&A arbitrage analysis of Mitchell, Pulvino and Stafford (2004).

Our alternative measure of abnormal insider trading (*CANIPR*) using recently available SHO daily short-selling data reflects this group's informed beliefs about own-firm value. We find that for a future M&A this measure is negatively (positively) associated with the use of stock (cash) as the method of payment, and is positively associated with the acquirer's (post-) announcement equity returns. We obtain the same inferences for a measure of relative short interest given that

[73] Our conclusions remain intact whether we use the total compensation of the CEO or the top five executives.

CANIPR measures undervaluation while relative short interest measures overvaluation. Using an extended version of the two-stage regression model of Mitchell, Pulvino, and Stafford (2004), we reported strong evidence for the much greater relative importance of short selling in explaining the pure equity price effects for acquirers for M&A announcements. When combined with the significant explanatory contribution of the abnormal net purchase ratio of the insiders of the acquirer, this implies that the pure equity price effects are substantially affected by acquirer misvaluation as perceived by the general market or the executives of the acquirer.

We found that CSR rankings have a positive relation with the choice of cash as the method of M&A payment and with acquirer announcement price effects. We found that CSR changes over M&A announcements are positively associated with changes in managerial conservatism, managerial alignment with the interests of both shareholders and bondholders and the net purchase ratio of the insiders of acquirers, and negatively associated with changes in the total compensation of the executives of acquirers. This illustrates the effects of "short-termism" behavior of the executives of some acquirers on their firms' CSR rankings.

CHAPTER FOUR

CORPORATE SOCIAL RESPONSIBILITY, VALUE BELIEFS, EXECUTIVE COMPENSATION AND CORPORATE GOVERNANCE

4.1. INTRODUCTION

Corporate social responsibility (CSR) and its relationship with various firm attributes have gained increasing importance among practitioners and academic researchers. While various investors choose firms based primarily on their CSR activities, other investors consider such activities to lesser degrees when making investment decisions. Many of the world's major institutional investors have signed the PRI protocol (Principles for Responsible Investment), and most large firms discuss CSR issues in their reports to investors.

A growing literature finds mixed or inconclusive relations between CSR with corporate governance, executive compensation and other firm attributes such as stakeholder value/wealth, stock price performance, risk, financial performance, profitability, and the cost of capital.[74] This is most likely caused by the proxies used to measure a firm's attributes, such as firm value and executive compensation, and the various ways in which these studies deal with endogeneity.

While this literature deals with unobservable simultaneity and heterogeneity in various ways, it tends to neglect endogeneity due to the impact on current levels of CSR, firm value, executive compensation, and other firm governance characteristics from past values of these variables. Traditional fixed-effects estimates tend to decrease the bias from undetected heterogeneity at the cost of invoking the unrealistic assumption of strong exogeneity. Other methodologies used in the literature to control for endogeneity include: use of an industry-median CSR as an instrumental variable (e.g., Cai, Jo and Pan, 2011; Miles and Miles, 2013), use of a system of equations to control for simultaneity among identified endogenous variables (e.g., Callan and Thomas, 2011), use of two-stage-least-squares (2SLS) regressions with religion rank and a dummy for blue states as instrumental variables for CSR (e.g., Rekker, Benson and Faff, 2014), use of two-stage least squares (2SLS) to control for simultaneity (e.g., Cai, Cui and Jo, 2016),

[74] Examples include Pava and Krausz (1996); Baron, Harjoto and Jo (2011); Orlitzky, Schmidt and Rynes (2003); Margolis and Walsh (2003); Lee and Faff (2009); Starks (2009); and Oikonomou, Brooks and Pavelin (2012).

and the use of the Heckman model for a two-stage treatment effect and firm age as an instrumental variable to control for endogeneity (e.g., Jo and Harjoto, 2011).

The primary objective of this paper is to estimate a four-equation system using econometric techniques that address a more comprehensive set of possible endogeneity issues among four dependent variables (CSR, firm undervaluation, executive compensation, and firm governance) for a sample of 2803 US firms covering the period 1992-2013. To provide tests of the "errors-in-expectations" hypothesis for the undervaluation of firm CSR performance, we develop and use an undervaluation metric that is based on the findings of various studies that insiders tend to be better informed about the true values of their firms (e.g., Jeng, Metrick and Zeckhauser, 1999; Rozeff and Zaman, 1988; Seyhun, 1986, 1988; Cui, Jo and Li, 2015), and such insider trades by managers are profitable.[75] Like the undervaluation metric used by Akbulut (2013), our metric is based on trade decisions of managers as captured by insider trade data over the two quarters prior to an information event.[76]

We provide evidence that the four dependent variables are dynamic and endogenous as are some of the control variables. As a result, we employ a dynamic system-GMM estimator to our panel data to quantify the dynamic and simultaneous relationships between these four variables. The inferences from the dynamic system-GMM estimations are then compared with those from 3SLS estimations of the four-equation system. We examine previously untested proxies for two of our dependent variables; namely, inside debt and compensation leverage as proxies for executive conservatism, and insider trade behavior for firm undervaluation. The motivations for these proxies are developed later in the paper.

This study contributes to the literature in six distinct ways. First, we test dynamic and simultaneous relations among CSR, firm undervaluation, executive compensation and corporate governance. According to our knowledge, no other study provides such a comprehensive examination of the relationships between these four variables. Second, our evidence that firm undervaluation is positively associated with a firm's future CSR ranking provides new avenues of enquiry for both insider trading and firm misvaluation research. Third, we show that two

[75] See, e.g., Agrawal and Nasser (2012); Kraft, Lee and Lopatta (2014); Lee, Lemmon, Li, and Sequeira (2014); Agrawal and Cooper (2015); Aitken, Cumming and Zhan (2015); Hillier, Korczak. and Korczak (2015).
[76] Ben-David, Drake & Roulstone (2015) find that short interest predicts future M&A choices and long-run post-announcement performance for up to six months prior to the M&A announcement.

metrics based on executive pension plans (i.e., inside debt and compensation leverage) have corporate effects that differ from those from firm leverage. Our finding that these pension plan metrics are positively related to a firm's future CSR rankings contributes to both the CSR and executive compensation literatures by providing further evidence on the effect of managerial conservatism on corporate decisions. Fourth, this study contributes to the corporate mispricing literature in that our insider trading based undervaluation metric identifies a unique mispricing component that is not captured by the commonly used mispricing measures in the literature. It also has significant explanatory power for explaining a firm's future CSR ranking, executive compensation and corporate governance. Fifth, this paper contributes to the literature by further emphasizing the need to examine the relations among independent and dependent variables and their relations with CSR rankings and to the need to use more sophisticated econometric techniques (such as system-GMM and 3SLS) to estimate simultaneous systems of equations to control for endogeneity and simultaneity. Sixth, this paper contributes to the literature on the asymmetric effects of various regressors. To illustrate, we find that institutional ownership, shareholder rights, board independence, firm undervaluation and firm size each have an asymmetrically greater negative impact on a firm's CSR as predicted by the findings of Derwall, Koedijk and Horst (2011) and Dimson, Karakaş and Li (2015).

The rest of the paper is organized as follows. Section 2 develops the hypotheses tested herein based on the theoretical and empirical literatures. Section 3 describes the sample, data and characteristics of the variables used in the empirical tests. Section 4 presents some preliminary empirical results, including the determinants of the likelihood of CSR changes. Section 5 presents and interprets the results for the simultaneous systems of equations first estimated using 3SLS and then System-GMM with CSR ranking, firm undervaluation, total CEO compensation and a shareholder rights index as the dependent variables. Section 6 concludes the paper.

4.2. DEVELOPMENT OF THE HYPOTHESES

The literature, which is selectively reviewed in Appendix 4.A, generally supports a positive relationship between a firm's value and its CSR ranking. However, only the paper by Derwall, Koedijk and Horst (2011) examines the relation between a firm's misvaluation and the ranking of its CSR performance. According to their "errors-in-expectations" hypothesis, CSR firms can

be undervalued if markets are inefficient in that investors make systematic expectational errors about, for example, the net benefits from firm CSR activities.[77] In support of this hypothesis, Derwall, Koedijk and Horst (2011) find that some CSR practices are not properly valued over the short but are over the long run. They also find that values-driven investors use "negative" screens while profit-driven investors use "positive" screens. This could lead to an asymmetric effect on firm undervaluation from increases and decreases in CSR rankings. Cui, Jo and Li (2015) find that both the number and volume of insider trading transactions are positively related with CSR activities, and that legal insider transactions are positively associated with CSR engagements. Since we expect greater firm undervaluation with a higher CSR ranking, our first hypothesis which tests the "errors-in-expectations" hypothesis is:

H_1: A firm's undervaluation is related positively with its CSR ranking.

Some studies report that corporate governance is related to firm value (Deng, Kang and Low, 2013; Servaes and Tamayo, 2013; Johnson and Greening, 1999) or to firm performance (Agrawal and Knoeber, 1996). Other studies claim that firm governance is related positively to CSR performance (Callan and Thomas, 2011; Adam and Schwartz, 2009; Jian and Lee, 2015). Thus, our second hypothesis which is used to examine the link between firm undervaluation and corporate governance is:

H_2: A firm's undervaluation is negatively related to the level of its corporate governance.

If executive compensation is the result of efficient bargaining between shareholders and executives designed to best mitigate the principal-agent problem, the productivity (or optimal contracting) view argues that executive compensation effectively rewards scarce decision-making talent and productivity.[78] Due to their influence over establishing the level of their own compensation, the entrenchment (or managerial power) view argues that current levels of executive compensation are inefficient wealth transfers from shareholders to decision makers (Bebchuk, Fried, and Walker, 2002; Bebchuk and Fried, 2003). Some studies (e.g., Nguyen and Nielsen, 2014) find a positive relation between executive compensation and firm performance that supports the productivity view, while others (Moussa, Rachdi and Ammeri, 2013; Cooper,

[77] Derwall, Koedijk, and Horst (2011, p. 2139) provide some reasons why markets may fail to value some CSR practices properly.
[78] See Lucas (1978); Tervio (2008); Gabaix and Landier (2008); amongst others. Murphy (1999) provides an excellent discussion on the evolution of our understanding of executive compensation.

Gulen and Rau, 2014) find a negative relation between excess executive compensation and future stock market performance that supports the entrenchment view.[79] Although the nature of the relation between executive compensation and firm undervaluation can only be determined empirically, we expect that the negative relation would prevail. Thus, our third hypothesis is:

H_3: A firm's undervaluation is negatively related to the level of its executive compensation.

Since CEO compensation is related to a CEO's risk-aversion and time preferences (Graham, Harvey and Puri, 2013), compensation leverage (i.e., the present value of executive pensions divided by the sum of this present value and the values of all equity claims held by the executives) through its effect on executive risk-aversion or conservatism is expected to be negatively related with firm value and positively related with firm undervaluation. Thus, our fourth hypothesis is:

H_4: A firm's undervaluation is negatively related to its executive compensation leverage.

A growing literature finds that a firm's CSR ranking and executive compensation are negatively related (e.g., Miles and Miles, 2013; Callan and Thomas, 2011), which is consistent with the conflict-resolution hypothesis based on the stakeholder theory (Jensen 2002; Calton and Payne, 2003; Sherere, Palazzo and Baumann, 2006).[80] The relation is significant for total and cash compensation in Cai, Jo and Pan (2011), and for total compensation (including long-term compensation from stock options) in Rekker, Benson and Faff (2014) who also find that this relation is driven by some CSR sub-components (namely, employee relations, diversity and environment). Jo and Harjoto (2011) interpret their finding that a firm's CSR ranking is positively related with its industry-adjusted Tobin's Q as supporting the conflict-resolution hypothesis. Thus our fifth testable hypothesis is:

H_5: A firm's CSR ranking is negatively related with its executive compensation.

While the CSR literature reports evidence that a firm's CSR ranking is negatively related to its leverage (e.g., Deng, Kang and Low, 2013; Manos and Drori, 2016), the debt component of leverage does not distinguish between inside debt (debt held by executives) and debt held by others or firm obligations incurred for executive pension plans that are not included in a firm's

[79] Brick, Palmon and Wald (2006) interpret the negative relation as being consistent with cronyism.
[80] The conflict-resolution hypothesis states that strong corporate governance forces managers to act in the best interests of shareholders.

debt.[81] Since a firm's CSR ranking is related negatively to its leverage, we expect that due to their hypothesized effects on managerial risk aversion (conservatism) that a firm's CSR ranking will be negatively related to its inside debt and compensation leverage. Thus, our sixth testable hypothesis is:

H_6: A firm's CSR ranking is inversely related to its inside debt and to its compensation leverage.

According to the conflict-resolution hypothesis, CSR investments are viewed as an effort to resolve potential conflicts among various stakeholders. As such, it predicts a positive relation between a firm's CSR ranking and the strength of the concerns of its monitors for a firm's CSR ranking. Monitors include shareholders as captured by the level of shareholder rights, boards of directors as captured by, e.g., their level of independence, institutional investors and security analysts. According to the agency theory hypothesis (e.g., Barnea and Rubin, 2010), a firm's CSR ranking is determined by a principle-agent relationship, where less monitored managers are prone to overinvestment in order to obtain better personal reputations, which eventually leads to managerial overconfidence. This agency theory hypothesis predicts a negative relation between a firm's CSR ranking and the strength of the concerns of its monitors for a firm's CSR ranking. Which directional prediction prevails is likely to be monitor-specific and can only be determined empirically. Thus, our seventh testable hypothesis is:

H_7: A firm's CSR ranking is related to the perceived merits of a firm's CSR ranking by each of the firm's monitors.

4.3. SAMPLE, DATA AND VARIABLE CHARATERISTICS

Our initial sample consists of over 3000 firms with calendar year-end CSR rankings from the MSCI ESG STATS (formerly KLD) database. This is reduced to a final sample of 2803 firms representing 25,571 firm-year observations over the period from 1992 to 2013 after deleting firm-year observations missing the required data from the sources identified below for the following: insider trading, institutional holdings, number of analysts following a firm,

[81] See, e.g., American Academy of Actuaries, 2004, *Fundamentals of Current Pension Funding and Accounting for Private Sector Pension Plans*.

governance, and financial and market performance. Equity ownerships are obtained from CDA/Spectrum 13 (f) filings for unaffiliated institutional holders whose aggregated holdings exceed 5%. We estimate residual coverage using the number of analysts following a firm that is available from the Institutional Brokers Estimation Services (I/B/E/S) database.[82] The 24 firm-level anti-takeover provisions (ATPs) used to construct the shareholder rights index *IndexGIM* (ranging from 0 to 24) are drawn from the RiskMetric database.[83] We assume that the shareholder rights provisions reported for a firm for any given year by RiskMetric continue to be in place up to the year of their update (as in Gompers, Ishii and Metrick, 2003, 2010; Bebchuk and Cohen, 2005). Compensation data are obtained from Compustat's Executive Compensation Database (ExecuComp). Traded bond data are hand collected from Mergent's Bond Record database (previously Moody's), and audit committee director appointments are hand collected from Form 8-K filings with the SEC by disclosed issuers.[84] The financial and stock market data are obtained from Compustat and CRSP, respectively.

Table 4.1 presents descriptive statistics for all the variables used in this study that are described in Appendix 4.B. In these tabulations firms are considered as having (no) CSR engagements if they have (no) ranking observations. These summary statistics are consistent with those reported in previous CSR studies (e.g., Cai, Jo and Pan, 2011; Deng, Kang and Low, 2013; Rekker, Benson and Faff, 2014). Table 4.2 reports the bivariate correlation matrix for the independent variables of our main interest herein. Consistent with previous papers, CSR ranking (*CSRcom*) is related positively to board independence (*%Board*) and institutional share ownership (*%Insti*). CSR ranking is significantly correlated with all governance variables and negatively correlated with CEO compensation. The correlation coefficients between CSR ranking and the remaining variables that range from 0.07 to 0.32 are slightly higher in absolute values and statistically significant at the 5% level or better. Correlations exceeding 0.3 are between the residual coverage with *CSRcom*, *CSR*, and *CSRnet*, between the residual coverage with *R&D/Sales* and *IndexGIM*, between *IndexGIM* with $IndexGIM_{t-1}$, *Uvdum* with *CSRnet*, and between *InsDbt* with *ComLev*.

[82] The potential relation of analyst coverage to various firm characteristics will lead to a spurious relationship between analyst behaviors and firm mispricing or executive compensation. As in many previous studies, we follow Yu (2008) and use the residual value of analyst coverage (i.e. residual coverage) to mitigate this concern.
[83] Measures of corporate governance from the MSCI ESG STATS database are not used because they are very different from conventional corporate governance measures (Jo and Harjoto, 2012).
[84] We obtain data from August 2004, which is when the new SEC disclosure rule became effective.

[Please place Tables 4.1 and 4.2 about here.]

The method detailed in Appendix 4.C is used to estimate the values of the *AIB* (Abnormal Insider Buys) misvaluation measure. Table 4.3 reports the time-series means of the coefficients from yearly regressions of insider trading on the control variables specified in equation (C.1).[85] Almost all of the estimated coefficients are significant at the 1% level with their expected signs. As expected, prior insider trading (*lnTrading*) is positively associated with current insider trading with estimated coefficients of 0.2014 to 0.4732 that are similar to the coefficients of 0.1915 to 0.4639 obtained by Akbulut (2013). This implies that the relation between past and current self-trading of insiders is similar when examined annually rather than quarterly. Similarly, prior insider trading in peer firms (*Ptrading*) is positively related with current insider trading. Open market buys and sells are positively associated with manager ownership (*Ownership*) while option exercise purchases are negatively associated with manager ownership. The three types of insider transactions are negatively associated with total assets (*Assets*), residual coverage (*ResCov*) and the percentage of equity in the CEO's total compensation (*%ComTotl*), and positively associated with total CEO compensation (*ComTotl*). The negative association of open-market purchases with the percentage of institutional investors (*%Insti*) becomes positive for open-market sales and option-exercise purchases.

[Please place Table 4.3 about here.]

We now examine if the *AIB* misvaluation estimates are different from other misvaluation measures commonly used in the literature and defined in Appendix 4.B. We find that *AIB* is markedly different given its very low and statistically significant correlation with these alternative misvaluation measures. Based on untabulated results, *AIB*'s correlation is 0.0512 with MP^{HP}; 0.1207 with the PAIT measure of Akbulut (2013), 0.1143 with Tobin's Q; 0.0845 with the Pastor and Veronesi (2003) MB ratio (*PV_MB*), 0.0691 with the Dong, Hirshleifer, Richardson and Teoh (2006) (*DHRT*) misvaluation measure market-to-book ratio; and 0.0513, 0.0089 and 0.0069 with the long-run pricing to book (*RKRV_Long*), time-series sector short-run error (*RKRV_Sector*), and the firm specific short-run pricing error (*RKRV_Firm*) components

[85] In all estimations throughout this study, the criterion used to deal with multicollinearity is that the variance inflation factors (VIF) be under ten. In specifications where VIF exceeds four and is below ten, other factors that influence the stability of the estimates are considered to ensure the consistency of the estimations. For more details, see, e.g., O'Brien (2007).

based on the MB ratio decomposition of Rhodes-Kropf, Robinson and Viswanathan (RKRV) (2005).

4.4. PRELIMINARY EMPIRICAL RESULTS

4.4.1 Characteristics and Determinants of Undervalued Firms

Table 4.4 presents summary distributional statistics for *AIB* (the misvaluation measure based on insider trading data where positive values indicate undervaluation) sorted by the subsequent differences in the CSR composite for firms. The *AIB* mean of 0.0044 is highly significant (standard deviation = 0.0011) for all firms. Firms with positive CSR changes ($\Delta CSRcom_{i,t} > 0$) have a significantly positive mean *AIB* of 0.0147 (standard deviation = 0.0023), firms with negative CSR changes ($\Delta CSRcom_{i,t} < 0$) have a significantly negative mean *AIB* of -0.0091 (standard deviation = 0.0016), and firms with no CSR changes have a significant but relatively small mean *AIB* of 0.0045 (standard deviation = 0.0009). These results are consistent with our conjecture that managers are more informed about the value of their firm's CSR performance, and on balance believe that CSR firms are undervalued.

[Insert Table 4.4 about here]

Table 4.5 reports the average values for various characteristics of firms placed in three *AIB*s terciles.[86] If insider trading represents managers' beliefs about firm pricing fundamentals, the average firm in the high (low) *AIB* tercile will be relatively more undervalued (overvalued). Columns [I], [II], and [III] report the mean values for the firm characteristics for the High, Medium, and Low *AIB* terciles, respectively. We observe that most of the means for firm characteristics in the High versus Low AIB terciles are statistically different. Of primary interest is the statistically significant difference of 0.0575 (t-stat = 6.51) for the CSR composite rankings between the mean of 0.0348 for the High *AIB* tercile and -0.0227 for the Low *AIB* tercile. This indicates that firms in the high (low) tercile of abnormal net insider share purchases, on average, precede a positive (negative) CSR composite ranking. Using a 5% critical t-value, the firms in the High *AIB* tercile compared to those in the Low *AIB* tercile have a significantly lower mean

[86] Descriptions of all variables are provided in Appendix B.

CEO total compensation (*ComTotl*), shareholder rights (*IndexGIM*),[87] inside debt (*InsDbt*), compensation leverage (*ComLev*), and debt ratio (*Debt/Assets*); and significantly higher mean diversification level (*Divers*), likelihood that CEO is also board chair (*Duality*), periods of financial crisis (*CRISIS*), and/or nomination committee chair (*CEOnom*), percentage of independent directors (*%Board*),[88] percentage of institutional ownership (*%Inst*), firm size (*Assets*), RKRV'S firm specific short-run pricing error (*RKRV_Firm*), MP^{HP}, and R&D ratio (*R&D/Sales*).[89]

[Insert Table 4.5 about here]

We use fixed-effects panel regressions and two estimation approaches to examine possible determinants of firm undervaluation as proxied by *Uvdum*. For the Heckman two-stage approach designed to deal with selection bias, we use the inverse Mills' ratio (gamma) obtained from a Probit model in a first stage estimation as a regressor in the second stage estimation. For the IV approach designed to deal with an endogenous regressor, we use firm age (*firmage*) as our chosen instrumental variable (IV) since firm age is highly correlated with *CSRcom* but only influences *Uvdum* through *CSRcom* (i.e., Cov(*firmage*, ε) = 0).

Based on the summary regression results reported in Table 4.6, we observe that undervaluation as proxied by the net shares purchased by managers (*Uvdum*) is significantly and positively related with *CSRcom* in all the specifications, and that this relation does not depend upon the choice of which control variables are included in the estimations, such as the inclusion or exclusion of the governance or pension-related variables. We also observe that almost all the coefficient estimates for the regressors are significant and robust across the two estimation approaches. A notable exception is the estimated coefficient for institutional ownership *(%Insti*) which is significantly negative in the Heckman two-stage approach but becomes insignificant or marginally significant using the IV estimation approach.[90] This may reflect to some extent the

[87] A higher value of *IndexGIM* represents stronger shareholder rights (more takeover pressure), and a lower potential for managerial entrenchment. This is accomplished by reverse ordering the ranks in the original index.
[88] The percent of independent directors (*%Director*) is used to measure board independence (Linck, Netter and Yang, 2008; Hermalin and Wesbach, 1998, 2003; Raheja, 2005; Harris and Raviv, 2008).
[89] Wilcoxon signed-rank test results for the observations for each year and each characteristic fail to reject the hypothesis at the 5% level that the sorted firms are normally distributed around the median.

[90] Heckman's (1979) two-stage regressions are estimated by including firm size, debt to assets, and R&D to sales, in order to compare the results across the various estimation methods. *Gamma* (inverse Mills' ratio) is included along with the other control variables in the second stage of this estimation approach. The significantly negative

conflicting roles of institutions as investors and monitors (Johnson, 2014). The robustness of the significantly positive estimated coefficients for *ResCov* using various specifications of the two estimation approaches suggests that firm undervaluation based on insider expectations increases with greater lagged residual analyst coverage when *ResCov* is used as a proxy for the underlying expectations of analysts with higher values corresponding to better aggregate measures of their actual expectations about a firm's true value.[91]

[Insert Table 4.6 here]

4.4.2 Determinants of the Likelihood of CSR Changes

Table 4.7 reports summary results for logistic regressions when the dependent variable is a dummy variable based on changes in one of three CSR rankings which are commonly used in the literature, namely, *CSRcom*, *CSRstr*, and *CSRcon*.[92] Consistent with many previous studies (e.g., Servaes and Tamayo, 2013; Jo and Harjoto, 2011), most of the independent variables are significantly related to the likelihood of a change in a CSR ranking and have opposite signs when dummies capturing changes in CSR strengths and concerns (*DΔCSRstr* and *DΔCSRcon*, respectively) are examined separately. As expected, positive (negative) changes in the likelihoods of *CSRcom* and *CSRstr* are negatively (positively) related to total CEO compensation (*ComTotl*) and positively (negatively) related to the undervaluation dummy variable based on the *AIB* tercile rankings (*Uvdum*), and positive (negative) changes in the likelihoods of *CSRcon* are positively (negatively) related to *ComTotl* and negatively (positively) related to *Uvdum*. The relationships between each of the three CSR rankings measures and firm undervaluation as measured by *Uvdum* remain qualitatively unchanged in untabulated results when MP^{HP} is replaced with one of the other mispricing measures, i.e., *PAIT*, *Tobin's Q*, *PV_MB*, *DHRT*, *RKRV_Long*, *RKRV_Sector*, and *RKRV_Firm*.

Thus, the estimated relation between changes in *CSR* and *ComTotl* are consistent with the predicted sign for the conflict-resolution hypothesis for H_5, and the relations of *CSR* changes with *Uvdum* are consistent with the predicated sign for the risk-mitigation hypothesis for H_1. Our

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coefficients for *Gamma* suggest the existence of a potential sample selection bias in the estimations if not adjusted for.

[91] *ResCov* measures a firm's unexpected analyst following.

[92] The summary regression results for two other commonly used measures of CSR rankings are reported in the Online Internet Appendix Table I.2 which is a separate document from this paper that is available upon request. The results are qualitatively the same when we use Probit models to estimate the likelihood of a CSR change. The untabulated results also remain intact when we control for risk using the standard deviation of stock returns.

findings for the relations of *CSR* changes with *Uvdum* also are consistent with a number of previous studies that identify a positive relationship between CSR activities and firm value (e.g., Deng, Kang, and Low, 2013; Edmans, 2012; Servaes and Tamayo, 2013; Lins, Servaes and Tamayo, 2016; Derwall, Koedijk, and Horst, 2011).

[Insert Table 4.7 here]

We find weak evidence for a relationship between each of the three CSR ranking measures and the two pension-related variables. Specifically, the likelihood of positive changes in composite CSR rankings (*DΔCSRcom*) is significantly and negatively related with inside debt (*InsDbt*), the likelihood of positive (negative) changes in the CSR strength rankings (*DΔCSRstr*) is significantly and negatively (and positively) related with inside debt (*InsDbt*) and the likelihood of positive (negative) changes in CSR concern rankings (*DΔCSRcon*) is significantly and positively (negatively) related with compensation leverage (*ComLev*). These results are consistent with the predicted sign for these pension-related variables due to their hypothesized effects on managerial risk aversion as stated in H_6.

For the other regressors and in the interests of brevity, we only discuss the results reported in Columns [1] and [2] of Table 4.7 for positive changes. We observe that the likelihood of a positive change in a firm's combined CSR ranking (*DΔCSRcom*) increases for firms with the following characteristics: more diversified (*Divers*), less leveraged (*Debt/Assets*), larger (*Assets*), higher R&D ratios (*R&D/Sales*), lower shareholder rights (*IndexGIM*), CEO is the chair or a member of the board nomination committee (*CEOnom*), higher percentage of independent board directors (*%Board*), higher institutional ownership (*%Insti*), and higher residual coverage (*ResCov*). The results for *CEOnom*, *%Board*, *%Insti* and *IndexGIM* support H_7 and the expectation that the relation is monitor specific.

Based on the Wald test, we reject the null hypothesis at the 1% level that the differences in the coefficients estimates between the samples of positive and negative changes in the CSR rankings are the same. Furthermore, the elasticities are larger for *%Insti*, *IndexGIM*, *%Board* and *Uvdum* and lower for firm size for the regressions based on positive changes in *CSRcom* and CSRstr than for negative changes in *CSRcon*.[93] This finding is indirectly consistent with the finding of

[93] The lower relative effect on negative versus positive changes for CSR concerns, Δ*CSRcon*, for *%Insti*, *IndexGIM*, *%Board* and *Uvdum*, for example, is consistent with the results reported in the other columns, since a negative (positive) Δ*CSRcon* represents an increase (decrease) in CSR rankings. The elasticity at the sample mean for a level variable is given by $(dy/y)/(dx/x) = \beta \times (\bar{x}/\bar{y})$, where $\bar{x}$ is the sample mean of the independent

Derwall, Koedijk, and Horst (2011) that value-driven investors primarily use *negative* screens to avoid controversial stocks, while profit-driven investors use *positive* screens, and with the finding of Dimson, Karakaş and Li (2015) that positive (zero) cumulative abnormal returns are associated with (un)successful CSR engagements.

4.5. RESULTS FOR SIMULTANEOUS SYSTEMS OF EQUATIONS

4.5.1 3SLS Estimations of a Simultaneous System of Four Equations

The literature has abundant applications of simultaneous equations models in finance research given the fact that firm decisions, characteristics, and performance may be jointly determined (Lee, Liang, Lin and Yang, 2016). Coles, Daniel and Naveen (2006) examine the joint determination of managerial incentives and policy choices using three stage least squares (3SLS), whereas Chen, Steiner and Whyte (2006) employ a two-equation model using 2SLS to estimate the relationship between executives' incentive compensation and firm risk for the banking industry.

The relation among the four variables should be contemporaneously determined and be taken into account in a simultaneous equations framework. CSR papers using 3SLS include Callan and Thomas (2011), Mishra and Modi (2013), Cheng, Ioannou and Serafeim (2014) and Bouslah, Kryzanowski and M'Zali (2016). Another important source of endogeneity arises because firm's current actions will affect its control environment and future performance (Wintoki, Linck and Netter; 2012).

In this section, we examine whether these four variables are simultaneously determined and whether a number of variables have power to explain these four variables. To address this issue, we use three stage least squares (3SLS) to estimate a simultaneous equations system that includes one equation for each of these four independent variables that are both internal and

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variable x, β is the estimated coefficient for x, and $\bar{y}$ is the sample mean of the dependent variable y. We obtain elasticities of 0.0042 {i.e., $0.008 \times 0.5201/1.000$}, 0.0047{i.e., $0.009 \times 0.5201/1.000$}, 0.0094{i.e., $0.018 \times 0.5201/1.000$}, 0.0109{i.e., $0.021 \times 0.5201/1.000$} for the level variable *%Insti* in columns (1) to (4), respectively, implying that the relative effect of a change in *%Insti* is greater for negative versus positive changes in *CSRcom* (i.e., *D*Δ*CSRcom*). For log variables such as *Assets*, the elasticities are given by $(dy/y)/(dx/x) = \beta/\bar{y}$. For dummy variable *Uvdum*, the elasticity is given by $(dy/y)/(dx/x) = d\ln(y)/(dx/x) = \beta/x = \beta$. The elasticities are 0.062, 0.085, 0.095, 0.183 for the dummy variable *Uvdum* in columns (1) to (4), respectively.

external to the firm. The system in line with the classical form for tests of structural equations is given by:

$$Y_t = \alpha + \beta Y_{t-1} + \gamma Y_t^* + \delta Z_t + \eta_t + \epsilon_t \quad (1)$$

where Y_t is the dependent variable used in a specific equation in the system chosen from *CSRcom*, *Uvdum*, *ComTotl* and *IndexGIM*; Y_t^* is a vector of one or more dependent variables other than Y_t included in the equation as regressors; Z_t is a vector of other observable control variables whose choice is subsequently motivated for each equation; η_t is an unobservable firm effect; and ϵ_t is a random error term.

First equation in the system. We start by exploring the potential independent variables for the first equation where *CSRcom* is the dependent variable. We expect CSR to be positively related to firm undervaluation, board independence, CEO nomination committee, institutional ownership, residual coverage, firm diversification, firm size, R&D to sales, and negatively related to executive compensation, shareholder rights, inside debt, compensation leverage, and debt to assets, based on our discussion in Section 2, and the findings reported earlier in Tables 2 and 7. We expect that the financial crisis is related to CSR rankings based on evidence that the relation between CSR rankings and risk is significantly different in the crisis period (Bouslah, Kryzanowski and M'Zali, 2016).We also include a number of other controls based on the findings of Jo and Harjoto (2011) that CSR rankings are positively related to CEO duality (*Duality*), State laws (*StateLaw*), entrenchment index (*EntIndex*), the index of Gompers, Ishii and Metrick (2003; 2010),[94] percent of shares owned by directors (*%Director*), and to the measure of firm valuation (MP^{HP}).

Second equation in the system. We expect firm undervaluation (*Uvdum*) to be positively associated with CSR, inside debt, compensation leverage, percent of shares owned by directors (*%Director*), board independence (*%Board*), CEO duality (*Duality*), CEO nomination, family firm, residual coverage (*ResCov*), firm diversification (*Divers*), firm size, and R&D to sales, and negatively associated with executive compensation, shareholder rights, institutional ownership (*%Insti*), debt to assets, based on our discussion in Section 2 and the findings reported earlier in Tables 2, 5 and 6. We expect firm undervaluation to be positively related with *VolatR* and MP^{HP}

[94] We use our shareholder rights index instead which is the inverse of the GIM index.

given the finding that informed insider traders choose riskier investment projects to benefit from their increased volatility (Bebchuk and Fershtman, 1994) and the argument that insider purchases are positively associated with past volatility and the long-term MB ratio (Akbulut, 2013). We expect firm undervaluation and share turnover to be positively related since stock portfolios with high turnovers generate superior returns (Dey, 2005). We expect that the financial crisis is associated with firm undervaluation (*Uvdum*) based on the finding by Akin, Marín and Peydró (2016) that trades by top five executives reveal their understanding of bank risk-taking before and during the crisis.

Third equation in the system. We expect executive compensation (*ComTotl*) to be negatively associated with CSR, firm undervaluation (*Uvdum*), residual coverage (*ResCov*) and shareholder rights (*IndexGIM*) based on our discussion in Section 2, and the findings reported earlier in Tables 2, 6 and 7. Earlier studies (e.g., Coughlan and Schmidt, 1984; Warner et al., 1988; Murphy, 1999) find that firm performance is positively related with CEO compensation. Given the finding of Gulen and Ion (2016) that industry and size adjusted CEO pay are negatively associated with future shareholder returns, we expect executive compensation to be positively related with past returns (*PReturn*). We expect a positive relation between executive compensation and blockholder interest (*BlockH*) based on the finding by Bethel et al. (1998) that active blockholders enhance shareholder value although Holderness (2003) concludes that blockholders not only have incentives to monitor management but they also might consume corporate resources. We expect executive compensation to be negatively related to institutional ownership (*%Insti*) based on the finding by Hartzell and Starks (2003) that concentrated institutional ownership moderates executive compensation and after considering the effect of the finding by Woidtke (2002) that the monitoring role of some institutions may potentially be compromised due to their conflicts of interest with other shareholders. Our expectations for other controls are based on the finding by Rüdiger (2009) that executive compensation is positively related with CEO duality, firm size, and return volatility (*VolatR*), and negatively related with firm mispricing.

Fourth and final equation in the system. We expect shareholder rights (*IndexGIM*) to be negatively related with CSR, executive compensation, and firm undervaluation based on our discussion in Section 2, and the findings reported earlier in Tables 2, 5, 6 and 7. Shareholder

rights are expected to be positively related with cash compensation as in Belghitar and Clark (2015) based on the finding that higher cash compensation lowers agency costs by providing risk-averse managers the opportunity to diversify externally (Belghitar and Clark, 2015). We expect shareholder rights to be associated with bond yield spreads (*Spreads*) and blockholdings (*BlockH*) given the finding that lower debt financing costs are associated with the increased use of antitakeover measures (Klock, Mansi and Maxwell, 2005) and lower yields are associated with the presence of institutional blockholders, particularly in the presence of multiple antitakeover measures (Cremers, Nair and Wei, 2004). We expect shareholder rights to be negatively related with past returns based on the findings of a positive relation between the use of antitakeover measures and firm poor performance (Daines and Klausner, 2001; Field and Karpoff, 2002; Bebchuk and Cohen, 2005; Bebchuk, Coates IV and Subramanian, 2003; and Gompers, Ishii and Metrick, 2003) and poor firm future operating performance (Coles, Daniel and Naveen, 2006) and from the presence of negative abnormal returns surrounding antitakeover adoptions that suggest that antitakeover measures (ATMs), on average, entrench managers (Malatesta and Walkling, 1988; Reingaert, 1988). We expect shareholder rights to be positively related with board independence based on the finding by Brickley, Coles and Terry (1994) that market reactions to abnormal returns surrounding antitakeover adoptions depend on board structure. We expect corporate board ownership (CBO) to be associated with shareholder rights based on the finding of Bhagat and Bolton (2006) that corporate board ownership is a more appropriate measure of corporate governance than the index of Gompers, Ishii and Metrick (2003; 2010) and Bebchuk, Cohen and Ferrell (2004). We expect shareholder rights to be related with inside debt and compensation leverage based on the finding of Sundaram and Yermack (2007) that inside debt which better aligns CEO incentives with those of debtholders has a role in mitigating a potential risk-shifting agency problem of managers associated with deferred compensation (Jensen and Meckling, 1976) and the finding that the use of debt compensation of managers (e.g., inside debt) is better than bonuses to deal with potential managerial agency problems (Edmans and Liu, 2010).

To identify the system, we first apply Hausman (1978) tests to each equation to select the endogenous variables. Exogenous variables are drawn from the corporate governance and firm characteristics that are out of the control of managers (e.g., the percentage of institutional share

ownership) or predetermined (e.g., whether or not the firm is a family firm). [95] The coefficients obtained from OLS estimation of the relations among the four variables set forth in the model are inconsistent when simultaneous equation biases are present. We use Hausman (1978) tests to identify the possible presence of simultaneity bias in the OLS regression results.[96] In addition to the four variables, most of the governance and firm characteristic variables were also found to be endogenously and jointly determined. We find significant residual cross-correlations in 2SLS estimation. Thus, 3SLS estimation procedure is efficient in addressing the cross-correlations of the disturbances. The simultaneous equation estimation with 3SLS is chosen over ordinary least squares (OLS) because it emits unbiased and consistent estimated coefficients for the exogenous variables and it facilitates an examination of interdependence among endogenous variables that are related to common exogenous variables. According to Jackling and Johl (2009), 3SLS regression is preferred over 2SLS because 3SLS addresses both potential endogeneity and cross correlations between equations if the system includes no misspecified equation,[97] [98] which is supported by our Hausman test results reported in Online Internet Appendix Table I.3.

We assume that all the regressors are endogenous except for firm age, the year dummies, family firm, CEO tenure and Tobin's Q. While firm age, our instrumental variable for equation [I], is highly correlated with *CSRcom*, it only influences *Uvdum*, *ComTotl* and *IndexGIM* through *CSRcom* (i.e., *firmage* has zero covariances with the residuals of the equations containing *Uvdum*, *ComTotl* and *IndexGIM* as dependent variables). Family firm, our instrumental variable for equation [II], is highly correlated with *Uvdum* but only affects *CSRcom*, *ComTotl* and *IndexGIM* through *Uvdum* (i.e., *familyfirm* has zero covariances with the residuals of the equations containing *CSRcom*, *ComTotl* and *IndexGIM* as dependent variables). Employing similar criteria,

[95] Some previous studies use similar technique for preliminary choice of exogenous variables. See, e.g., Switzer (2007).
[96] When no simultaneous equation bias was identified using the Hausman (1978) test for a suspected endogenous variable in an equation and the variable was insignificant in both the OLS and 2SLS estimation, it was removed from our 3SLS estimation. The results remain similar when we include such variables as exogenous variables in the 3SLS model.
[97] As argued by Chen and Lee (2010), 2SLS and 3SLS estimations are respectively limited and full information methods. The 3SLS estimation is more efficient because it accounts for the information from a full system of equations. The 3SLS method estimates all structural parameters of this system jointly which allows for any contemporaneous correlation between the disturbances in the different structural equations.
[98] Jointly determined in the system, these dependent and independent variables are correlated with the disturbance terms of equations. Thus, the OLS estimator would be inconsistent and biased (e.g., Greene, 2011; Johnston and DiNardo, 1997).

we choose CEO tenure and Tobin's Q as instrumental variables for equations [III] and [IV], respectively.

To conduct endogeneity tests, we execute tests of over-identifying constraints using GMM estimation and report the results in Online Internet Appendix Table I.4. Panel A. We observe that the J-statistics are insignificant for all the four equations, with probabilities between 0.203 and 0.471. Thus, for all the four equations we cannot reject the null hypothesis of the over-identifying constraints of the four instrumental variables, which validate our instruments. Next, we conduct the GMM endogeneity test to examine whether these four instrumental variables are valid in addressing the underlying endogeneity problem, or whether this problem arises among CSR composite, firm undervaluation, executive compensation, shareholder rights, and their lags in our estimations. The results of the endogeneity tests reported in Panel B of Online Internet Appendix Table I.4. from GMM estimations reveal that the differences in J-statistics are all insignificant,[99] implying that the endogeneity test results cannot reject the null hypothesis of no endogeneity. To sum up, using these four instruments, the GMM over-identifying tests and the endogeneity tests support that endogeneity is not an issue and that the three stage least squares procedure is a valid methodology for our estimations.

Table 4.8 reports the summary regression results from the 3SLS estimations of our system of four simultaneous equations.[100] Column [I] reports the results when CSR composite rankings are regressed on the other three dependent variables and various control variables. Column [II], [III] and [IV] present the summary regression results for similar model formulations for the other three dependent variables. We observe that the other three dependent variables and the lagged dependent variable are simultaneously related to the dependent variable in each equation. We now discuss only the relations that are significant at a 0.05 level or better.

[Insert Table 4.8 about here]

Based on column [I] of Table 4.8, we find that CSR composite rankings (*CSRcom*) are positively associated with our managerial trading measure of firm undervaluation (*Uvdum*) and negatively related with total CEO compensation (*ComTotl*) and our shareholder rights measure

[99] The probabilities of difference are 0.501, 0.533, 0.473, and 0.392 for equation [I], [II], [III] and [IV] respectively.
[100] First, we set the list of parameters in the system according to a set of *NONLIN* RATS instructions. Second, we create the formulas for the equations using *FRML*. Third, we set up the list of instruments using command *INSTRUMENTS*. Finally, we estimate the model using *NLSYTEM* using the *INST* option.

(*IndexGIM*). This positive relation between *CSRcom* and *Uvdum* is consistent with our conjecture that higher CSR rankings are related to higher managerial net share purchases, which suggests that their managers believe that their firms' undervaluations will diminish when the market begins to more accurately value their firms' CSR. This result is consistent with the positive relation postulated in H_1. With regard to its relationships with the controls, the CSR composite ranking (*CSRcom*) is positively related with relative director ownership (*%Director*), proportion of independent directors (*%Board*), institutional ownership (*%Insti*), residual analyst coverage (*ResCov*), degree of firm diversification (*Divers*), ln of total assets (*Assets*), R&D-to-sales ratio (*R&D/Sales*), state law (*StateLaw*), and entrenchment index (*EntIndex*). The estimated relations between *CSRcom* and the variables measuring the perceived merits of a firm's CSR ranking by each of the firm's monitors are consistent with H_7. The negative relation of *CSRcom* with the debt-to-assets ratio (*Debt/Assets*) is consistent with our expectation that leads to the negative relation postulated in H_6.

Based on column [II] of Table 4.8, we find that our managerial trading measure of firm undervaluation (*Uvdum*) is positively associated with CSR composite rankings (*CSRcom*), consistent with the "errors-in-expectations" hypothesis that investors are likely to make more "errors-in-expectations" with higher CSR rankings as predicted for H_1. The findings that the managerial trading measure of firm undervaluation (*Uvdum*) is negatively associated with shareholder rights (*IndexGIM*) and with total CEO compensation (*ComTotl*) are consistent respectively with the predicted sign for H_2 and with the predicted sign from the conflict-resolution hypothesis for H_3. With regard to its relationship with the controls, our managerial trading measure of firm undervaluation (*Uvdum*) is positively related with the alternative mispricing estimate (MP^{HP}), relative director ownership (*%Director*), proportion of independent directors (*%Board*), CEO is board chair (*Duality*), residual coverage (*ResCov*), firm is family firm (*FamilyFirm*), degree of firm diversification (*Divers*), ln of total assets (*Assets*), share turnover (*Turnover*) and return volatility (*VolatR*), and negatively related with the debt-to-assets ratio (*Debt/Assets*). The significant and positive relation of firm undervaluation based on insider trading with *CSRcom* and MP^{HP} based on firm fundamentals implies that the channels that determine investor "errors-in-expectations" are based on both tangible and intangible firm fundamentals.

Based on column [III] of Table 4.8, we find that total CEO compensation (*ComTotl*) is negatively related with the CSR composite ranking (*CSRcom*), firm undervaluation (*Uvdum*) and shareholder rights (*IndexGIM*). The negative relation with *CSRcom* is consistent with the conjecture that CEOs of more socially responsible firms are paid less. With regard to the controls, CEO compensation (*ComTotl*) is positively related with blockholdings (*BolckH*), ln of total assets (*Assets*), CEO is board chair (*Duality*), and past return (*PReturn*), and negatively related with the proportion of institutional ownership (*%Insti*). The latter result is consistent with the monitoring role of institutions and analysts.

Based on column [IV] of Table 4.8, we find that shareholder rights (*IndexGIM*) is, as expected, negatively related with the CSR composite ranking (*CSRcom*) and our managerial trading measure of firm undervaluation (*Uvdum*). With regard to the controls, corporate shareholder rights (*IndexGIM*) is negatively related with past return (*PReturn*), and positively affected by board independence (*%Board*), the proportion of blockholdings (*BlockH*), executive cash compensation (*ComCash*), bond yield spreads (*Spreads*), and corporate board ownership (*CBO*).

The above results may not be robust if the control variables used are related to past values of the dependent variables (e.g., Wintoki, Linck and Netter, 2012). Following Wintoki, Linck and Netter (2012), Kryzanowski and Mohebshahedin (2016), amongst others, and in order to determine the most appropriate model specification for testing our hypotheses, we examine how strongly current levels and changes of various control regressors, such as *%Board*, *InsDbt*, *Assets* or *ΔAssets* and *Δ%Insti*, are related to lags of the other variables (both dependent and independent). The summary results for these OLS regressions are reported in Panels A and B of Table 4.9. We find that both current levels and differences in the levels of the control variables are all significantly related to their past values. This finding supports the assertion that not only the four dependent variables are endogenous, but also that some of the control variables also are possibly endogenous.

[Insert Table 4.9 about here]

The results for tests of strict endogeneity (Wooldridge, 2002, p. 285)[101] reported in Table 4.9 indicate that the estimated coefficients from regressions of the current values of four representative control variables on the past values of all the other variables are all significantly different from zero. This implies that none of these four variables are strictly exogenous.[102]

4.5.2 System-GMM Estimation of the Relationships among the Four Dependent Variables

The system-GMM requires that the instruments (lagged variables) are exogenous to current shocks in the dependent variables. As in previous studies (e.g., Beltratti and Paladino, 2015; Cai, Cui and Jo, 2016; Kryzanowski and Mohebshahedin, 2016), we use two tests to examine the exogeneity of instruments. The first one is the second-order serial correlation test to ensure that enough lags of the dependent variables are included. If our model has enough of a lag length, we could consider lagged dependent variables beyond those lags as potential instruments for current shocks in the dependent variables. Thus, the first difference residuals are correlated and second differenced residuals are not if our model has the required lag length, using the autocorrelation tests of the first [AR(1)] and second [AR(2)] differences, respectively. The second approach is a Hansen test of over-identification. We can test whether over-identification is a problem for our model as our system-GMM includes several lags. The Hansen test generates a J-statistic and χ^2 distribution under the null hypothesis of valid instruments. The exogeneity tests of Difference-in-Hansen are under the null hypothesis of exogenous instruments for the equations in levels. This test computes the increase in J when the given subset is added to the estimation set up. The change in J is χ^2 with degrees of freedom equal to the number of added instruments. We use the finite sample correction for variance proposed by Windmeijer (2005) to address the downward bias of the standard errors.

Applying screening criteria to choose the instrumental variables for the simultaneous system of 3SLS, we choose family firm, firm age, CEO tenure and Tobin's Q as the instrumental variables for the equations with *CSRcom*, *Uvdum*, *ComTotl* and *IndexGIM*, respectively, as the

[101] Suppose $\mathbf{X}_{i,t}$ includes the explanatory and a series of control variables, we then estimate the following fixed-effects model to test for strict endogeneity: $\mathbf{p}_{i,t} = \alpha + \beta\mathbf{X}_{i,t} + \mathbf{\Omega W}_{i,t+2} + \eta_{i,t} + \epsilon_{i,t}$ $t = 1992, \ldots, 2011$ (2) where $\mathbf{W}_{i,t+2}$ represents a subset of the corporate control and governance variables. The null hypothesis of strict exogeneity, $\mathbf{\Omega} = 0$, is that future values of these control variables are unrelated to current changes in the CSR ranking measures.

[102] Our conclusions are robust when we replace changes in the CSR composite with changes in CSR strength or changes in CSR concerns.

dependent variable. Many previous studies (e.g. Staiger and Stock, 1997; Bound, Jaeger and Baker, 1995; Stock and Yogo, 2005) demonstrate that estimates from instrumental variables regressions could be biased when the instruments are weakly correlated with the endogenous variables. However, the literature of IV regression has not identified a single rule to assess the joint strength of instruments used in the dynamic panel system GMM estimator.

Table 4.10 reports the results from our examination of the relation among the four variables of primary interest using a system-GMM estimation for each of the four equations. Compared to our results from the 3SLS simultaneous system with four equations, we identify three new findings. First, the estimated coefficients of inside debt and compensation leverage are all negative and significant at the 1% level in both the *CSRcom* (column [I]) and firm undervaluation equations (column [II]) while the estimated coefficients of total compensation remain negative and significant. Thus, more deferred (e.g., pension) compensations from both the perspective of the firm and its executives are negatively related to a firm's CSR ranking and its undervaluation, consistent with H_3, H_4, H_5, and H_6. Second, total compensation is negatively and significantly associated with *IndexGIM* (column [IV]). Finally, institutional ownership (a firm monitoring proxy) is negatively and significantly related to both firm undervaluation and total compensation (columns [II] and [III] respectively) but positively and significantly related to *CSRcom* (column [I]).

We find that both the lagged CSR rankings and the alternative undervaluation factor (MP^{HP}) are positively associated with *Uvdum* (column II). To obtain their relative effect on *Uvdum*, we calculate a ratio of 0.367 for the elasticity of MP^{HP} to that of *CSRcom*.[103] This implies that errors-in-expectations due to not only the CSR channel but also other channels (e.g., other firm-specific activities) need to be accounted for when examining the relation between CSR and firm value. As such, this finding has implications for the findings of other studies (e.g., Dimson, Karakaş and Li, 2015; Servaes and Tamayo, 2013; Derwall, Koedijk and Horst, 2011). However, such an examination lies beyond the scope of this study. Consistent with our results reported in Tables 6 and 7, lagged MP^{HP} is not related to current *CSRcom* when lagged firm undervaluation (*Uvdum*) is accounted for (column I), and both lagged *CSRcom* and MP^{HP} are significantly related to current firm undervaluation (column II). Thus, lagged *Uvdum* (insider assessment of

[103] We obtain the following MP^{HP} and *CSRcom* elasticities ratios: $\beta_1(\bar{x}_1/\bar{y})/\beta_2(\bar{x}_2/\bar{y}) = \beta_1\bar{x}_1/\beta_2\bar{x}_2 = (0.072\times0.0253)/(0.011\times0.4517) = 36.7\%$.

"errors in expectations" embodied in firm value) subsumes the association of lagged MP^{HP} (overall market's assessment of "errors in expectations" embodied in firm value) with *CSRcom* but both lagged *CSRcom* and lagged MP^{HP} are associated with *Uvdum*. Furthermore, the latter result indicates, as expected, that being informed is not confined to firm insiders.

When including the interaction of the pricing measure (MP^{HP}) with the post-SOX period dummy which is equal to one if a financial expert appo (see Online Internet Appendix Table I.6),[104] we find that the estimated coefficients for this interaction variable and MP^{HP} by itself are always significant but with opposite signs. Other conclusions drawn earlier remain essentially unchanged. For robustness purposes, we also use 4-lagged independent variables as instruments to repeat our estimation.[105] Our conclusions remain similar and the results are available in Online Internet Appendix Table I.7. [106] [107] We recognize that the system GMM estimation is for a single

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[104] *SOXpost* is equal to 1 if a firm appointed expert directors to the audit committee in a year of the post-SOX period and the sum of the two coefficients is significantly different from zero and has the same sign as MP^{HP} by itself. Thus, the effects of the mispricing measure MP^{HP} on each of the four dependent variables was lower in magnitude for the post-SOX versus pre-SOX period. This expands on the study of Singhvi, Raghunandan and Mishra (2013) who find that the market reactions to the appointment of expert directors for the three years of 2004, 2006 and 2008 are not significantly different from zero.

[105] We first use the Stat 13 *xtdpdsys* instruction to set the instruments, then use the *varlist* instruction to specify the predetermined variables and the endogenous variables to be included in the model with the option *level* of 95%, then we use the *artests* instruction to set 2 as the maximum order of the autocorrelation to be calculated; Finally, we use the *xtabond* instruction to perform the Blundell-Bond dynamic panel-data estimation.

[106] If p is the independent variable and X includes all the regressors, system-GMM involves estimating the following:

$$\left| \begin{matrix} \Delta p_{i,t} \\ p_{i,t} \end{matrix} \right| = \alpha + \beta \left| \begin{matrix} \Delta \boldsymbol{X}_{i,t} \\ \boldsymbol{X}_{i,t} \end{matrix} \right| + \epsilon_{i,t} \tag{3}$$

To assess the strength of the instruments, the system being estimated is divided into its constituent equations of differences and of levels. The strength of lag differences as instruments in the level equations is first assessed. Then the strength of lagged levels as instruments in the differenced equations is evaluated. The equation in levels is given by:

$$p_{i,t} = \alpha + \beta \boldsymbol{X}_{i,t} + \varepsilon_{i,t} \tag{4}$$

and the equation in differences is given by:

$$\Delta p_{i,t} = \alpha + \beta \Delta \boldsymbol{X}_{i,t} + \mathrm{e}_{i,t} \tag{5}$$

[107] There is a trade-off between endogeneity and strength when using instruments of lagged dependent variables since longer lags make the instruments less endogenous but weaker, and vice versa. Based on test results using different lag lengths, we select the 4th and 5th lags of the dependent variables as the instruments for the system of level and differenced equations, respectively. Based on the GMM estimation results reported in Online Internet Appendix Table I.7, the AR(1) is below 0.3% and 0.4% and the AR(2) is above 23.8% and 14.9% for all four differenced equations and four level equations, respectively. The Hanson test results are between 14.9% and 34.7% and between 13.8% and 41.11 for all four differenced equations and four level equations, respectively. The Difference-in-Hanson values are between 11.3% and 51.2% and between 21.7% and 53.2% for all four differenced equations and four level equations, respectively. When using the 5th and 6th lags of the dependent variables as the instruments for the system of level and differenced equations, we find that for equation [II] in levels that the AR(1) and AR(2) are 4.6% and 7.2%, respectively. This suggests that the null hypothesis of no serial correlations cannot be rejected at the 1% and 5% levels for the first and second orders, respectively, although the results from the AR(1), AR(2), Hanson test of overidentification, and Diff-in-Hanson are acceptable for equations [I], [III] and [IV]. When using the 3th and 4th lag of the dependent variables as the instruments for the system of level and differenced

equation estimation. In order to estimate the system together, we also conduct seemingly unrelated regressions (SUR) and obtain similar conclusions based on the results reported in Online Appendix Table I.8.[108] Figure 4.1 depicts the relations between changes in the CSR composite and the other three variables for overvalued and undervalued firms in Table 4.10 column [I]. For firms with higher abnormal insider buys (greater firm undervaluation), positive changes in CSR composite rankings are more likely to be associated with lower total CEO compensation, and firms with lower shareholder rights are more likely to be associated with positive changes in CSR composite rankings. The trends are similar for the overvalued firms with the exception that most of the CSR composite changes are negative.

[Insert Table 4.10 and Figure 4.1 about here]

4.6. CONCLUSION

This paper provides a comprehensive examination of the relations among CSR composite rankings, firm undervaluation, executive compensation and corporate governance, which are increasingly important areas for practitioners and academic researchers. We construct a measure of undervaluation based on insider trading that captures mispricing information that has not been fully captured by the commonly used mispricing measures in the literature. We use system-GMM and 3SLS estimations of a system of four simultaneous equations to control for endogeneity and simultaneity.

We report strong evidence that firm undervaluation is positively related to a firm's future CSR rankings. This suggests that the trading of managers is informed about misvaluation due to "errors-in-expectations" related to a firm's CSR rankings. We find that inside debt (a proxy for managerial conservatism) is negatively related to a firm's future CSR ranking. The general small elasticities of independent variables used to explain the net buying behavior of a firm's managers suggest that the primary driver of such trading behavior is private information.

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equations, respectively, we observe that the Hanson test of overidentification and Diff-in-Hanson test can be rejected at the 5% and 10% levels, respectively, for equation [IV] in differences.

[108] We use *sureg* command instructions to perform seemingly unrelated regressions in Stata 13.

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FIGURES

Figure 2.1. Plots of the estimated coefficients for two pension-related metrics by quartile as regressors in logistic regressions for acquirer choice of cash (stock) as the method of payment

Panels A and B depict the estimated coefficients for two pension-related metrics (i.e., inside debt and compensation leverage) by quartile from time-series logistic regressions used to identify the determinants of acquirer choice of cash in Panel A and stock in Panel B. The numerical values so plotted are tabulated in column 2 of Panel A of Table 2.6 for cash payment and in column 2 of Panel B for stock payment. Quartiles I (lowest) and IV (highest) refer to the 1st and 4th quartile, respectively.

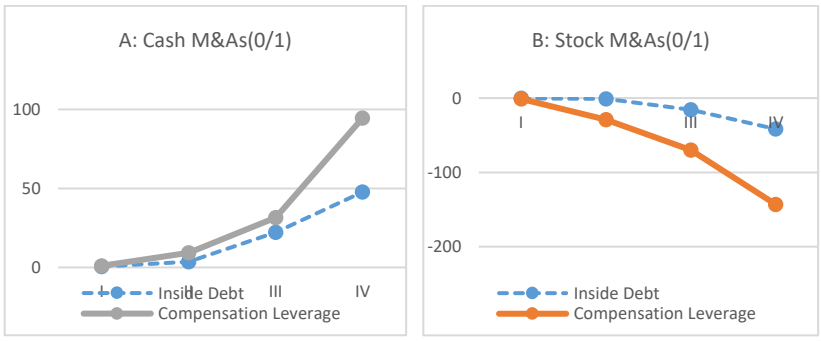
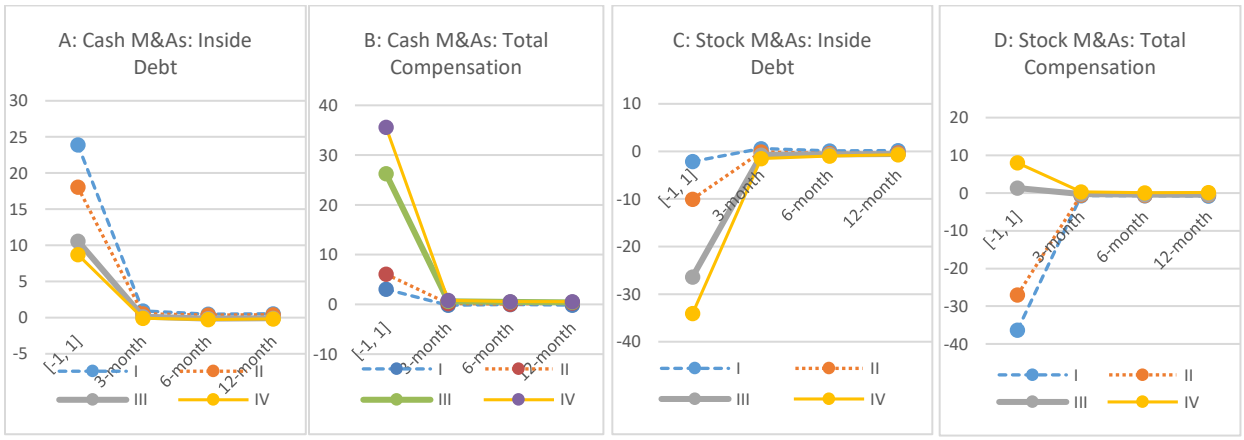


Figure 2.2. Plots of the estimated coefficients for inside debt and total compensation by quartile for the PCAR and PAlpha for (post-) M&A announcement windows for acquirers

These panels include plots of the mean PCAR for the announcement window [-1, 1] and mean PAlpha for three post-announcement windows for a sample of firms that engaged in M&As between 1992 and 2014 and are double sorted by method of payment (stock and cash) in year t and pension-related metric (i.e., inside debt and total compensation) in year *t*-1 where *t* is the M&A announcement year. The reported values in basis points (bps) are obtained using the four-factor model of Carhart (1997) and the five-factor model of Fama and French (2015) adjusted for the equity issue effect to get PCAR and PAlpha. The announcement CAR for the window [-1, 1] are based on model coefficients estimated in the first step for each model over the window [-200, -41]. Post-announcement performance is estimated in-sample as the intercept of the four- (five-)factor model for portfolios for windows of [2, 64], [2, 124] and [2, 250] trading days representing periods of about 3-, 6-, and 12-months, respectively. These portfolios are formed at the end of each announcement month that has a minimum of five such events as in Mitchell and Stafford (2000) and held unchanged until the ending day specified in each post-announcement window. Values depicted in Panels A, B, C and D are drawn from Panels A, D, B and E, respectively, of Table 2.9. Values depicted in the remaining panels are drawn from values in the online appendix. Quartiles I (lowest) and IV (highest) refer to the 1st and 4th quartile of inside debt or compensation leverage, respectively, where managerial conservatism increases with a higher inside debt quartile and decreases with a higher total compensation quartile.

Five-Factor Model Alphas



Four-Factor Model Alphas

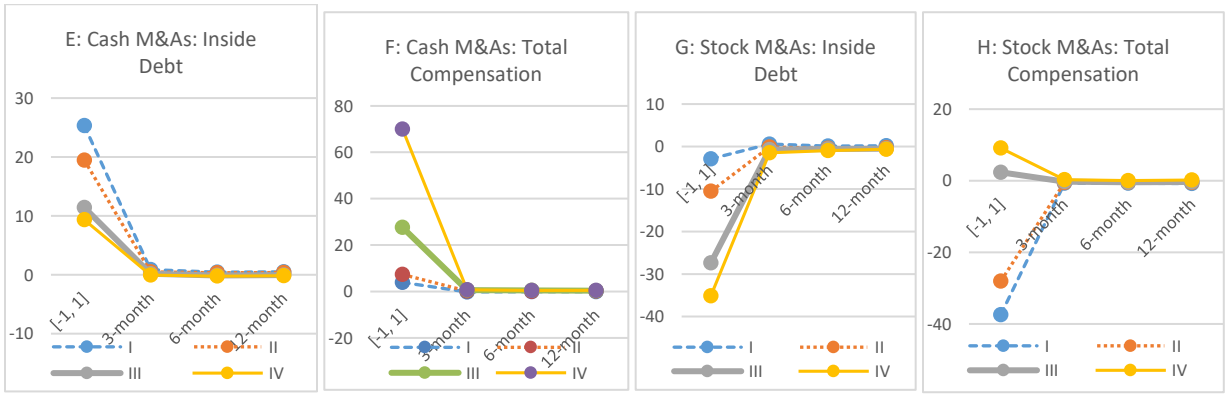
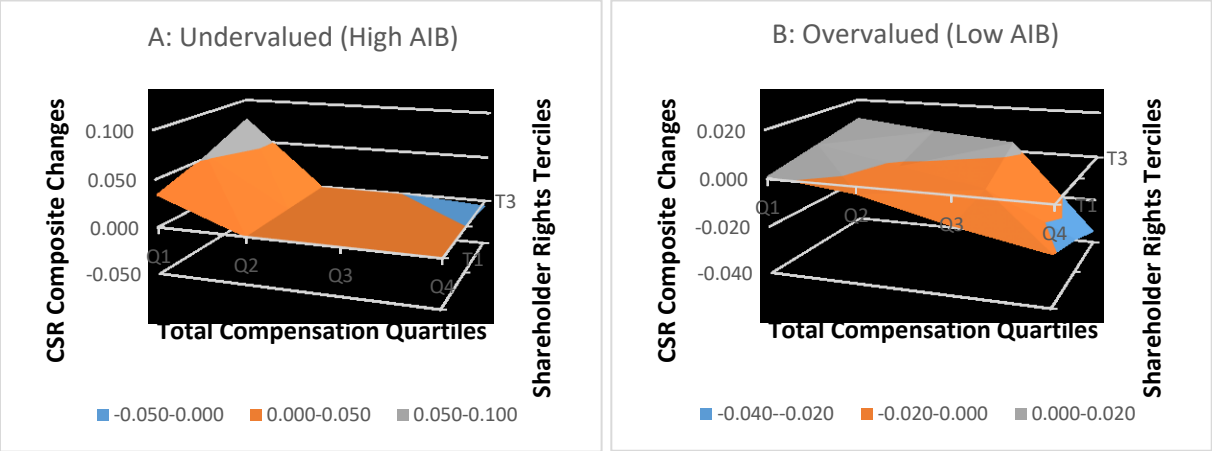


Figure 4.1. Relations among CSR composite, firm undervaluation, CEO total compensation, and shareholder rights

Panels A and B report the relations between three variables (i.e., firm undervaluation, CEO total compensation, and shareholder rights) and the future CSR composite as reflected in Table 4.10 column [I]. Panel A and Panel B include the sample firms in the High *AIB* and Low *AIB* terciles, respectively, as described in Table 4.5. The changes in the CSR composite are the future CSR composite ranking minus the mean CSR composite ranking for the full sample. T1, T2 and T3 refer to shareholder rights terciles. Q1, Q2, Q3 and Q4 refer to CEO total compensation quartiles.



TABLES

Table 2.1. Summary descriptive statistics for the samples of acquirers (initial and final) and SEOs

This table provides summary descriptive statistics for the variables used herein for our initial, final, and SEO samples in Panels A, B and C, respectively. Numbers in brackets are the natural logarithm values for some variables whose non-log values are in thousands of units. All variables are as defined in Appendix 2.A. I and III represent the median values in quartile I and III, respectively. The initial sample consists of the firms with matched compensation and firm data obtained from Standard and Poor's Execucomp and COMPUSTAT. N is the number of firm-year observations from 1992 to 2014.

Panel A of Table 2.1. Summary statistics for the initial sample at year *t* – 1. N = 24,428

Variable	Mean	I	Median	III	Standard Deviation
Adv/Assets$_{t-1}$	0.021	0.017	0.019	0.022	0.051
Cap($k)	1.482 [14.209]	0.051 [10.840]	0.173 [12.061]	0.741 [13.516]	4.117 [2.189]
CashFlowRisk $_{t-1}$	0.061	0.048	0.059	0.667	0.071
Cash M&A	0.231	0.000	0.000	1.000	0.421
CEO Age	56.014 [4.026]	49.000 [3.892]	56.000 [4.025]	61.000 [4.111]	74.000 [4.304]
CEO CComp	1,314,482 [14.089]	817,402 [13.614]	1,410,701 [14.159]	1,904,253 [14.460]	114,902 [0.817]
CEO TComp	5,785,034 [15.571]	3,536,102 [15.079]	6,211,890 [15.640]	8,924,630 [16.004]	6,760,302 [1.023]
CEO Chair	0.715	0.000	1.000	1.000	0.449
CEO Gender	0.008	0.000	0.000	0.000	0.091
CEO Tenure	7.412	4.510	8.000	12.721	6.471
CompLev	0.083	0.003	0.035	0.311	0.234
ΔCompLev	-0.001	-0.004	0.000	0.006	0.031
Debt/Assets$_{t-1}$	0.297	0.201	0.286	0.397	0.152
Dir TComp	80,142 [11.292]	49,021 [10.800]	78,624 [11.272]	1,059,023 [13.873]	45,371 [0.510]
Dir CComp	31,198 [10.348]	19,690 [9.888]	29,251 [10.283]	41,409 [10.63]	13,202 [0.321]
%Equity	0.021	0.012	0.020	0.067	0.056
ExpTenure	-0.756	-10.000	0.000	8.000	7.419
InsDebt	0.504	0.012	0.371	1.703	3.850
ΔInsDebt1	-0.003	-0.021	-0.003	0.028	0.213
ΔInsDebt2	-0.003	-0.019	-0.002	0.022	0.197
ΔInsDebt3	-0.003	-0.015	-0.003	0.019	0.184
Ins Ownership	0.377	0.089	0.305	0.612	0.311
Internal CEO	0.783	0.000	1.000	1.000	0.412
Inv/Assets$_{t-1}$	0.081	0.062	0.080	0.104	0.072
LGG	0.218	0.000	0.000	1.000	0.413
MAQ	0.314	0.000	0.000	1.000	0.464
Mixed M&A	0.140	0.000	0.000	1.000	0.347
MGR Rep(CEO)	0.302	0.000	0.122	1.000	0.459
MGR Rep	0.289	0.000	0.102	1.000	0.456
Price	21.627 [3.074]	14.920 [2.702]	24.460 [3.197]	27.006 [3.296]	36.225 [1.008]
PUI	123.875	100.000	123.000	133.000	42.892
Q_{t-1}	1.801	1.308	1.791	1.917	1.043
R&D/Assets$_{t-1}$	0.039	0.024	0.040	0.069	0.087

Return $_{t-1,\ t-3}$	0.167	0.110	0.165	0.182	0.177
ROA $_{t-1}$	0.152	0.131	0.151	0.165	0.113
ROA $_{t-1,\ t-3}$	0.518	0.403	0.522	0.558	0.364
Sales$_{t-1}$ ($k)	4,332,042 [15.282]	3,084,482 [14.942]	4,702,115 [15.364]	6,401,565 [15.672]	8,539,104 [1.224]
SAQ	0.122	0.000	0.000	0.000	0.326
Stock M&A	0.096	0.000	0.000	0.000	0.293
Turnover	1.387	0.469	1.104	2.204	1.802
Volatility	0.411	0.359	0.423	0.481	0.215

Panel B of Table 2.1. Summary statistics for the final sample of acquirers at year *t* – 1. N = 8,189

Variable	Mean	I	Median	III	Standard Deviation
Adv/Assets$_{t-1}$	0.022	0.018	0.021	0.023	0.033
Ann Return	0.011	-0.021	0.011	0.042	0.089
BM Ratio	0.506	0.252	0.423	0.692	0.348
Cap($k)	3.011 [14.917]	0.370 [12.821]	0.509 [13.140]	0.820 [13.617]	6.575 [3.007]
CashFlowRisk $_{t-1}$	0.040	0.020	0.041	0.476	0.051
Cashhold	0.152	0.030	0.068	0.203	0.184
Cash Merger	0.494	0.000	0.000	1.000	0.499
CEO Age	56.371 (4.032)	50.000 (3.912)	56.000 (4.025)	61.000 (4.111)	73.000 (4.290)
CEO Chair	0.698	0.000	1.000	1.000	0.457
CEO Gender	0.007	0.000	0.000	0.000	0.091
CEO CComp	1,738,212 [12.674]	901,773 [13.712]	1,734,660 [14.366]	2,561,708 [14.756]	162,251 [0.590]
CEO TComp	7,166,570 [15.785]	4,500,927 [15.320]	7,166,623 [15.785]	11,648,054 [16.270]	8,072,652 [1.831]
CEO Tenure	7.782	4.916	8.000	13.467	9.731
CF/EQ	0.063	0.036	0.061	0.106	0.122
CompLev (k)	0.093	0.008	0.109	0.308	0.210
ΔCompLev	-0.004	-0.007	-0.001	0.005	0.059
Debt/Assets$_{t-1}$	0.241	0.187	0.236	0.332	0.152
DebtP	0.239	0.015	0.417	0.601	0.630
Dir CComp	36,220 [10.497]	21,501 [9.980]	36,251 [10.498]	51,234 [10.844]	9,759 [0.712]
Dir TComp	110,564 [11.613]	61,004 [11.019]	110,572 [11.613]	1,261,303 [14.048]	55,630 [0.671]
Diversific	0.384	0.000	0.000	1.000	0.464
ExpTenure	-0.713	-11.000	0.000	8.000	7.025
%Equity	0.023	0.014	0.022	0.069	0.026
Hostile	0.032	0.000	0.000	0.000	0.179
Income Ratio	0.114	0.041	0.117	0.168	0.123
InsDebt (k)	0.624	0.113	0.577	1.697	3.041
ΔInsDebt1	-0.017	-0.036	-0.013	0.023	0.404
ΔInsDebt2	-0.016	-0.034	-0.012	0.019	0.387
ΔInsDebt3	-0.014	-0.026	-0.009	0.016	0.363
Ins Ownership	0.510	0.227	0.483	0.741	0.326
Internal CEO	0.779	0.000	1.000	1.000	0.413
Inv/Assets$_{t-1}$	0.079	0.051	0.080	0.107	0.064
LGG	0.223	0.000	0.000	1.000	0.429
MAQ	0.637	0.000	1.000	1.000	0.481
MGR Rep(CEO)	0.293	0.000	0.000	1.000	0.455
MGR Rep(Five)	0.280	0.000	0.000	1.000	0.449
Mixed Merger	0.300	0.000	0.000	1.000	0.458
Multibid	0.637	0.000	1.000	1.000	0.481
Q_{t-1}	1.712	1.194	1.710	1.813	0.937
Price	25.715 [3.247]	7.053 [1.953]	16.920 [2.828]	38.122 [3.640]	26.415 [1.233]
Public Target	0.412	0.000	0.000	1.000	0.492
PUI	124.125	99.000	123.000	132.000	41.052
R&D/Assets$_{t-1}$	0.038	0.023	0.039	0.067	0.039
Return $_{t-1, t-3}$	0.197	0.140	0.195	0.232	0.277
ROA $_{t-1}$	0.181	0.148	0.183	0.221	0.512
ROA $_{t-1, t-3}$	0.548	0.433	0.542	0.639	0.578
Sales$_{t-1}$ ($k)	6,573,251 [15.699]	4,103,514 [15.227]	6,573,543 [15.700]	8,328,927 [15.935]	2,261,724 [1.359]

SAQ	0.363	0.000	0.000	1.000	0.481
Stock Merger	0.205	0.000	0.000	1.000	0.403
Tender	0.392	0.000	0.000	1.000	0.488
Transaction Size	0.278	0.051	0.106	0.283	0.616
Transaction Value ($m)	538.722	18.629	87.738	201.724	3,864.030
Turnover	1.564	0.547	0.951	1.680	5.374
Volatility	0.484	0.398	0.483	0.607	0.119
Withdrawn	0.016	0.000	0.000	0.000	0.123
No of Announcements: 11,417					

Panel C of Table 2.1. Summary statistics for the SEO sample at year *t* – 1. N = 26,113

Variable	Mean	I	Median	III	Standard Deviation
BM Ratio	0.417	0.143	0.311	0.509	0.296
Cap($Billion)	2.413 [14.696]	0.139 [11.842]	0.497 [13.116]	1.895 [14.455]	7.267 [4.231]
Cashhold	0.183	0.027	0.085	0.338	0.315
CF/EQ	0.052	0.008	0.062	0.119	0.129
Combined	0.356	0.000	0.000	1.000	0.479
Debt/Assets$_{t-1}$	0.259	0.176	0.251	0.358	0.207
Income Ratio	0.083	0.032	0.122	0.173	0.302
Pure Primary	0.613	0.000	1.000	1.000	0.487
Return $_{t-1, t-3}$	0.223	0.169	0.205	0.267	0.309
Transaction Size	0.265	0.054	0.135	0.312	0.711
Transaction Value ($m)	78.263	18.629	65.264	123.256	2,536.251
Volatility	0.512	0.411	0.491	0.598	0.132

Table 2.2. Correlations between various compensation variables

This table presents the correlations between the various compensation variables (including inside debt and compensation leverage) in year $t - 1$ for the 24,428 firm-year observations for the initial sample in Panel A and the 6598 firms involved in the 11,417 M&A announcements in our final sample in Panel B. The variables are defined in Appendix 2.A. The natural log (ln) is used for all variables with the exception of CompLev, InsDebt, Hubris and MGR Rep.

	CEO CComp	CEO TComp	CompLev	Dir CComp	DirTComp	InsDebt
Panel A: Initial Sample						
CEO CComp	1.000	0.594	0.149	0.351	0.301	0.222
CEO TComp		1.000	0.321	0.311	0.504	0.281
CompLev			1.000	0.161	0.221	0.603
Dir CComp				1.000	0.490	0.167
DirTComp					1.000	0.237
InsDebt						1.000
CEO Age	0.065	0.041	0.064	0.089	0.054	0.087
Hubris	0.108	0.468	0.275	0.377	0.158	0.321
MGR Rep	0.152	0.311	0.304	0.451	0.532	0.267
Value Dir Options	0.401	0.477	0.292	0.551	0.623	0.327
Value Dir Stocks	0.290	0.386	0.309	0.461	0.602	0.233

	CEO CComp	CEO Tcomp	CompLev	Dir CComp	DirTComp	InsDebt
Panel B: Final Sample						
CEO Ccomp	1.000	0.610	0.274	0.337	0.262	0.341
CEO Tcomp		1.000	0.350	0.364	0.476	0.297
CompLev			1.000	0.248	0.314	0.576
Dir CComp				1.000	0.520	0.308
DirTComp					1.000	-0.211
InsDebt						1.000
CEO Age	0.075	0.049	0.071	0.097	0.064	0.034
Hubris	0.098	0.412	0.277	0.397	0.151	0.268
MGR Rep	0.124	0.395	0.260	0.433	0.512	0.201
Value Dir Options	0.361	0.482	0.242	0.524	0.677	0.264
Value Dir Stocks	0.320	0.376	0.187	0.449	0.596	0.147

Table 2.3. Summary statistics for pre-to-post changes in managerial conservatism

This table provides summary descriptive statistics for the changes in the two variables, InsDebt and CompLev, used herein to measure managerial conservatism for our initial, acquiring and non-acquiring samples in Panels A, B and C, respectively. ΔInsDebt1= [PVB_{post} /TA_{post}] - [PVB_{pre} /TA_{pre}]; ΔInsDebt2 = [PVB_{post} - PVB_{pre}] / TA_{pre}; ΔInsDebt3 = [PVB_{post} / (TA_{post} – $TA_{acquired}$)] - [PVB_{pre} /TA_{pre}]; ΔCompLev = $CompLev_{post}$ – $CompLev_{pre}$; and all variables are as defined in Appendix 2.A. I and III represent the median values in quartile I and III, respectively. The values used are from the annual financial statements. The initial sample consists of the firms with matched compensation and firm data obtained from Standard and Poor's Execucomp and COMPUSTAT. N is the number of firm-year observations from 1993 to 2014. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively, for t-tests of the means and Wilcoxon tests of the medians.

	Mean	I	Median	III	STD	T-test	Wilcoxon
Panel A. All firm-year observations N=23,207							
ΔCompLev	-0.001*	-0.004	0.000	0.006	0.031	0.091	0.072
ΔInsDebt1	-0.003*	-0.021	-0.003	0.028	0.213	0.054	0.049
ΔInsDebt2	-0.003***	-0.019	-0.002	0.022	0.197	0.008	0.019
ΔInsDebt3	-0.003**	-0.015	-0.003	0.019	0.184	0.013	0.010
Panel B. All acquirer observations N=7,779							
ΔCompLev	-0.004**	-0.007	-0.001	0.005	0.059	0.022	0.043
ΔInsDebt1	-0.017***	-0.036	-0.013	0.023	0.404	0.003	0.011
ΔInsDebt2	-0.016***	-0.034	-0.012	0.019	0.387	0.004	0.007
ΔInsDebt3	-0.014**	-0.026	-0.009	0.016	0.363	0.010	0.029
Panel C. All non-acquirer observations N=15,456							
ΔCompLev	0.001	-0.002	0.000***	0.007	0.041	0.232	0.177
ΔInsDebt1	0.004	-0.014	0.002**	0.031	0.301	0.121	0.192
ΔInsDebt2	0.004	-0.011	0.003**	0.023	0.297	0.319	0.216
ΔInsDebt3	0.003	-0.010	0.000**	0.021	0.254	0.166	0.151

Table 2.4. Summary regression results for the determinants of changes in managerial conservatism

This table reports time-series averages of the results for cross-sectional regressions between changes in managerial conservatism and various one-period lagged potential determinants (except for Ann Return) that are defined in Table 2.3 and Appendix 2.A. One cross-sectional regression is run for each acquisition announcement that includes the acquirer and all other firms in the acquirer sample with data at that point in time. The assignments to managerial conservatism terciles are made using the managerial conservatism values computed for the year prior to year of the acquisition announcement. All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. All mean estimated coefficients are multiplied by 1000 for reporting purposes. A Hausman-Wu test rejects the presence of an endogeneity problem. The t-statistics are reported in the parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

	AT(L)				AT(H)			
Independent Variable	ΔInsDebt1	ΔInsDebt2	ΔInsDebt3	ΔCompLev	ΔInsDebt1	ΔInsDebt2	ΔInsDebt3	ΔCompLev
	1	2	3	4	5	6	7	8
MAQ	-0.11***	-0.13*	-0.11	-0.03*	-0.51***	-0.62***	-0.49***	-0.04*
	(-11.07)	(-1.71)	(-1.52)	(-1.65)	(-31.04)	(-7.65)	(-2.59)	(-1.81)
SAQ	-0.68***	-0.60***	-0.71***	-0.08***	-2.16***	-1.73***	-1.69**	-0.07***
	(-10.08)	(-2.95)	(-22.03)	(-4.51)	(-7.52)	(-12.79)	(-2.03)	(-4.45)
CEO TComp	0.37	0.36	0.41	0.05	1.11	1.42	0.95	0.08
	(1.28)	(1.31)	(1.14)	(0.33)	(0.92)	(0.71)	(0.63)	(0.32)
Dir TComp	1.22	0.115	1.13	0.31	3.65	2.16	2.17	0.14
	(1.54)	(0.64)	(0.49)	(0.98)	(0.46)	(0.59)	(0.12)	(1.31)
Ann Return	0.15***	0.15*	0.10***	0.04*	0.47**	0.31**	0.43***	0.08***
	(4.22)	(1.95)	(5.31)	(1.72)	(9.62)	(2.26)	(11.28)	(3.73)
Cap	2.94**	2.47***	3.03***	0.45***	7.21***	5.12***	6.76***	0.52*
	(2.19)	(3.42)	(6.10)	(5.01)	(14.27)	(2.87)	(23.91)	(1.71)
CashFlowRisk	-1.84	-1.37	-1.91	-0.36	-6.82	-4.87	-3.79	-0.34
	(-0.31)	(-1.20)	(-0.89)	(-0.14)	(-1.09)	(-0.68)	(-1.23)	(-0.61)
Cash Merger	-3.01*	-2.14**	-1.94***	-0.11*	-7.13**	-6.87**	-5.99***	-0.23**
	(-1.69)	(-2.03)	(-2.96)	(-1.66)	(-2.01)	(-2.05)	(-4.12)	(-1.99)
CEO Age	-1.12	-1.35	-1.59	-0.39	-3.97	-3.64	-2.99	-0.26
	(-1.23)	(-1.63)	(0.47)	(-1.62)	(-0.79)	(-1.63)	(-0.31)	(-1.31)
Debt/Assets	-3.82	-3.77	-4.91	-0.83	-11.18	-9.30	-10.91	-0.69
	(-1.64)	(-0.21)	(-0.12)	(-0.45)	(-1.51)	(-0.52)	(-1.02)	(-1.22)
ExpTenure	0.42	0.47	0.46	0.05	1.56	1.44	1.39	0.05
	(0.71)	(0.47)	(1.31)	(0.30)	(0.50)	(1.15)	(0.27)	(0.33)
%Equity	1.22	1.09	1.07	0.11	3.99	2.03	1.25	0.14
	(1.54)	(1.01)	(0.93)	(0.98)	(0.23)	(0.57)	(0.33)	(1.31)
Hubris	0.40**	0.35***	0.033***	0.05**	1.34**	0.31***	0.38***	0.07*
	(1.97)	(3.01)	(2.67)	(2.41)	(1.98)	(3.21)	(9.46)	(1.72)
LGG	-1.02***	-1.09***	-1.09***	-0.08***	-3.75***	-1.13***	-0.97***	-0.12***
	(-8.71)	(-5.61)	(-3.08)	(-2.75)	(-11.01)	(-11.15)	(-17.26)	(-6.01)
MP-FM	1.03***	0.25***	1.28**	0.23***	5.01**	1.21**	1.06***	0.32**
	(5.23)	(2.99)	(1.97)	(8.01)	(2.45)	(2.29)	(9.71)	(1.99)
MGR Rep	-1.03***	-1.10**	-0.84***	-0.09*	-3.95***	-0.81**	-2.99***	-0.12***
	(-3.41)	(-2.01)	(-3.95)	(-1.69)	(-7.03)	(-2.06)	(-10.32)	(-2.57)
PUI	-10.84***	-11.61***	-12.41***	-2.59**	-57.22***	-12.52***	-39.96**	-2.49***
	(-5.03)	(3.12)	(-7.01)	(-2.23)	(-2.77)	(-3.07)	(-1.99)	(-4.14)
Return $_{t-1, t-3}$	0.61**	0.54***	0.55***	0.03***	1.98***	0.53***	0.58***	0.06*
	(2.42)	(5.61)	(5.09)	(6.02)	(5.10)	(4.31)	(7.29)	(1.74)
(IFE&YFE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.081	0.072	0.095	0.071	0.059	0.066	0.072	0.083

Table 2.5. Summary regression results for the determinants of acquirers that acquire less risky firms or fund the purchase by issuing debt

This table presents panel regression results of the likelihood of acquiring a less risky firm or of issuing debt to pay for the M&A. All variables are defined in Appendix 2.A, and all regressors are lagged one period. For the logistic regression results reported in columns 1 to 3, the dependent variable is equal to 1 if the acquirer is acquiring a firm that is a public target and is 0 otherwise. The dependent variables in the other columns are Debt/Assets-Rel (column 4), InsDebt-Rel (column 5), CompLev-Rel (column 6), and DebtP or Debt/Transaction Value (column 7), where Rel refers to the difference in this variable between the target and acquirer. I and IV refer to the 1st (lowest) and 4th (highest) compensation quartiles, respectively. Assignments to compensation quartiles continue for calendar months until the annual compensation update becomes available. The sample includes all the 11,417 M&A announcements from 1992 to 2014. All definitions of the variables included in this table are provided in Appendix 2.A. All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. All estimated coefficients are multiplied by 1000 for reporting purposes. A Hausman-Wu test rejects the presence of an endogeneity problem. The p-values are reported in the parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

	Public Target			Debt/Assets-Rel	InsDebt-Rel	CompLev-Rel	DebtP
Independent Variable	1	2	3	4	5	6	7
InsDebt		0.82**	0.68**	0.72***	0.53*	0.14**	0.16**
		(0.042)	(0.037)	(0.001)	(0.097)	(0.039)	(0.021)
InsDebt×QD(II)		2.39***	1.57***	2.01**	3.77***	4.09**	1.32***
		(0.000)	(0.001)	(0.031)	(0.004)	(0.024)	(0.001)
InsDebt×QD(III)		13.03**	18.23**	19.88***	21.20**	30.75*	4.21**
		(0.030)	(0.042)	(0.000)	(0.041)	(0.093)	(0.014)
InsDebt×QD(IV)		50.90**	52.84***	44.67***	42.29*	62.76**	10.45***
		(0.011)	(0.003)	(0.000)	(0.054)	(0.033)	(0.001)
CompLev		0.73**		0.20*	0.52***	0.91*	0.51*
		(0.032)		(0.093)	(0.002)	(0.091)	(0.088)
CompLev×QD(II)		3.73***		1.75*	1.39***	5.73**	1.36*
		(0.003)		(0.056)	(0.006)	(0.021)	(0.055)
CompLev×QD(III)		10.69*		4.47**	5.01***	21.97***	2.93**
		(0.051)		(0.018)	(0.007)	(0.008)	(0.043)
CompLev×QD(IV)		38.08***		34.44***	32.24**	58.21*	7.25***
		(0.000)		(0.003)	(0.022)	(0.094)	(0.002)
CEO Age × InsDebt	14.24*	6.55**					
	(0.067)	(0.044)					
CEO Age × CompLev	31.87**	22.64***					
	(0.019)	(0.001)					
CEO TComp	4.25		3.88	3.52		6.07	
	(0.342)		(0.481)	(0.312)		(0.218)	
CEO CCcomp		3.59			2.95		.53
		(0.328)			(0.246)		(0.453)
Dir TComp	3.10				2.31		1.06
	(0.244)				(0.328)		(0.519)
Dir CComp		2.40	11.03	2.12		7.05	
		(0.390)	(0.420)	(0.252)		(0.661)	
Adv/Assets	2.44						
	(0.227)						
Ann Return	3.91**	4.44***	2.17***	0.82***	2.38*	4.31**	0.31***
	(0.011)	(0.001)	(0.000)	(0.002)	(0.073)	(0.026)	(0.000)
Cap	-5.36**	-6.02***	-5.32**	-0.71***	-1.52**	-5.10**	-0.91***
	(0.013)	(0.000)	(0.025)	(0.008)	(0.039)	(0.021)	(0.007)
CashFlowRisk	3.59***	3.31*	3.11**	0.86***	1.64***	18.87***	0.34***
	(0.003)	(0.060)	(0.018)	(0.000)	(0.001)	(0.000)	(0.001)
Cash Merger		23.19***	31.25***	35.11**	24.23***	1.9.87***	9.01***
		(0.003)	(0.001)	(0.021)	(0.000)	(0.005)	(0.000)

Table 2.5. Continued.

Independent Variable	Public Target			Debt/Assets-Rel	InsDebt-Rel	CompLev-Rel	DebtP
	1	2	3	4	5	6	7
CEO Age		11.67**	3.05**	1.08***	0.52***	1.59***	3.07***
		(0.022)	(0.023)	(0.000)	(0.001)	(0.005)	(0.001)
CEO Chair	8.44						
	(0.231)						
CEO Gender	2.07	1.61	0.88	0.45	0.55	0.71	0.52
	(0.121)	(0.440)	(0.322)	(0.301)	(0.220)	(0.159)	(0.162)
CEO Tenure	0.086						
	(0.442)						
Debt/Assets	6.01**	3.24*	5.92**	1.83**	3.58*	4.25**	0.52*
	(0.031)	(0.071)	(0.029)	(0.045)	(0.084)	(0.032)	(0.082)
ExpTenure		3.61**	2.54***	0.61***	0.50**	2.41***	0.11***
		(0.041)	(0.000)	(0.000)	(0.014)	(0.007)	(0.000)
%Equity	19.82	17.43	10.67**	2.10**	5.95	14.02*	0.37*
	(0.131)	(0.174)	(0.011)	(0.038)	(0.330)	(0.057)	(0.086)
Hubris	-10.53**	-5.69*		-2.39	-4.37*	-22.51	-0.91***
	(0.021)	(0.091)		(0.141)	(0.072)	(0.221)	(0.000)
Ins Ownership	2.11						
	(0.217)						
%Internal	-10.13						
	(0.334)						
Internal CEO	15.12						
	(0.220)						
Inv/Assets	-2.07						
	(0.334)						
LGG	-12.14***	-10.43***	-7.29**	-5.14**	-4.88***	-7.01***	-3.48***
	(0.001)	(0.004)	(0.021)	(0.018)	(0.000)	(0.002)	(0.007)
MAQ	-1.75***	-1.49***	-1.65**	-1.27***	-1.58***	-1.01**	-1.22***
	(0.008)	(0.000)	(0.024)	(0.001)	(0.006)	(0.026)	(0.003)
MP-FM		-2.01***	-2.12**	-1.32***	-1.92**	-5.20**	
		(0.000)	(0.0019)	(0.005)	(0.016)	(0.023)	
MGR Rep		1.09***	0.56***	0.59***	1.82*	6.81**	0.23**
		(0.001)	(0.001)	(0.000)	(0.094)	(0.036)	(0.041)
Price	16.75						
	(0.341)						
PUI	-41.55**	-35.84***	-33.25**	-40.29*	-37.15***	-32.94**	-39.37***
	(0.012)	(0.002)	(0.032)	(0.081)	(0.000)	(0.037)	(0.008)
$Q_{t\text{-}1}$	5.08*	1.36*	2.33	6.74	3.05	3.77	4.67
	(0.081)	(0.074)	(0.127)	(0.422)	(0.201)	(0.120)	(0.101)
R&D/Assets	1.96						
	(0.331)						
Return $_{t\text{-}1,\ t\text{-}3}$	-2.21***	-1.98***	-1.75***	-.53***	-1.11*	-7.52***	-0.22**
	(0.001)	(0.002)	(0.003)	(0.000)	(0.074)	(0.001)	(0.042)
ROA	2.37**	4.71	1.21	0.77*	3.77	1.53	0.88
	(0.021)	(0.117)	(0.253)	(0.063)	(0.451)	(0.101)	(0.510)
Sales ($k)	4.92	-3.81*	3.65	4.84	12.23	-2.64	9.33
	(0.402)	(0.055)	(0.447)	(0.231)	(0.214)	(0.267)	(0.338)
SAQ	2.61	2.09	1.76	2.30	1.95	1.82	1.54
	(0.291)	(0.127)	(0.204)	(0.103)	(0.518)	(0.135)	(0.337)
Stock Merger		0.98	1.03	4.06	1.12	5.07	9.15
		(0.237)	(0.119)	(0.142)	(0.261)	(0.195)	(0.250)
Turnover	-2.94	-3.08	-2.65	-1.06	-2.41	-6.82	-0.51
	(0.192)	(0.117)	(0.236)	(0.147)	(0.175)	(0.232)	(0.312)
Volatility	23.01						
	(0.312)						
(IFE&YFE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	8187	8109	8109	8164	8127	8127	8164
Pseudo R^2	0.059	0.133	0.214	0.139	0.095	0.153	0.112

Table 2.6. Time-series logistic regression results for the likelihood of becoming an acquirer using cash (stock) as the method of payment for acquirers differentiated by inside debt and compensation leverage

This table reports summary results for time-series logistic regressions of the likelihood of becoming an acquirer using cash (or stock) as the method of payment for the initial sample of firm-year observations from 1992 to 2014. All regressors are lagged one period except for the pension-related metrics that are lagged either one or two years. The dependent variable is equal to 1 if the firm makes one or more acquisition bids using cash (stock) as the method of payment in the year considered in Panel A (Panel B), and 0 otherwise. I, II, III, and IV refer to the first to fourth (highest) quartiles in inside debt (InsDebt) or compensation leverage (CompLev). These quartiles are determined for each calendar month. Years $t-1$ and $t-2$ are the year before and the second year before the M&A announcement year t. The definitions of all the variables are provided in Appendix 2.A. All estimates are multiplied by 1000 for reporting purposes. The p-values are reported in the parentheses. N is the number of observations. All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Likelihood of becoming an acquirer using cash as the method of payment

	Pension-related Metric Year t-1; N = 24,428				Pension-related Metric Year t- 2; N = 23,565	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
InsDebt		0.56**		0.44*		0.14*
		(0.039)		(0.081)		(0.092)
InsDebt×QD(II)		3.02***		2.00**		3.45*
		(0.001)		(0.041)		(0.082)
InsDebt×QD(III)		21.74***		19.04**		17.22**
		(0.000)		(0.033)		(0.025)
InsDebt×QD(IV)		47.16***		51.87***		29.43***
		(0.000)		(0.006)		(0.002)
CompLev		1.04*	0.73**		0.92*	0.22*
		(0.094)	(0.033)		(0.078)	(0.068)
CompLev×QD(II)		8.28***	15.96**		10.85*	7.36**
		(0.000)	(0.018)		(0.065)	(0.047)
CompLev×QD(III)		30.59***	55.91**		34.57**	24.58*
		(0.000)	(0.011)		(0.022)	(0.069)
CompLev×QD(IV)		93.53***	114.72***		132.98**	154.06**
		(0.000)	(0.007)		(0.037)	(0.021)
InsDebt-Rel	2.12***	1.91***	1.87**	2.02***		0.96**
	(0.001)	(0.009)	(0.019)	(0.000)		(0.013)
CompLev-Rel	4.62***	3.33***	3.17***	2.97***		2.85*
	(0.000)	(0.003)	(0.001)	(0.000)		(0.051)
CEO Age × InsDebt	6.52***		3.56***	4.71**	4.46*	
	(0.008)		(0.000)	(0.030)	(0.068)	
CEO Age × CompLev	9.24***		8.59**	7.19**	3.67**	
	(0.008)		(0.022)	(0.036)	(0.041)	
CEO TComp	9.89*	15.49	6.40	0.98	8.57	6.69
	(0.094)	(0.156)	(0.450)	(0.189)	(0.233)	(0.115)
Ann Return	-12.45***	-10.92***	-9.02***	-11.17**	-7.74*	-8.39*
	(0.001)	(0.001)	(0.000)	(0.037)	(0.089)	(0.051)
Cap	-12.58***	-10.11***	-9.24***	-12.26***	-9.10*	-12.21**
	(0.002)	(0.000)	(0.000)	(0.000)	(0.095)	(0.032)
CashFlowRisk	-6.01***	-5.73***	-4.30***	-4.88***	-2.65	-6.75*
	(0.000)	(0.000)	(0.001)	(0.001)	(0.233)	(0.077)

Panel A of Table 2.6. Continued

	Pension-related Metric Year *t*- 1				Pension-related Metric Year *t*- 2	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
CEO Age	12.01***	9.04***	7.92**	11.85**	9.11*	7.08
	(0.000)	(0.007)	(0.065)	(0.016)	(0.064)	(0.361)
DA-Rel	7.70***	5.29***	5.93**	6.73*	4.25	3.92*
	(0.006)	(0.000)	(0.037)	(0.061)	(0.252)	(0.094)
Debt/Assets	13.96***	12.26**	10.19***	10.16**	8.40*	10.08**
	(0.001)	(0.034)	(0.008)	(0.024)	(0.097)	(0.012)
%Equity	26.52	23.07	25.13	26.07	25.35	22.04
	(0.231)	(0.224)	(0.143)	(0.311)	(0.326)	(0.148)
ExpTenure	5.36***	4.83**	5.12***	2.03**	3.25*	4.01
	(0.000)	(0.063)	(0.004)	(0.082)	(0.058)	(0.202)
Hubris	-18.27***	-11.10*	-9.50	-10.87***	-11.95	-11.79*
	(0.000)	(0.089)	(0.133)	(0.000)	(0.194)	(0.071)
LGG	-10.08***	-7.23***	-8.74***	-9.12**	-4.34*	-5.23**
	(0.001)	(0.001)	(0.006)	(0.021)	(0.072)	(0.030)
MAQ	-0.56***	-0.45**	-0.51***	-0.39***	-0.41***	-0.38*
	(0.004)	(0.042)	(0.000)	(0.002)	(0.001)	(0.079)
MP-FM		-8.29***	-6.95**		-8.44**	
		(0.005)	(0.034)		(0.041)	
MGR Rep	3.02***	2.93	1.78**	2.41*	0.98	1.28
	(0.000)	(0.171)	(0.022)	(0.056)	(0.236)	(0.138)
PUI	-79.24*	-77.16***	-68.91***	-73.33**	-65.81***	-71.43***
	(0.082)	(0.001)	(0.002)	(0.040)	(0.001)	(0.000)
$Q_{t\text{-}1}$	8.62	6.04	7.00	4.95	5.46	2.14
	(0.451)	(0.187)	(0.360)	(0.381)	(0.135)	(0.246)
Return $_{t\text{-}1,\ t\text{-}3}$	-3.30***	-2.03**	-1.63***	-1.53***	-2.97**	-1.03
	(0.003)	(0.041)	(0.008)	(0.001)	(0.033)	(0.172)
ROA	18.91	12.16	18.85	11.121	9.89	6.05
	(0.134)	(0.291)	(0.134)	(0.424)	(0.189)	(0.364)
Sales ($k)	-1.99	-1.42	-2.67	-1.14*	-1.95	-1.69
	(0.323)	(0.291)	(0.403)	(0.087)	(0.277)	(0.169)
SAQ	0.32***	0.31***	0.25***	0.19***	0.20**	0.16***
	(0.001)	(0.000)	(0.002)	(0.005)	(0.017)	(0.008)
Turnover	-12.11	11.31	-10.85	-10.56	-9.81	-8.64
	(0.361)	(0.224)	(0.185)	(0.260)	(0.116)	(0.145)
Intercept	-636.0	-613.6**	-525.2*	-741.3	-511.3**	-612.1*
	(0.144)	(0.020)	(0.051)	(0.201)	(0.041)	(0.093)
IFE&YFE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.115	0.136	0.129	0.131	0.128	0.136

Panel B of Table 2.6. Likelihood of becoming an acquirer using stock as the method of payment

	Pension-related Metric in *t*-1; N = 24,428				Pension-related Metric in *t*-2; N = 23,565	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
InsDebt		-0.33**		-0.26*	-0.24*	
		(0.035)		(0.082)	(0.062)	
InsDebt×QD(II)		-0.83*		-6.58**	-9.09	
		(0.056)		(0.042)	(0.296)	
InsDebt×QD(III)		-15.34***		-22.07**	-29.84**	
		(0.007)		(0.024)	(0.022)	
InsDebt×QD(IV)		-41.28***		-48.29**	-59.25***	
		(0.004)		(0.037)	(0.001)	
CompLev		-1.12**	-1.06 *	-1.25**		-1.48
		(0.011)	(0.061)	(0.039)		(0.330)
CompLev×QD(II)		-27.83**	-26.52***	-14.17*		-34.33*
		(0.017)	(0.003)	(0.061)		(0.071)
CompLev×QD(III)		-69.05***	-67.69***	-55.03**		-71.60**
		(0.000)	(0.000)	(0.040)		(0.019)
CompLev×QD(IV)		-141.99***	-155.03***	-139.47***		-127.14**
		(0.001)	(0.001)	(0.007)		(0.043)
InsDebt-Rel	-3.02	-4.36*	-3.64*	-5.47	-2.37	-4.01
	(0.182)	(0.091)	(0.074)	(0.309)	(0.184)	(0.243)
CompLev-Rel	-6.32	-5.47*	-4.25	-3.35**	-2.69	-1.97
	(0.421)	(0.058)	(0.392)	(0.046)	(0.114)	(0.208)
CEO Age × InsDebt	-18.73***		-12.01***	-7.46***	-21.14*	
	(0.007)		(0.004)	(0.001)	(0.087)	
CEO Age × CompLev	-14.96***		-10.95***	-9.27***	-7.41***	
	(0.003)		(0.005)	(0.008)	(0.007)	
CEO TComp	2.40	20.71	1.32	0.04	-2.45	1.57
	(0.331)	(0.336)	(0.157)	(0.310)	(0.127)	(0.220)
Ann Return	-25.61***	-22.04**	-24.58***	-21.45**	-12.07*	-19.19*
	(0.003)	(0.014)	(0.001)	(0.032)	(0.082)	(0.076)
Cap	5.32	-2.01	6.56	2.02	-5.68	-7.04
	(0.160)	(0.151)	(0.214)	(0.175)	(0.154)	(0.233)
CashFlowRisk	32.32	22.15	20.21	12.14	18.25	20.04
	(0.121)	(0.210)	(0.221)	(0.163)	(0.335)	(0.242)
CEO Age	-1.95***	-1.62***	-1.58*	-1.03**	-0.57***	-0.46*
	(0.001)	(0.000)	(0.051)	(0.048)	(0.000)	(0.080)
DA-Rel	-20.71	-15.58	-10.45	-14.54	-11.42	-10.35
	(0.221)	(0.157)	(0.109)	(0.235)	(0.121)	(0.388)
Debt/Assets	-2.33*	-2.24**	-1.97**	-2.00*	-1.96**	-2.18**
	(0.64)	(0.032)	(0.021)	(0.086)	(0.034)	(0.041)
%Equity	3.56	1.26	1.55	1.68	1.55	1.44
	(0.451)	(0.251)	(0.330)	(0.421)	(0.201)	(0.129)
ExpTenure	9.67	4.75	3.65	6.55*	3.65	9.75
	(0.447)	(0.216)	(0.323)	(0.091)	(0.294)	(0.185)
Hubris	4.04	3.22	3.25**	5.21	2.03**	9.43
	(0.221)	(0.214)	(0.034)	(0.210)	(0.041)	(0.193)
LGG	4.78**	3.71***	6.20***	3.98**	3.07**	2.15**
	(0.019)	(0.002)	(0.000)	(0.002)	(0.011)	(0.042)
MAQ	11.21***	9.45***	10.71**	12.20***	10.03*	8.15**
	(0.000)	(0.000)	(0.022)	(0.001)	(0.074)	(0.046)
MP-FM	27.73***	25.62***		23.47***		8.79*
	(0.000)	(0.001)		(0.002)		(0.067)
MGR Rep	-12.09***	-9.47***	-7.81**	-8.29***	-6.07*	-4.84***
	(0.000)	(0.001)	(0.031)	(0.002)	(0.071)	(0.000)
PUI	95.11**	90.31***	85.09***	79.73**	75.92***	83.01***
	(0.021)	(0.000)	(0.002)	(0.033)	(0.000)	(0.001)

Panel B of Table 2.6. Continued

	Pension-related Metric Year *t*-1				Pension-related Metric Year *t*- 2	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Q	4.93***	2.26***	2.32***	1.62***	1.88**	1.01***
	(0.001)	(0.006)	(0.004)	(0.005)	(0.023)	(0.001)
Return $_{t\text{-}1,\ t\text{-}3}$	11.52***	7.35***	9.21***	6.48***	5.37**	7.10*
	(0.002)	(0.000)	(0.001)	(0.001)	(0.031)	(0.089)
ROA	4.46	6.25	3.31	9.23	5.86	2.43
	(0.165)	(0.221)	(0.293)	(0.131)	(0.250)	(0.349)
Sales ($k)	12.48**	10.04***	10.17***	11.27***	9.98***	8.22**
	(0.044)	(0.000)	(0.007)	(0.006)	(0.008)	(0.063)
SAQ	-1.96**	-1.71***	-1.78***	-1.58***	-1.41**	-1.63***
	(0.039)	(0.000)	(0.001)	(0.000)	(0.012)	(0.001)
Turnover	23.66	22.54	12.08	22.36	18.04	20.07
	(0.311)	(0.236)	(0.142)	(0.121)	(0.144)	(0.266)
Intercept	-553.1*	-521.3	-446.2**	-514.3*	-510.3*	-426.2**
	(0.069)	(0.167)	(0.031)	(0.087)	(0.074)	(0.033)
YFE&IFE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.106	0.134	0.129	0.135	0.131	0.121

Table 2.7. Cross-sectional logistic regression results for the likelihood of using cash as the method of payment for acquirers differentiated by inside debt and compensation leverage

This table presents logistic regression results of the likelihood of becoming an acquirer using cash as the method of payment. All regressors are lagged one period except for the pension-related metrics that are lagged either one or two years. The dependent variable is equal to 1 if the firm makes one or more acquisitions using cash as the method of payment in the year considered, and is 0 otherwise. I, II, III, and IV refer to 1st (lowest) to 4th (highest) quartile of the pension-related metrics. Assignments to these quartiles occur each calendar month and subsequently remain unchanged. The sample includes the initial sample of firm-year observations from 1992 to 2014. Year *t* is the year of the M&A announcement. All definitions of the variables used in this table are provided in Appendix 2.A. All estimates are multiplied by 1000 for reporting purposes. All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. The p-values are reported in the parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

	Pension-related Metric Year *t*-1			Pension-related Metric Year *t*- 2	
Variable	1	2	3	4	5
InsDebt		1.34**		0.41	0.34
		(0.034)		(0.211)	(0.163)
InsDebt×QD(II)		16.84**		14.56*	-12.87
		(0.036)		(0.077)	(0.113)
InsDebt×QD(III)		42.37***		29.09*	21.36*
		(0.000)		(0.054)	(0.085)
InsDebt×QD(IV)		43.79***		45.31**	36.71**
		(0.000)		(0.046)	(0.032)
CompLev		2.25***	0.79**	0.21*	
		(0.000)	(0.015)	(0.064)	
CompLev×QD(II)		19.33**	17.09**	12.01*	
		(0.013)	(0.014)	(0.067)	
CompLev×QD(III)		67.28***	62.74**	59.33**	
		(0.000)	(0.036)	(0.042)	
CompLev×QD(IV)		154.43***	145.01***	139.11**	
		(0.001)	(0.002)	(0.021)	
InsDebt-Rel	5.35***	3.58**	4.22***	2.97***	3.44**
	(0.002)	(0.049)	(0.000)	(0.004)	(0.021)
CompLev-Rel	7.48**	6.39***	5.21*	6.03***	4.87***
	(0.022)	(0.006)	(0.091)	(0.000)	(0.001)
CEO Age × InsDebt	0.87***		0.49***	0.65***	0.56**
	(0.001)		(0.007)	(0.000)	(0.042)
CEO Age × CompLev	0.48**		0.27***	0.34***	0.29***
	(0.041)		(0.001)	(0.000)	(0.004)
Director TComp	-9.04	-20.95	-7.73	-14.57	-6.94
	(0.403)	(0.101)	(0.302)	(0.209)	(0.149)
Ann Return	-21.44***	-15.91***	-11.17***	-10.31**	-9.82*
	(0.001)	(0.001)	(0.000)	(0.030)	(0.067)
Cap	-24.20***	-23.02***	-22.6***	-21.24**	-19.94**
	(0.002)	(0.000)	(0.000)	(0.024)	(0.011)
CashFlowRisk	-11.51***	-8.62***	-9.83**	-7.15***	-8.54*
	(0.000)	(0.000)	(0.033)	(0.001)	(0.067)
CEO Age	3.21**	2.18***	2.67*	1.78***	1.99***
	(0.031)	(0.001)	(0.069)	(0.000)	(0.007)
Debt/Assets	12.54***	9.01**	11.14***	7.32*	11.32***
	(0.001)	(0.034)	(0.004)	(0.067)	(0.002)
Debt/Assets-Rel	2.39	1.54	1.22	1.06	1.69
	(0.231)	(0.304)	(0.102)	(0.225)	(0.282)

Table 2.7. Continued

	Pension-related Metric Year *t*-1			Pension-related Metric Year *t*- 2	
Variable	1	2	3	4	5
%Equity	19.82	17.43	10.67	11.27	9.10
	(0.331)	(0.104)	(0.211)	(0.126)	(0.138)
ExpTenure	1.59***	1.38***	1.12*	0.98***	1.35***
	(0.001)	(0.001)	(0.087)	(0.003)	(0.000)
Hubris	-21.05	-16.07***	18.57	16.38**	17.11
	(0.325)	(0.149)	(0.101)	(0.031)	(0.221)
LGG	-12.52***	-10.33***	-9.15***	-6.79*	-7.34**
	(0.001)	(0.002)	(0.000)	(0.093)	(0.018)
MAQ	-0.16***	-0.15**	-0.12***	-0.11*	-0.08*
	(0.001)	(0.032)	(0.000)	(0.059)	(0.081)
MGR Rep	5.08***	4.48**	3.17***	3.99***	4.06**
	(0.001)	(0.042)	(0.000)	(0.001)	(0.033)
MP-FM	-11.25***		-10.92***		8.87***
	(0.001)		(0.006)		(0.000)
PUI	-132.05***	-122.49***	-126.07**	-118.43***	-115.01**
	(0.003)	(0.001)	(0.011)	(0.000)	(0.042)
Q	12.36	11.01	10.12	9.52	8.32
	(0.191)	(0.154)	(0.263)	(0.181)	(0.165)
Return $_{t\text{-}1,\ t\text{-}3}$	-10.10***	-7.99**	-7.87**	-9.06***	-6.24***
	(0.003)	(0.041)	(0.033)	(0.001)	(0.003)
ROA	11.53	5.16	8.49	9.47	10.87
	(0.134)	(0.391)	(0.109)	(0.274)	(0.183)
Sales ($k)	13.64*	11.20	6.20	13.92	11.57
	(0.083)	(0.421)	(0.330)	(0.105)	(0.262)
SAQ	0.89***	1.01**	0.92***	0.71***	0.64***
	(0.000)	(0.039)	(0.001)	(0.000)	(0.002)
Turnover	-12.61	-11.17	-9.55	-10.39	-8.10
	(0.211)	(0.185)	(0.306)	(0.152)	(0.245)
Intercept	-855.6	-843.5*	-831.5	-796.2**	-938.7
	(0.124)	(0.071)	(0.231)	(0.025)	(0.167)
(IFE&YFE)	Yes	Yes	Yes	Yes	Yes
NO of Obs.	23,738	23,404	23,401	23,210	23,215
Pseudo R^2	0.060	0.124	0.248	0.103	0.147

Table 2.8. (Post-) announcement five-factor (P)CAR and (P)Alpha sorted by M&A method-of-payment

This table presents mean (P)CAR for the announcement window [-1, 1] and mean (P)Alpha for three post-announcement windows for a sample of firms that engaged in M&As between 1992 and 2014 and are single sorted by method of payment. The reported values in basis points (bps) are obtained using the five-factor model of Fama and French (2015) not adjusted (CAR and Alpha) and adjusted (PCAR and PAlpha) for the equity issue effect in Panel A and B, respectively. The announcement CAR for the window [-1, 1] are based on model coefficients estimated in the first step over the window [-200, -41]. Post-announcement performance is estimated in-sample as the intercept of the five-factor model for portfolios for windows of [2, 64], [2, 124] and [2, 250] trading days representing periods of about 3-, 6-, and 12-months, respectively. These portfolios are formed at the end of each announcement month that has a minimum of five such events as in Mitchell and Stafford (2000) and held unchanged until the ending day specified in the column labeled "horizon". The number of such post-announcement portfolios is 2209 for stock, 3207 for mixed and 5612 for cash. The t-values for tests of the mean values are reported in the parentheses. *, ** and *** represent two-tailed significance at the 10%, 5% and 1% level, respectively.

Horizon	Method of Payment				
(Days)	All	Stock	Mixed	Cash	Stock-Cash
Panel A: CAR or Alpha (in bps) without adjustment for equity issue effect					
[-1, 1]	-97.45***	-281.12***	-169.50***	16.02***	-297.14***
	(-4.09)	(-11.37)	(-3.04)	(3.39)	(-2.63)
[2, 64]	-1.47***	-4.42***	-2.73***	0.41	-4.83***
	(-4. 33)	(-7.11)	(3.73)	(0.12)	(-11.02)
[2, 124]	-0.96***	-2.90***	-1.79**	0.28	-3.17***
	(-7.02)	(-3.08)	(-2.53)	(1.34)	(-6.56)
[2, 250]	-0.90**	-2.53***	-1.95***	0.34	-2.87***
	(-2.54)	(-11.43)	(-4.20)	(0.64)	(-3.21)
Panel B: PCAR or PAlpha (in bps) after the equity issue effect adjustment					
[-1, 1]	4.01**	-18.71	-1.36**	16.02***	-34.73*
	(2.19)	(-1.59)	(-2.21)	(3.39)	(-1.66)
[2, 64]	0.09***	-0.35***	-0.17***	0.41	-0.76***
	(6.38)	(-11.28)	(-3.14)	(0.12)	(-2.96)
[2, 124]	0.01***	-0.50***	-0.10**	0.28	-0.78***
	(3.65)	(-3.72)	(-2.01)	(1.34)	(-5.77)
[2, 250]	0.05***	-0.44**	-0.12***	0.34	-0.77**
	(3.11)	(-1.99)	(-2.95)	(0.64)	(-1.97)

Table 2.9.(Post-) announcement five-factor PCARs and PAlphas for samples double-sorted by M&A method-of-payment and pension-related metric

This table reports mean PCAR for the announcement window [-1, 1] and mean PAlpha for three post-announcement windows for a sample of firms that engaged in M&As between 1992 and 2014 and are double sorted by method of payment and pension-related metric. The reported values in basis points (bps) are obtained using the five-factor model of Fama and French (2015) adjusted (PCAR and PAlpha) for the equity issue effect. The announcement CAR for the window [-1, 1] are based on model coefficients estimated in the first step over the window [-200, -41]. Post-announcement performance is estimated in-sample as the intercept of the five-factor model for portfolios for windows of [2, 64], [2, 124] and [2, 250] trading days representing periods of about 3-, 6-, and 12-months, respectively. These portfolios are formed at the end of each announcement month that has a minimum of five such events as in Mitchell and Stafford (2000) and held unchanged until the ending day specified in the column labeled "horizon". The number of such post-announcement portfolios is 2209 for stock, 3207 for mixed and 5612 for cash. *, ** and *** represent two-tailed significance at the 10%, 5% and 1% level, respectively.

Eval. Period	Inside Debt Quartiles					
(Days)	All	I (lowest)	II	III	IV (highest)	I-IV
Panel A: Acquirers using cash as the method of payment						
[-1,1]	16.02***	23.92***	18.05***	10.61***	8.73**	15.19***
	(3.39)	(2.71)	(11.04)	(3.62)	(1.97)	(7.03)
[2, 64]	0.41	0.92*	0.52**	0.16**	-0.06*	0.98**
	(0.12)	(1.89)	(2.01)	(1.97)	(-1.71)	(2.31)
[2, 124]	0.28	0.48*	0.35	-0.13*	-0.26**	0.73**
	(1.34)	(1.67)	(0.87)	(-1.72)	(-2.48)	(1.98)
[2, 250]	0.34	0.52	0.42	-0.08	-0.18	0.70*
	(0.64)	(1.05)	(1.21)	(-0.79)	(-1.25)	(1.72)
No of Firms	5612	1194	1310	1506	1602	
Panel B: Acquirers using stock as the method of payment						
[-1,1]	-18.71	-2.13***	-10.02***	-26.36***	-34.08***	31.95***
	(-1.59)	(-11.30)	(-3.12)	(-9.41)	(-2.64)	(4.91)
[2, 64]	-0.35***	0.61***	-0.12***	-0.76***	-1.53***	2.14***
	(-11.28)	(3.71)	(-3.98)	(-3.96)	(-6.28)	(11.04)
[2, 124]	-0.50***	0.13**	-0.41***	-0.60***	-0.99**	1.12***
	(-3.72)	(2.35)	(-3.04)	(-7.74)	(-2.09)	(3.71)
[2, 250]	-0.44**	0.20***	-0.30**	-0.55**	-0.69***	0.90***
	(-1.99)	(4.72)	(-2.36)	(-2.36)	(-4.80)	(6.09)
No of Firms	2209	794	415	567	433	
Panel C: All acquirers						
[-1,1]	4.01**	22.19***	15.08***	-10.17**	-15.61***	37.79***
	(2.19)	(5.41)	(3.28)	(-2.01)	(-6.01)	(13.11)
[2, 64]	0.09***	0.54**	0.45**	-0.14***	-0.86***	1.40***
	(6.38)	(2.35)	(2.21)	(-2.70)	(-3.95)	(6.83)
[2, 124]	0.01***	0.26*	0.24**	0.19*	-0.67**	0.93**
	(3.65)	(1.91)	(1.96)	(1.87)	(-2.29)	(2.14)
[2, 250]	0.05***	0.21***	0.20	0.18**	-0.41**	0.62***
	(3.11)	(4.55)	(0.98)	(2.41)	(-1.97)	(2.95)
No of Firms	11028	3493	2293	2567	2675	

Table 2.9. Continued

Horizon (Days)	Total Compensation Quartiles					
	All	I (lowest)	II	III	IV (highest)	I-IV
	Panel D: Acquirers using cash as the method of payment					
[-1,1]	16.02***	3.04***	6.07***	26.25***	35.61***	-32.57***
	(3.39)	(4.31)	(2.94)	(7.29)	(11.02)	(-8.09)
[2, 64]	0.41	-0.18**	0.19***	0.63**	0.80***	-0.98***
	(0.12)	(-2.01)	(3.84)	(1.97)	(4.23)	(-10.04)
[2, 124]	0.28	-0.01***	0.05***	0.47***	0.56***	-0.57***
	(1.34)	(-7.98)	(2.87)	(3.44)	(2.98)	(-5.11)
[2, 250]	0.34	-0.14***	0.27**	0.40***	0.54***	-0.68***
	(0.64)	(-3.23)	(1.99)	(5.01)	(3.64)	(-3.46)
No of Firms	5612	1580	1301	1579	1152	
	Panel E: Acquirers using stock as the method of payment					
[-1,1]	-18.71	-36.33***	-27.02***	1.33***	8.01***	-44.34***
	(-1.59)	(-2.60)	(-6.39)	(3.31)	(5.46)	(-6.78)
[2, 64]	-0.35***	-0.68***	-0.50***	-0.28**	0.31**	-0.99***
	(-11.28)	(-3.01)	(-3.67)	(-2.19)	(1.98)	(-5.23)
[2, 124]	-0.50***	-0.69*	-0.57***	-0.42**	0.09***	-0.79***
	(-3.72)	(-1.67)	(-6.01)	(-2.03)	(2.96)	(-3.01)
[2, 250]	-0.44**	-0.81***	-0.56***	-0.40*	0.19***	-1.00***
	(-1.99)	(-3.61)	(-5.32)	(-1.81)	(9.18)	(-2.97)
No of Firms	2209	386	699	753	371	
	Panel F: All acquirers					
[-1,1]	4.01**	-14.55***	6.17***	10.64***	20.03***	-34.58***
	(2.19)	(-2.79)	(7.17)	(3.02)	(6.18)	(-21.33)
[2, 64]	0.09***	-0.46***	0.02***	0.46**	0.51**	-0.97***
	(6.38)	(-11.39)	(3.01)	(1.98)	(2.13)	(-9.41)
[2, 124]	0.01***	-0.79***	0.32**	0.39***	0.44**	-1.23***
	(3.65)	(-21.31)	(2.09)	(3.47)	(2.29)	(-7.38)
[2, 250]	0.05***	-0.59***	0.26***	0.37**	0.40***	-0.99***
	(3.11)	(-4.09)	(3.89)	(1.99)	(7.06)	(-6.84)
No of Firms	11028	2528	2930	3159	2411	

Table 2.10. Summary regression results for the relation between announcement PCARs for acquirers and inside debt

This table presents OLS regression results examining the determinants of announcement PCARs for the window [-1, 1] where 0 is the M&A announcement day. The announcement CAR for the window [-1, 1] are based on four-factor model coefficients estimated in the first step over the window [-200, -41]. PCAR are the CAR adjusted for the equity issue effect using the procedure detailed in Appendix 2.B. The sample includes firms that had at least one announcement between 1992 and 2014. The independent variables as defined in Appendix 2.A are all measured in year *t*–1 relative to the year of the M&A announcement in year *t* month *m*. Quartiles of inside debt are assigned on each calendar month. The regressions include industry-fixed effects (IFE&YFE) based on the Fama-French (1997) 48 industries interacted with year-fixed effects. Standard errors are robust to industry clustering. The p-values are reported in the parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

	Stock	Stock	Cash	Cash	Stock or Cash	
Variable	1	2	3	4	5	6
InsDebt	-4.28**		32.66*	40.27**	5.52	8.33
	(0.012)		(0.079)	(0.013)	(0.215)	(0.155)
InsDebt×QD(II)	-4.70**		13.75***	12.08***	2.69*	3.79
	(0.029)		(0.000)	(0.005)	(0.069)	(0.231)
InsDebt×QD(III)	-17.04***		3.49***	4.09***	-9.21*	-7.33*
	(0.002)		(0.008)	(0.001)	(0.075)	(0.069)
InsDebt×QD(IV)	-46.22***		0.11**	0.21*	-34.26**	-35.72**
	(0.008)		(0.030)	(0.072)	(0.042)	(0.031)
InsDebt-Rel	2.05*	1.06**	0.98**	2.01*	1.95***	3.75**
	(0.061)	(0.027)	(0.023)	(0.051)	(0.001)	(0.018)
CompLev-Rel	3.72***	1.63**	2.21***	1.74***	3.19**	1.18***
	(0.005)	(0.041)	(0.002)	(0.000)	(0.041)	(0.001)
CEO Age × InsDebt	0.24	-4.69		-3.85		3.11
	(0.115)	(0.216)		(0.412)		(0.139)
CEO Age × CompLev	-11.65	8.09		0.98		-2.78
	(0.216)	(0.235)		(0.225)		(0.221)
Director TComp	9.31**		14.59***		11.23**	
	(0.014)		(0.000)		(0.037)	
CEO TComp		3.28***		4.07*		5.51**
		(0.009)		(0.062)		(0.021)
Cap	-18.11***	-17.06**	-15.53**	-17.57***	-10.15**•	-13.89***
	(0.001)	(0.031)	(0.023)	(0.006)	(0.004)	(0.001)
Cash M&A						18.54
						(0.140)
CEO Age	-1.95	2.41	11.07	5.38	0.42	-7.29
	(0.223)	(0.138)	(0.101)	(0.242)	(0.226)	(0.466)
DA-Rel	4.72***	3.78***	5.39**	2.98**	3.44*	4.83***
	(0.009)	(0.001)	(0.033)	(0.016)	(0.069)	(0.000)
ExpTenure	1.03***	0.89***	2.02***	1.46***	1.64***	1.21*
	(0.001)	(0.004)	(0.001)	(0.004)	(0.000)	(0.087)
Hubris	-12.59*	-11.95***	-10.14*	-8.44***	-11.68	-9.09***
	(0.051)	(0.007)	(0.051)	(0.002)	(0.316)	(0.008)
LGG	3.26***	2.94***	4.01***	3.45***	3.94***	4.13**
	(0.002)	(0.001)	(0.000)	(0.004)	(0.003)	(0.24)

Table 2.10. Continued

Variable	Stock 1	Stock 2	Cash 3	Cash 4	Stock or Cash 5	Stock or Cash 6
MAQ	-13.01***	-15.46***	-4.11**	-3.02***	-9.24*	-11.03**
	(0.001)	(0.000)	(0.019)	(0.009)	(0.085)	(0.023)
MGR Rep	-21.08	-13.11	-15.89	-9.87	-11.13	4.28
	(0.314)	(0.219)	(0.205)	(0.173)	(0.195)	(0.360)
MP-FM	-4.17***	-6.28***	-10.94**	-8.27**	-4.87**	-1.22*
	(0.001)	(0.006)	(0.035)	(0.041)	(0.044)	(0.063)
Price	-8.69**	-7.25**	-9.52***	-8.44**	-7.56***	-6.08**
	(0.013)	(0.043)	(0.001)	(0.024)	(0.000)	(0.039)
Public Target	-2.87**	-1.97**	2.65	2.79	-2.58	-1.27
	(0.015)	(0.027)	(0.156)	(0.301)	(0.128)	(0.271)
PUI	49.14**	43.01***	44.52***	39.72**	36.98***	41.28***
	(0.031)	(0.001)	(0.001)	(0.027)	(0.001)	(0.001)
Q	-3.24	-2.29	1.95	-3.07	5.69	-2.29
	(0.146)	(0.221)	(0.190)	(0.166)	(0.268)	(0.385)
Return $_{t\text{-}1,\ t\text{-}3}$	18.32***	15.22**	8.19***	13.50***	17.02***	12.11***
	(0.001)	(0.042)	(0.001)	(0.000)	(0.036)	(0.003)
ROA	-5.03	-3.08	-4.43	-4.25	-3.44	-3.07
	(0.132)	(0.127)	(0.451)	(0.330)	(0.232)	(0.387)
Sales ($k)	-12.63	-9.99	-4.48	-7.01	-11.26	-9.23
	(0.241)	(0.108)	(0.237)	(0.282)	(0.645)	(0.194)
SAQ	2.95	2.07	2.30	1.63	1.84	2.03
	(0.409)	(0.127)	(0.348)	(0.113)	(0.290)	(0.194)
Stock M&A						-11.60***
						(0.006)
Volatility	2.38	3.17	1.45	5.50	11.26	7.09
	(0.201)	(0.153)	(0.283)	(0.370)	(0.118)	(0.102)
IFE&YFE	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	601.8	565.9*	652.6	591.1**	677.35	571.7 *
	(0.129)	(0.091)	(0.190)	(0.021)	(0.174)	(0.063)
No of Obs.	2,275	2,275	5,109	5,109	10,861	10,861
R^2	0.217	0.266	0.112	0.098	0.126	0.085

Table 2.11. (Post-) announcement BHARs for acquirers for samples double-sorted by M&A method-of-payment and pension-related metric

This table reports the average (post-) announcement buy-and-hold abnormal returns (BHAR) in basis points of acquirers over the three-day announcement window [-1, 1] and the post-announcement evaluation windows of [2, 64], [2, 124] and [2, 250] trading days representing periods of about 3-, 6-, and 12-months, respectively. The BHAR are computed using the procedure detailed in Appendix 2.B. The samples of acquirers are based on a double sort by method of payment (i.e., stock, mixed, cash, and long stock short cash) in year *t* and pension-related metric quartile (i.e., inside debt and total compensation) in year *t-1* where *t* is the M&A announcement year. These portfolios are formed at the end of each announcement month that has a minimum of five such events as in Mitchell and Stafford (2000) and held unchanged until the ending day specified in the column labeled "horizon". Eval. Period refers to the evaluation period. The t-values are reported in the parentheses. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Eval. Period	Inside Debt Quartiles					
(Days)	All	I	II	III	IV	I-IV
Panel A: Acquirers using cash as the method of payment						
[-1,1]	16.12***	24.06**	18.09***	10.37***	8.84***	15.22***
	(4.63)	(2.01)	(7.96)	(5.22)	(4.37)	(3.95)
[2, 64]	0.39	0.89**	0.51*	0.16**	-0.06**	0.95*
	(0.21)	(2.31)	(1.73)	(2.33)	(-2.25)	(1.71)
[2, 124]	0.27	0.45*	0.34	-0.13**	0.21	0.24**
	(1.29)	(1.84)	(1.41)	(-1.97)	(-6.45)	(2.03)
[2, 250]	0.32	0.49	0.40	-0.07	-0.17	0.66*
	(1.12)	(1.25)	(0.97)	(-1.14)	(1.13)	(1.81)
No of Firms	5612	1194	1310	1506	1602	
Panel B: Acquirers using stock as the method of payment						
[-1,1]	-18.68*	-2.12***	-9.93**	-25.70***	-33.74***	31.62***
	(-1.65)	(-4.79)	(-2.51)	(-3.91)	(-2.59)	(5.63)
[2, 64]	-0.34***	0.58**	-0.11***	-0.73***	-1.45**	2.03***
	(-6.07)	(2.04)	(-4.14)	(-3.21)	(-1.99)	(2.93)
[2, 124]	-0.48***	0.29**	-0.45***	-0.78***	-1.02**	1.31***
	(-4.30)	(2.37)	(-4.94)	(-2.74)	(-2.23)	(7.91)
[2, 250]	-0.42***	-0.24***	-0.32***	-0.43**	-0.60**	0.36***
	(-2.61)	(-3.15)	(-2.63)	(-2.02)	(-1.97)	(5.71)
No of Firms	2209	794	415	567	433	
Panel C: All acquirers						
[-1,1]	10.69***	22.31***	15.22***	-6.36***	-1.71***	24.02***
	(3.74)	(3.30)	(5.71)	(-3.62)	(-8.11)	(4.41)
[2, 64]	-0.20***	0.53**	0.09**	-0.48***	-0.82**	1.35**
	(-3.95)	(1.97)	(2.03)	(-3.74)	(-1.98)	(1.83)
[2, 124]	-0.28***	0.25**	-0.10**	-0.52*	-0.65**	0.90***
	(-2.78)	(2.30)	(-2.30)	(-1.71)	(-2.13)	(2.85)
[2, 250]	-0.25***	0.20***	-0.17*	-0.28**	-0.38**	0.58***
	(-5.21)	(2.85)	(-1.95)	(-1.99)	(-2.22)	(4.01)
No of Firms	11028	3493	2293	2567	2675	

Table 2.11. Cont'd

Horizon (Days)	Total Compensation Quartiles					
	All	I	II	III	IV	I-IV
Panel D: Acquirers using cash as the method of payment						
[-1,1]	16.12***	3.09***	6.06***	26.31***	35.65***	-32.55***
	(4.63)	(2.84)	(3.90)	(8.08)	(7.61)	(-11.19)
[2, 64]	0.39	-0.18***	0.18**	0.60***	0.76***	-0.94***
	(0.21)	(2.81)	(3.04)	(2.31)	(5.94)	(-8.45)
[2, 124]	0.27	-0.01***	0.05***	0.46***	0.54***	-0.55***
	(1.29)	(-5.17)	(3.96)	(2.87)	(3.29)	(-4.11)
[2, 250]	0.32	-0.13***	0.26***	0.38**	0.51***	-0.64***
	(1.12)	(-2.68)	(4.03)	(2.49)	(5.07)	(-4.73)
No of Firms	5612	1580	1301	1579	1152	
Panel E: Acquirers using stock as the method of payment						
[-1,1]	-18.68*	-36.29***	-27.01***	1.32***	7.98***	-44.26***
	(-1.65)	(-2.74)	(-5.72)	(2.93)	(7.01)	(-4.89)
[2, 64]	-0.34***	-0.65**	-0.47***	-0.26***	0.30***	-0.95***
	(-6.07)	(-2.39)	(-3.81)	(-2.79)	(3.16)	(-6.31)
[2, 124]	-0.48***	-0.66**	-0.55***	-0.40**	0.09***	-0.75***
	(-4.30)	(1.98)	(-4.75)	(-1.98)	(4.17)	(-3.56)
[2, 250]	-0.42***	-0.77***	-0.53***	-0.38**	0.18***	-0.95***
	(-2.61)	(-5.21)	(-7.61)	(-2.21)	(6.09)	(-2.65)
No of Firms	2209	386	699	753	371	
Panel F: All acquirers						
[-1,1]	10.69***	-14.63***	6.19***	13.70***	20.02***	-34.65***
	(3.74)	(-3.11)	(4.01)	(2.58)	(3.92)	(-13.07)
[2, 64]	-0.20***	-0.44***	-0.31***	-0.08***	0.48***	-0.93***
	(-3.95)	(-8.77)	(-2.57)	(-3.20)	(2.84)	(-6.31)
[2, 124]	-0.28***	-0.76***	-0.50***	0.08***	0.13***	-0.89***
	(-2.78)	(-7.62)	(-2.69)	(3.81)	(3.03)	(-9.83)
[2, 250]	-0.25***	-0.56***	-0.41***	-0.10***	0.20**	-0.76***
	(-5.21)	(-2.94)	(-3.04)	(-2.99)	(2.31)	(-8.19)
No of Firms	11028	2528	2930	3159	2411	

Table 3.1. Summary Statistics for Acquirers

Panel A reports summary statistics for the final sample for: number of bidders (*#Bidders*), % of stock and of cash in the M&A payment (*%Stock* and *%Cash*), and the dummy variable *Congl* equal to one if the SIC codes of acquirer and target differ. Panel B reports summary statistics for the announcement window [-1, 1] for the final sample of acquirers for: cumulated abnormal stock returns adjusted for equity issue price effects ($PCAR_{[-1, 1]}$), average stock price (*Price*), market capitalization (*Size*), standard deviation of daily stock returns (*VolatR*) from day *t*-11 to the current trading day *t*-2; daily high minus low stock price divided by daily high stock price (*PriceVol*); ratio of short to total trade volume (*%Short*); ratios of trading volumes and of short volumes to shares outstanding (*Turnover* and *%ShortO*). Panels C and D report summary statistics for various variables defined in Appendix 3.A over the window [-200, -41] for the final sample in Panel C and for the sample that also includes acquirers with missing data in Compustat or Execucomp in Panel D. $M and $B represent value in millions and billions of dollars, respectively.

	Mean	25%	Median	75%	Std. Dev.	Min	Max
Panel A: Final acquirer sample; N = 1,556							
#Bidders	1.161	1.000	1.000	1.000	0.581	1.000	5.000
%Stock	20.649	0.000	0.000	88.680	19.370	0.000	100.000
%Cash	79.351	11.320	100.00	100.000	46.710	0.000	100.000
Congl	0.531	0.000	1.000	1.000	0.499	0.000	1.000
Panel B: Final acquirer sample using values for announcement window [-1, 1]; N = 1,556							
$PCAR_{[-1, 1]}$ (%)	0.151	-9.322	0.184	2.294	5.013	-38.776	31.385
$PCABR_{[-1, 1]}$ (%)	-0.063	-5.493	-0.064	1.356	3.412	-17.699	19.512
Price	43.775	4.392	46.011	291.041	35.332	2.230	599.150
PriceVol(%)	6.105	2.236	5.741	8.329	4.022	0.519	19.071
PriceVolB(%)	1.225	0.563	1.227	1.701	0.951	0.086	4.398
Size($billion)	20.365	2.925	14.752	18.082	19.032	1.980	128.605
%Short	30.102	19.503	29.129	42.245	17.331	0.000	91.214
%ShortO	26.112	16.344	25.503	39.104	22.329	0.000	86.005
Δ%ShortO, Cash	0.682	0.224	0.685	1.158	0.504	0.003	1.371
Δ%ShortO, Stock	1.124	0.637	1.173	1.995	0.899	0.008	2.660
Turnover	2.223	0.069	1.012	4.325	2.180	0.013	44.722
VolatR (%)	2.101	0.931	1.725	3.663	1.314	0.446	7.936
VolatBR (%)	0.711	0.427	0.710	0.989	0.402	0.122	1.812
Panel C: Final acquirer sample using values for window [-200, -41]; N = 1,556							
Cashhld	0.091	0.021	0.037	0.112	0.037	0.000	0.158
CashFlow	0.023	0.018	0.026	0.027	0.016	0.010	0.059
CSRcom	0.463	0.293	0.419	0.649	0.031	0.000	1.000
ComTotl ($M)	6.021	1.711	4.039	6.619	3.209	0.986	29.680
ComLev	0.086	0.000	0.000	0.349	0.062	0.000	0.487
DumCSR	0.402	0.000	0.000	1.000	0.490	0.000	1.000
Debt/assets	0.313	0.198	0.291	0.402	0.223	0.102	0.530
Deal Size	525.700	16.200	56.500	196.200	508.100	2.958	275.400
%Equity	2.301	1.346	2.421	6.709	3.647	0.338	15.227
InsDbt	0.531	0.000	0.000	1.767	0.669	0.000	2.490
%Insti	48.303	20.822	48.109	71.235	21.141	0.000	94.241
Invest/Assets	0.122	0.049	0.132	0.241	0.148	0.030	0.552
Leverage	0.229	0.153	0.221	0.316	0.203	0.008	0.470
LGG	0.313	0.000	0.000	1.000	0.463	0.000	1.000
MAQ	0.339	0.000	1.000	1.000	0.473	0.000	1.000
MIAwDBT%	2.413	0.302	2.412	2.511	2.112	0.000	12.010
MIAwEQ%	3.261	0.519	3.263	3.901	3.269	0.110	21.024
MB	0.892	0.431	0.887	1.420	0.849	-1.474	2.697
MP_{FM}	0.026	-1.311	-0.011	1.324	0.830	-2.323	2.142
PAIT	0.005	-0.070	0.005	0.023	0.195	-0.335	0.271
PReturn (%)	5.130	-0.812	5.165	7.214	8.840	-5.182	18.951

Price	42.350	4.051	45.040	293.132	57.980	2.120	519.650
PriceVol(%)	2.501	1.027	2.224	3.939	3.975	0.611	16.912
PriceVolB(%)	0.662	0.301	0.661	1.294	1.021	0.122	4.891
Public target	0.523	0.000	1.000	1.000	0.499	0.000	1.000
PUI	119.514	101.000	122.000	135.000	22.771	91.000	139.000
Q	1.713	0.981	1.323	1.958	0.231	0.732	2.297
RKRV_FIRM	0.213	-0.129	0.209	0.533	0.631	-0.789	1.241
RKRV_LONG	0.601	0.152	0.599	1.059	0.622	-0.301	1.587
RKRV_TIME	0.129	0.021	0.130	0.247	0.235	-0.214	0.458
ROA	0.159	0.129	0.156	0.162	0.042	0.114	0.198
R&D/Assets	0.271	0.156	0.293	0.327	0.157	0.091	0.596
Relative Size	0.244	0.035	0.102	0.233	0.325	0.011	0.971
ResCov	0.270	-1.176	0.012	1.317	1.112	-2.031	1.943
Sales($B)	4.503	3.612	5.003	6.706	7.948	0.519	21.963
SAQ	0.519	0.000	1.000	1.000	0.500	0.000	1.000
%Short	28.103	8.919	22.008	81.046	26.043	4.123	62.109
%ShortO	23.002	7.331	17.722	67.907	42.014	0.030	146.005
Size ($B)	21.565	2.891	13.554	19.035	49.321	1.980	758.621
Subsidiary	0.159	0.000	0.000	0.000	0.366	0.000	1.000
Turnover	0.796	0.028	0.756	0.917	0.721	0.023	4.721
VolatR (%)	1.601	0.916	1.602	1.803	0.945	0.424	5.028
VolatRB(%)	0.572	0.233	0.571	0.712	0.289	0.114	1.655
Panel D: Acquirer sample (including those with missing values) using values for window [-200, -41]; N = 7,812							
CashHld	0.088	0.018	0.035	0.103	0.069	0.000	0.158
CashFlow	0.021	0.017	0.023	0.024	0.022	0.006	0.059
CSRcom	0.452	0.281	0.388	0.613	0.142	0.000	1.000
ComTotl($M)	5.739	1.594	3.842	6.031	3.117	0.439	29.680
ComLev	0.081	0.000	0.000	0.332	0.093	0.000	0.487
DumCSR	0.397	0.000	0.000	1.000	0.489	0.000	1.000
Debt/assets	0.341	0.210	0.309	0.461	0.221	0.102	0.589
%Equity	2.101	1.113	2.216	6.609	5.430	0.213	15.524
InsDbt	0.522	0.000	0.000	1.751	0.687	0.000	2.494
%Insitu	43.203	18.611	46.109	65.323	35.130	0.000	96.8
Invest/Assets	0.112	0.047	0.111	0.231	0.171	0.010	0.568
Leverage	0.233	0.159	0.232	0.328	0.232	0.008	0.486
LGG	0.331	0.000	0.000	1.000	0.471	0.000	1.000
MAQ	0.091	0.000	0.000	0.000	0.288	0.000	1.000
MIAwDBT%	1.863	0.219	1.850	1.914	2.712	0.000	12.010
MIAwEQ%	2.110	0.454	2.121	2.349	4.014	0.084	21.024
MB	0.882	0.424	0.881	1.413	0.893	-1.487	2.733
MP_{FM}	0.023	-1.432	-0.012	1.310	1.810	-2.511	2.223
PAIT	0.004	-0.080	0.004	0.021	0.017	-0.361	0.271
PReturn	3.946	-1.354	4.023	5.815	8.654	-9.548	18.951
Price	36.250	3.620	39.090	213.850	37.980	1.958	519.650
PriceVol(%)	2.202	0.929	2.121	3.701	1.342	0.548	6.935
PriceVolB(%)	0.612	0.403	0.612	0.912	0.622	0.114	4.901
PUI	118.003	99.000	121.000	134.000	18.015	90.000	139.000
Q	1.697	0.962	1.311	1.933	0.345	0.706	2.297
RKRV_FIRM	0.208	-0.131	0.206	0.511	0.954	-0.840	1.254
RKRV_LONG	0.597	0.149	0.597	1.056	1.171	-0.360	1.622
RKRV_TIME	0.127	0.020	0.120	0.231	0.252	-0.230	0.463
ROA	0.153	0.122	0.151	0.159	0.035	0.102	0.198
R&D/Assets	0.269	0.151	0.281	0.312	0.195	0.087	0.596
Sales($B)	3.902	3.218	4.623	5.991	4.156	0.219	21.963
SAQ	0.133	0.000	0.000	0.000	0.342	0.000	1.000

%Short	27.104	9.131	21.602	79.705	29.301	0.000	65.201
%ShortO	21.310	6.123	15.936	90.740	23.109	0.000	146.032
Size($B)	2.786	0.363	0.521	0.871	10.415	0.039	23.621
Turnover	0.713	0.022	0.702	0.824	0.812	0.021	4.721
VolatR (%)	1.701	1.031	1.703	2.018	1.142	0.335	5.148
VolatBR (%)	0.582	0.233	0.581	0.979	0.502	0.109	1.722

Table 3.2. Acquirer and target characteristics for four categories of stock method-of-payment percentages

This table reports the mean characteristics of acquirers and targets sorted into four categories based on the percentage of stock in M&A payments. *CANIPR* is the two-quarter cumulative abnormal insider purchase ratio. *CashFlow* is free cash flow. *CashHld* is cash holding. *CombCAR* (*TargetCAR*) are the stock CAR of the value-weighted acquirer plus target (target only). *ComLev* is compensation leverage. *ComTotl* is total executive compensation. *CSRcom* is CSR composite. *DealSize* is total dollar consideration paid to the target. *DumCSR* is dummy variable equal to one if CSR strengths exceed concerns. *InsDbt* is inside debt. *Leverage* is debt to equity ratio. *PCAR* is acquirer's pure cumulative abnormal stock returns controlling for equity issue effect using Fama-French (2015) 5-factor model. *Price* and *PriceVol* are share price and its volatility. *Q* is Tobin's Q ratio. *R&D/Assets* is R&D expenses divided by total assets. *Relative size* is the ratio of deal size to acquirer size. *ROA* is return on assets. *Sales* is sales. *%ShortO* is ratio of short sales volume to shares outstanding. *Δ%ShortO* is its change over three windows relative to announcement day. *Size* is acquirer's market capitalization. *TargetAR* is target's abnormal stock return premium. *TargetCANIPR* is % of targets with *CANIPR* in top 33% of all targets. *TargetPublic and TargetSub* are their respective percentages. Differences between categories I and IV are reported in column (6). Columns (7) and (8) report t-values based on their mean differences and p-values of their median differences based on Wilcoxon signed-rank tests. ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

%Stock =	All	100% [I]	(50-99)% [II]	(1-49)% [III]	0% [IV]	[I] – [V]	t-Stat	*p*(W)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Obs.	1,556	259	110	98	1089			
CANIPR	0.36%	-1.14%	-0.85%	-0.43%	0.91%	-2.05%	-1.97**	0.007
CashFlow	0.023	0.02	0.020	0.023	0.024	-0.004	1.89*	0.041
CashHld	0.091	0.084	0.004	0.095	0.101	-0.017	0.68	0.122
CombCAR	22.4%	19.5%	22.4%	21.2%	23.2%	-3.7%	-1.53	0.117
ComLev	0.086	0.080	0.081	0.098	0.108	-0.028	5.19***	0.004
ComTotl	6.021	6.211	6.522	6.027	5.030	1.181	1.71*	0.093
$CSRcom_t$	0.463	0.452	0.463	0.480	0.502	-0.050	1.20	0.137
DumCSR	0.402	0.388	0.391	0.435	0.451	-0.063	1.31	0.114
DealSize ($billions)	0.526	0.635	0.479	0.516	0.505	0.130	1.68*	0.033
InsDbt	0.530	0.413	0.581	0.793	0.892	-0.479	3.26***	0.002
$Leverage_{t-1}$	0.029	0.054	0.041	0.027	0.022	0.032	3.11***	0.023
LGG	0.313	0.479	0.326	0.293	0.274	0.205	2.09**	0.053
MAQ	0.339	0.516	0.373	0.322	0.295	0.221	3.09***	0.001
$PCAR_{[-1, 1]}$	0.15%	-0.12%	-0.01%	0.16%	0.24%	-0.36%	-1.17	0.091
$PCABR_{[-1, 1]}$	-0.063%	0.014%	-0.012%	-0.039%	-0.084%	-0.088%	-2.13**	0.022
Price	42.35	44.061	41.887	40.977	42.113	1.948	1.42*	0.068
PriceVol	2.501	4.101	2.801	02.401	2.101	2.001	2.39**	0.017
PriceVolB	0.662	0.712	0.735	0.593	0.649	0.063	0.76	0.154
PUI	119.514	129.403	121.700	118.45	117.039	12.364	1.69*	0.044
Q_{t-1}	1.713	1.404	1.533	1.619	1.813	-0.409	1.67*	0.053
R&D/Assets	0.271	0.221	0.264	0.278	0.283	-0.062	1.76*	0.031
Relative size	24.4%	23.90%	14.9%	24.80%	25.40%	-1.5%	-1.28	0.631
ROA_{t-1}	0.159	0.121	0.117	0.162	0.172	-0.051	1.79*	0.048
$Sales_{t-1}$($billions)	4.503	3.812	4.130	4.122	4.739	-0.927	0.97	0.192
SAQ	0.519	0.412	0.461	0.477	0.554	-0.142	-1.96**	0.009
%ShortO	0.230	0.284	0.270	0.243	0.212	0.072	9.16***	0.002
Δ%ShortO [-1, 1]	0.783	1.124	0.922	0.864	0.682	0.438	10.12***	0.001
Δ%ShortO [-1, 3]	0.588	0.868	0.711	0.692	0.499	0.369	7.41***	0.009
Δ%ShortO [-1, 10]	0.475	0.727	0.633	0.518	0.395	0.332	2.57**	0.008
Size of Acquirer	21.57	26.79	22.34	20.81	20.32	6.47	1.81*	0.094
TargetAR	20.0%	33.0%	33.747	15.6%	21.6%	11.4%	1.46	0.102
TargetCAR	32.6%	35.2%	55.1%	16.3%	24.1%	11.1%	1.39	0.110
TargetCANIPR	33.33%	48.1%	46.7%	33.1%	28.5%	19.6%	1.71*	0.093
TargetPublic	52.6%	55.30%	51.6%	37.20%	53.40%	1.9%	1.73*	0.026

TargetSub	15.9%	8.1%	28.4%	26.5%	15.6%	-7.5%	1.96*	0.060

Table 3.3. Acquirer and target characteristics for four quartiles of managerial interest alignments

This table reports the mean characteristics of acquirers and targets sorted into four quartiles based on managerial interest alignment with its shareholders (*MIAwEQ*) in Panel A and with its debtholders (*MIAwDBT*) in Panel B. *CANIPR* is the two-quarter cumulative abnormal insider stock purchase ratio. *CashFlow* is free cash flow. *CashHld* is cash holding. *CombCAR* (*TargetCAR*) is the stock CAR of the value-weighted acquirer plus target (target only). *ComLev* is compensation leverage. *ComTotl* is total executive compensation. *CSRcom* is CSR composite. *DealSize* is total dollar consideration paid to the target. *DumCSR* is dummy variable equal to one if CSR strengths exceed concerns. *InsDbt* is inside debt. *Leverage* is debt to equity ratio. *PCAR* is acquirer's pure cumulative abnormal stock returns controlling for equity issue effect using Fama-French (2015) 5-factor model. *Pay%Cash* (*Pay%Stock*) is the % of cash (stock) financing for the M&A. *Price* and *PriceVol* are share price and its volatility. *Prop. Cash (Stock) M&A* is the proportion of the M&As that are pure cash (stock). *Q* is Tobin's Q ratio. *R&D/Assets* is R&D expenses divided by total assets. *Relative size* is the ratio of deal size to acquirer size. *ROA* is return on assets. *Sales* is sales. *%ShortO* is ratio of short sales volume to shares outstanding. *Δ%ShortO* is its change over three windows relative to announcement day. *Size* is acquirer's market capitalization. *TargetAR* is target's abnormal stock return premium. *TargetCANIPR* is % of targets with *CANIPR* in top 33% of all targets. *TargetPublic and TargetSub* are their respective percentages. Differences between quartiles I and IV are reported in column (6). Columns (7) and (8) report t-values based on their mean differences and p-values of their median differences based on Wilcoxon signed-rank tests. ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

Panel A:		*MIAwEQ* Quartiles						
	All	I	II	III	IV	[I] – [IV]	t-Stat.	*p*(W)
Characteristic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CANIPR	0.36%	1.29%	0.48%	-0.21%	-0.12%	1.50%	0.32	0.214
CashFlow	0.023	0.021	0.021	0.024	0.026	-0.005	-1.94*	0.067
CashHld	0.091	0.084	0.084	0.095	0.101	-0.017	-3.29***	0.008
CombCAR	22.4%	13.7%	21.4%	25.3%	29.3%	-15.6%	-2.12**	0.024
ComLev	0.086	0.098	0.084	0.084	0.078	0.020	3.23***	0.002
ComTotl	6.021	6.711	6.522	5.821	5.030	1.681	1.97**	0.001
$CSRcom_t$	0.463	0.422	0.433	0.495	0.502	-0.080	-4.36***	0.000
DumCSR	0.402	0.329	0.391	0.437	0.451	-0.122	-5.23***	0.001
DealSize ($billions)	0.526	0.435	0.476	0.515	0.676	-0.241	-3.99***	0.016
InsDbt	0.530	0.693	0.528	0.482	0.417	0.276	5.19***	0.005
$Leverage_{t-1}$	0.229	0.122	0.227	0.233	0.334	-0.212	-4.69***	0.003
LGG	0.313	0.260	0.272	0.359	0.361	-0.101	-11.20	0.000
MAQ	0.339	0.326	0.334	0.344	0.352	-0.026	-0.91	0.121
Pay%Cash	79.351	91.619	86.511	72.241	67.033	24.586	11.39***	0.002
Pay%Stock	20.649	11.204	21.348	22.731	27.313	-16.109	-5.19***	0.003
$PCAR_{[-1, 1]}$	0.15%	-0.01%	-0.09%	0.27%	0.30%	-0.32%	-6.32***	0.001
$PCABR_{[-1, 1]}$	-0.063%	-0.051%	-0.058%	-0.061%	-0.082%	0.029%	5.627***	0.000
Price	42.35	44.06	44.25	40.98	40.11	3.948	1.02	0.113
PriceVol	2.501	3.052	2.521	2.435	2.112	0.907	1.71*	0.078
PriceVolB	0.662	0.612	0.738	0.701	0.597	0.015	1.03	0.233
Prop. *cash M&A*	70.1%	81.20%	79.90%	62.00%	56.90%	0.243	8.22***	0.009
Prop. *stock M&A*	16.6%	11.20%	15.20%	18.70%	21.30%	-0.101	-3.03**	0.018
PUI	119.514	124.001	119.604	118.442	116.009	7.992	2.11**	0.023
Q_{t-1}	1.713	1.404	1.766	1.769	1.913	-0.509	-1.35	0.104
R&D/Assets	0.271	0.261	0.262	0.278	0.283	-0.022	-1.16	0.159
Relative size	24.4%	19.2%	24.1%	26.0%	28.2%	-9.0%	-4.37***	0.014
ROA_{t-1}	0.159	0.151	0.158	0.162	0.165	-0.010	-1.83*	0.064
$Sales_{t-1}$($billions)	4.503	3.812	4.339	4.723	5.139	-1.326	-1.77*	0.092
SAQ	0.519	0.403	0.519	0.527	0.627	-0.224	-1.01	0.109
%ShortO	0.230	0.154	0.220	0.250	0.296	-0.142	-3.91***	0.003
Δ%ShortO [-1, 1]	0.783	0.300	0.590	0.892	1.351	-1.051	-9.38***	0.001
Δ%ShortO [-1, 3]	0.588	0.271	0.403	0.679	0.997	-0.725	-5.62***	0.002
Δ%ShortO [-1, 10]	0.475	0.227	0.380	0.580	0.712	-0.485	-2.02**	0.010
Size of Acquirer	21.57	13.36	21.11	23.09	28.72	-15.36	-1.651*	0.117
TargetAR	20.0%	16.2%	19.3%	21.3%	23.2%	-7.0%	-2.06**	0.042

TargetCAR	32.6%	26.0%	29.1%	32.2%	43.1%	-17.1%	-4.88***	0.004
TargetCANIPR	33.30%	27.41	-28.102	31.11%	38.09%	27.03%	1.33	0.193
TargetPublic	52.6%	59.2%	54.4%	49.3%	46.1%	13.1%	4.97***	0.002
TargetSub	15.9%	16.40%	16.90%	14.30%	16.00%	0.4%	1.82*	0.060
Obs.	1,566	391	392	392	391			

Panel B:		*MIAwDBT* Quartiles						
	All	I	II	III	IV	[I] – [IV]	t-Stat.	*p*(W)
Characteristic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CANIPR	0.36%	-0.26%	-0.11%	1.02%	0.79%	-1.28%	-0.47	0.191
CashFlow	0.023	0.026	0.024	0.020	0.022	0.004	1.65*	0.081
CashHld	0.091	0.106	0.096	0.084	0.078	0.028	5.09***	0.008
CombCAR	22.4%	19.2%	21.7%	22.0%	26.7%	-7.5%	-1.96**	0.026
ComLev	0.086	0.061	0.080	0.090	0.113	-0.052	-5.94***	0.002
ComTotl	6.021	6.04	5.90	5.75	6.39	-0.35	-11.72***	0.007
$CSRcom_t$	0.463	0.290	0.415	0.525	0.622	-0.332	-2.55**	0.034
DumCSR	0.402	0.231	0.366	0.437	0.574	-0.343	-2.98***	0.011
DealSize ($billions)	0.526	0.498	0.489	0.574	0.541	-0.043	-1.65*	0.079
InsDbt	0.530	0.382	0.520	0.563	0.655	-0.273	-4.92***	0.003
$Leverage_{t-1}$	0.229	0.273	0.240	0.221	0.182	0.091	2.13**	0.015
LGG	0.313	0.295	0.308	0.319	0.330	-0.035	-1.19	0.102
MAQ	0.339	0.373	0.337	0.332	0.314	0.059	1.39	0.115
Pay%Cash	79.351	77.229	78.060	80.005	82.110	-4.881	-5.01***	0.001
Pay%Stock	20.649	26.167	22.714	18.712	15.003	11.164	3.29***	0.008
$PCAR_{[-1, 1]}$	0.15%	0.28%	0.14%	0.08%	0.07%	0.22%	3.05***	0.007
$PCABR_{[-1, 1]}$	-0.063%	-0.072%	-0.067%	-0.067%	-0.043%	-0.029%	-3.95***	0.001
Price	42.35	31.20	44.10	53.90	40.20	-9.00	0.97	0.112
PriceVol	2.501	2.931	2.780	2.332	1.961	0.970	2.96***	0.016
PriceVolB	0.662	0.659	0.614	0.673	0.702	-0.043	-0.61	0.191
Prob. *cash M&A*	70.1%	59.3%	59.6%	74.0%	87.1%	-27.8%	-5.94***	0.006
Prob. *stock M&A*	16.6%	19.9%	19.2%	15.3%	12.0%	7.9%	-3.51**	0.040
PUI	119.514	125.049	119.666	118.061	115.280	9.769	1.65*	0.045
Q_{t-1}	1.713	1.781	1.622	1.761	1.690	0.096	1.83*	0.072
R&D/Assets	0.271	0.221	0.270	0.304	0.289	-0.068	-1.56	0.109
Relative size	24.4%	21.1%	26.6%	25.6%	24.3%	-3.2%	-3.98***	0.007
ROA_{t-1}	0.159	0.163	0.151	0.150	0.172	-0.009	-1.98**	0.051
$Sales_{t-1}$($billions)	4.503	4.302	4.573	5.107	4.032	0.271	1.70*	0.104
SAQ	0.519	0.639	0.512	0.492	0.433	0.206	0.92	0.154
%ShortO	0.230	0.283	0.243	0.210	0.184	0.099	3.91***	0.003
⊿%ShortO [-1, 1]	0.783	1.103	0.823	0.694	0.512	0.591	7.03***	0.005
⊿%ShortO [-1, 3]	0.588	0.722	0.606	0.531	0.493	0.229	2.14**	0.012
⊿%ShortO [-1, 10]	0.475	0.603	0.473	0.423	0.401	0.202	2.91***	0.004
Size of Acquirer	21.57	16.020	20.890	21.940	27.430	-11.410	-1.73*	0.040
TargetAR	20.0%	17.0%	17.6%	20.9%	24.5%	-7.5%	-1.66*	0.071
TargetCAR	32.6%	30.9%	30.0%	31.1%	38.4%	-7.5%	-5.11***	0.004
TargetCANIPR	33.30%	29.5%	29.2%	36.2%	38.3%	-8.8%	-1.07	0.120
TargetPublic	52.6%	40.2%	53.9%	57.0%	59.3%	-19.1%	-2.95***	0.003
TargetSub	15.9%	19.1%	17.2%	15.4%	11.9%	7.2%	1.91*	0.060
Obs.	1,566	391	392	392	391			

Table 3.4. Summary regression results for the determinants of managerial interest alignment changes pre-to-post M&A

This table reports time-series averages of the results for cross-sectional regressions between changes in managerial interest alignment and various one-period lagged potential determinants (except for Ann Return) that are defined in Table 3.3 and Appendix 3.A. A cross-sectional regression is run for each acquisition announcement that includes the acquirer and all other firms in the acquirer sample with data at that point in time. The assignments to managerial interest alignment terciles are made using the managerial interest alignment values computed for the year prior to year of the acquisition announcement. All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. All mean estimated coefficients are multiplied by 1000 for reporting purposes. A Hausman-Wu test rejects the presence of an endogeneity problem. The t-statistics are reported in the parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively.

	AT(L)						AT(H)					
Independent Variable	$\Delta MIAw$ *DBT*1 1	$\Delta MIAw$ *DBT*2 2	$\Delta MIAw$ *DBT*3 3	$\Delta MIAw$ *EQ*1 4	$\Delta MIAw$ *EQ*2 4	$\Delta MIAw$ *EQ*3 6	$\Delta MIAw$ *DBT*1 7	$\Delta MIAw$ *DBT*2 8	$\Delta MIAw$ *DBT*3 9	$\Delta MIAw$ *EQ*1 10	$\Delta MIAw$ *EQ*2 11	$\Delta MIAw$ *EQ*3 12
MAQ	-0.17***	-0.21***	-1.19**	2.51	1.84	8.24	-0.35	-0.28	-2.01	7.01***	5.31***	23.03**
	(-4.95)	(-11.03)	(-1.99)	(0.74)	(1.63)	(0.56)	(-1.14)	(-0.92)	(-1.03)	(21.03)	(13.45)	(1.97)
SAQ	-0.39	-0.41	-2.07	5.39***	3.72**	18.01***	-1.91***	-2.87**	-8.15*	5.62	6.01	17.92
	(-1.30)	(-0.94)	(-1.56)	(3.94)	(2.01)	(8.41)	(-3.96)	(-1.98)	(-1.66)	(0.34)	(0.49)	(1.01)
CashFlow	0.32***	0.23***	1.42*	3.58**	2.46***	8.03**	0.21***	0.14***	0.96***	4.16**	3.45***	13.11**
	(5.01)	(2.96)	(1.65)	(2.51)	(13.42)	(2.04)	(7.33)	(2.79)	(4.09)	(1.99)	(3.19)	(2.16)
CashHld	0.11**	0.09***	0.59**	0.75***	0.16***	3.93***	0.06**	0.03***	0.20**	0.23***	0.18***	2.08***
	(2.33)	(21.05)	(1.97)	(6.11)	(4.84)	(5.19)	(2.01)	(3.90)	(2.43)	(7.01)	(8.22)	(2.58)
ComLev	0.67***	0.45***	1.91***	-0.18***	-0.15**	-0.43**	-0.41***	-0.33***	-1.87	-0.41**	-0.25***	-1.30
	(10.01)	(14.25)	(7.02)	(-12.95)	(-1.99)	(-2.15)	(-3.00)	(-4.93)	(-1.63)	(-2.01)	(-2.86)	(-1.64)
ComTotl	0.32	0.21	1.39	-0.52	-0.43	-3.01	-0.89	-0.56	-4.19	0.19	0.11	0.84
	(0.32)	(1.51)	(1.24)	(-1.04)	(-0.23)	(-0.99)	(-1.30)	(-0.42)	(-0.75)	(1.11)	(-0.22)	(0.12)
$CSRcom_t$	0.12	0.06	0.41	0.31	0.20	1.74	1.39	0.99	11.01	1.03	0.79	6.72
	(0.10)	(1.29)	(0.53)	(1.63)	(1.03)	(0.64)	(1.01)	(0.13)	(0.62)	(0.49)	(1.45)	(0.19)
InsDbt	3.01***	2.42***	4.79*	-1.62**	-1.07***	-8.10*	-2.92***	-2.01**	-9.46***	-3.22***	-1.97***	-12.07***
	(2.92)	(3.03)	(-1.69)	(-2.13)	(-3.14)	(-1.68)	(-5.01)	(-1.99)	(-3.06)	(-5.22)	(-7.90)	(-4.02)
Dum CANIPR	0.32	0.23	0.96	-0.35	-0.24	-1.62	1.03	0.67	5.81	-2.34	-1.10	-9.01
	(0.30)	(1.55)	(0.45)	(-0.75)	(-0.39)	(-0.63)	(0.94)	(0.91)	(0.22)	(-0.99)	(-1.48)	(-1.01)
$Eq_{i,J,t}$ * $LTL_{i,J,t}$	-12.92	-6.01	-98.09	-16.21	-7.33	-54.93	-20.43	-8.09	-85.11	-30.30	-14.73	-78.05
	(-1.63)	(-0.23)	(-0.33)	(-0.12)	(-0.57)	(-1.03)	(-0.31)	(-1.01)	(-0.50)	(-1.43)	(-0.92)	(-0.50)
%Insti	0.96	0.75	3.01	0.52	0.41	2.19	-0.43	-0.29	-1.87	-0.75	-0.44	-4.10
	(0.11)	(1.33)	(0.92)	(0.19)	(1.20)	(0.83)	(-0.30)	(-0.39)	(-0.29)	(-0.41)	(-0.23)	(-0.43)
Invest/ Assets	-0.29	-0.12	-1.01	-0.30	-0.21	-0.87	-0.43	-0.28	-2.03	-0.27	-0.11	-0.99
	(0.58)	(-1.39)	(-0.31)	(-0.93)	(-0.41)	(-0.14)	(-0.54)	(-1.53)	(-1.13)	(-0.58)	(-0.12)	(-1.53)
$Leverage_{t-1}$	22.31**	14.30***	57.09**	-5.92***	-3.76***	-31.27**	-18.42**	-13.49***	-44.01*	-11.03***	-5.92**	-30.11**
	(2.41)	(2.65)	(1.97)	(-6.01)	(-3.71)	(-2.02)	(-1.97)	(-11.08)	(-1.65)	(-9.01)	(-2.46)	(-2.01)
LGG	-0.31***	-0.22***	-0.99***	-0.24***	-0.18***	-0.80***	1.03***	0.54***	4.91***	1.85***	1.03***	9.09***
	(-11.03)	(-4.16)	(-9.41)	(-2.86)	(-3.36)	(-2.59)	(4.73)	(3.03)	(4.29)	(2.97)	(3.01)	(6.07)
PReturn	35.03	30.01	113.09	27.12	19.07	98.73	33.03	20.20	108.14	19.72	11.03	90.13
	(0.39)	(0.30)	(1.29)	(0.75)	(0.31)	(1.63)	(1.05)	(0.29)	(0.94)	(0.30)	(1.42)	(0.25)
PriceVol	1.06	0.84	7.92	0.67	0.50	2.01	1.03	0.71	4.98	0.36	0.21	0.89
	(0.96)	(0.38)	(1.54)	(0.31)	(0.26)	(0.85)	(0.23)	(0.11)	(0.46)	(0.79)	(0.25)	(0.59)
PUI	-0.03***	-0.02**	-0.08*	-0.11**	-0.07***	-0.72	-0.21***	-0.14***	-1.31***	-0.59***	-0.30***	-4.12*
	(-9.56)	(-2.01)	(-1.66)	(-1.97)	(-5.01)	(-1.64)	(-2.58)	(-3.91)	(-5.33)	(-2.74)	(-10.03)	(-1.95)
Q_{t-1}	22.03	13.01	94.11	-12.92	-8.03	-59.42	11.70	6.01	43.93	-7.95	-4.33	-30.12
	(1.62)	(0.94)	(0.31)	(-0.47)	(-0.33)	(-1.11)	(0.78)	(0.49)	(0.21)	(-1.42)	(-0.92)	(-1.03)
RelIncentR	1.96	0.76	6.03	3.01	0.99	9.21	2.01	0.87	7.09	2.19	0.95	11.01
	(1.64)	(1.04)	(0.29)	(0.45)	(0.34)	()1.62	(1.30)	(0.99)	(1.60)	(0.22)	(1.59)	(0.50)
R&D/Assets	-2.95	-2.03	-11.19	-1.96	-0.98	-13.01	-3.45	-2.02	-15.85	-2.81	-2.04	-9.33
	(-0.45)	(-063)	(-1.11)	(-0.36)	(-0.97)	(-0.92)	(-1.03)	(-0.55)	(-1.48)	(-0.61)	(-0.31)	(-1.62)
RKRV-HP	0.13***	0.09***	0.43**	0.67***	0.52***	2.13***	0.14***	0.11***	1.04**	-2.32**	-1.01***	-9.46***
	(23.03)	(5.01)	(2.11)	(3.46)	(2.93)	(4.21)	(2.98)	(4.99)	(2.05)	(-1.98)	(-4.11)	(-5.49)
%ShortO	-0.12	-0.06	-0.42	0.17	0.11	0.86	-0.31	-0.17	-0.88	0.22	0.12	0.79
	(-0.84)	(-0.41)	(-0.66)	(0.43)	(0.31)	(1.44)	(-0.35)	(-0.85)	(-0.39)	(0.38)	(0.12)	(0.42)
VolatR	0.09	0.05	0.17	0.07	0.05	0.24	0.07	0.04	0.33	0.04	0.01	0.13
	(0.33)	(1.21)	(0.30)	(0.21)	(1.09)	(0.63)	(0.33)	(0.26)	(1.12)	(0.18)	(0.25)	(0.39)
(IFE&YFE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.069	0.074	0.076	0.093	0.066	0.077	0.089	0.102	0.095	0.079	0.082	0.086

Table 3.5. Acquirer and target characteristics for four quartiles of two-quarter cumulative abnormal insider purchase ratios (*CANIPR*)

This table reports the mean characteristics of acquirers and targets sorted into four quartiles based on the two-quarter cumulative abnormal insider purchase ratios (*CANIPR*) for stocks of acquirers. *CashFlow* is free cash flow. *CashHld* is cash holdings. *CombCAR* (*TargetCAR*) is the value-weighted acquirer plus target (target only) stock CAR. *ComLev* is compensation leverage. *ComTotl* is total executive compensation. *CSRcom* is CSR composite. *DealSize* is total dollar consideration paid to the target. *DumCSR* is dummy variable equal to one if CSR strengths exceed concerns. *InsDbt* is inside debt. *Leverage* is debt to equity ratio. *MIAwEQ* (*MIAwDBT*) is managerial interest alignment with shareholders (bondholders). *PCAR* is acquirer's pure cumulative abnormal returns for stocks controlling for equity issue effects using Fama-French (2015) 5-factor model. *Pay%Cash* (*Pay%Stock*) is the % of cash (stock) financing for the M&A. *Price* and *PriceVol* are share price and its volatility. *Prop. Cash (Stock) M&A* is the proportion of the M&As that are pure cash (stock). *Q* is Tobin's Q ratio. *R&D/Assets* is R&D expenses divided by total assets. *Relative size* is the ratio of deal size to acquirer size. *ROA* is return on assets. *Sales* is sales. *%ShortO* is ratio of short sales volume to shares outstanding. *⊿%ShortO* is its change over three windows relative to announcement day. *Size* is acquirer's market capitalization. *TargetAR* is target's abnormal return stock premium. *TargetCANIPR* is % of targets with *CANIPR* in top 33% of all targets. *TargetPublic and TargetSub* are their respective percentages. Differences between quartiles I and IV are reported in column (6). Columns (7) and (8) report t-values based on their mean differences and p-values of their median differences based on Wilcoxon signed-rank tests. ***, ** and * indicate significance at the 1%, 5% and 10%, respectively.

		CANIPR Quartiles						
	All	I	II	III	IV	[I] – [IV]	t-Stat.	*p*(W)
Characteristic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CashFlow	0.023	0.026	0.023	0.023	0.020	-0.006	-2.31**	0.008
CashHld	0.091	0.089	0.094	0.071	0.110	0.021	4.08***	0.003
CombCAR	22.4%	24.3%	15.3%	25.7%	24.3%	-0.0%	1.91*	0.044
ComLev	0.086	0.103	0.087	0.075	0.079	-0.028	-1.07	0.161
ComTotl	6.021	5.112	5.720	6.231	7.023	1.911	0.93	0.124
$CSRcom_t$	0.463	0.433	0.456	0.462	0.501	0.068	2.49**	0.034
DumCSR	0.402	0.331	0.395	0.420	0.462	0.131	3.82***	0.009
DealSize ($billions)	0.526	0.482	0.529	0.519	0.572	0.090	4.93***	0.007
InsDbt	0.530	0.602	0.511	0.497	0.510	-0.105	-1.09	0.135
$Leverage_{t-1}$	0.229	0.274	0.234	0.213	0.195	-0.079	-1.35	0.114
LGG	0.313	0.339	0.324	0.301	0.288	0.051	1.20	0.120
MAQ	0.339	0.362	0.375	0.324	0.295	-0.067	9.30***	0.004
MIAwDBT	2.41%	2.89%	2.52%	1.98%	2.25%	-0.91%	-0.73	0.192
MIAwEQ	3.26%	2.59%	2.98%	4.13%	3.35%	1.54%	1.01	0.161
Pay%Cash	79.351	89.330	87.931	72.003	68.140	-21.190	-3.82***	0.007
Pay%Stock	20.649	16.087	18.256	22.841	25.412	9.325	2.44**	0.000
$PCAR_{[-1, 1]}$	0.15%	0.08%	0.13%	0.19%	0.23%	-0.15%	-8.21***	0.001
$PCABR_{[-1, 1]}$	-0.063%	0.071	0.068	0.062	0.051	0.020	5.12***	0.000
Price	42.35	39.50	42.80	45.00	42.10	2.60	1.52	0.072
PriceVol	2.501	2.201	2.801	1.902	3.102	0.009	2.42**	0.020
PriceVolB	0.662	0.632	0.636	0.659	0.721	-0.089	-2.34**	0.019
Prop. *cash M&A*	70.1%	83.1%	69.0%	65.6%	62.3%	-20.8%	-6.11***	0.002
Prop. *stock M&A*	16.6%	13.5%	16.9%	17.8%	18.2%	4.7%	3.62**	0.003
PUI	119.514	129.024	123.772	115.760	109.500	19.524	-1.12	0.103
Q_{t-1}	1.713	1.691	1.640	1.722	1.801	0.118	1.71*	0.064
R&D/Assets	0.271	0.301	0.289	0.325	0.169	-0.132	-1.83*	0.019
Relative size	24.4%	19.3%	26.3%	24.8%	27.2%	7.9%	2.20**	0.005
ROA_{t-1}	0.159	0.142	0.176	0.155	0.163	0.021	1.92*	0.067
$Sales_{t-1}$($billions)	4.503	4.103	4.377	4.723	4.811	0.708	1.97**	0.023
SAQ	0.519	0.472	0.513	0.530	0.561	-0.041	-10.89***	0.004
%ShortO	0.230	0.213	0.224	0.239	0.244	0.031	6.01***	0.003
⊿%ShortO [-1, 1]	0.783	0.731	0.748	0.792	0.861	0.130	3.95***	0.002
⊿%ShortO [-1, 3]	0.588	0.522	0.591	0.607	0.632	0.110	9.12***	0.005
⊿%ShortO [-1, 10]	0.475	0.441	0.469	0.487	0.503	0.062	2.20***	0.007
Size of Acquirer	21.57	22.910	23.830	20.110	19.430	-3.480	-1.81*	0.059
TargetAR	20.0%	17.5%	16.3%	22.1%	24.1%	6.6%	1.66*	0.043
TargetCAR	32.6%	36.1%	26.0%	35.0%	33.3%	-2.8%	-3.01***	0.003

TargetCANIPR	33.30%	35.4%	31.7%	29.7%	36.4%	1.0%	1.21	0.101
TargetPublic	52.6%	67.2%	49.5%	48.6%	45.1%	22.1%	5.33***	0.001
TargetSub	15.9%	14.8%	15.4%	16.2%	17.2%	2.4%	1.09	0.176
Obs.	1,566	391	392	392	391			

Table 3.6. Probit analyses to identify the determinants for the choice of stock and of cash as the method of target payment

This table reports marginal coefficients (multiplied by 1000) from Probit regressions predicting cash and predicting stock as the method of payment to targets. Variable definitions are presented in Appendix 3.A. The dependent variable in Panel A (B) is a cash (stock) dummy variable equal to 1 if cash (stock) accounts for 100% of the payment and zero otherwise. The sample consists of 7812 observations for 1556 M&A announcements from August 2009 to December 2015. The t-statistics are reported in the parentheses. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively. The regressions include industry-fixed effects (IFE) based on the Fama-French (1997) 48 industries interacted with year-fixed effects (YFE). Standard errors are robust to industry clustering.

	Panel A: Cash as Method of Payment					**Panel B**: Stock as Method of Payment				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CashFlow	-3.512***	-4.231***	-3.009*		-3.891***	8.144***	8.921***	9.037**		
	(2.61)	(3.09)	(1.95)		(4.09)	(1.98)	(3.08)	(2.52)		
CashHld	-8.565***	-10.121***	-11.061***		-9.419***	6.292***	6.919***	7.803***		
	(-3.91)	(2.62)	(-4.27)		(-4.26)	(11.20)	(7.03)	(5.96)		
ComLev	3.264***	4.012***	2.918***		4.326***	-19.337***	-15.025***	-16.712***		-18.008***
	(7.00)	(2.93)	(3.93)		(2.72)	(-5.62)	(-4.40)	(-3.62)		(-2.71)
ComTotl	6.011	7.908	5.228	5.957		5.947	6.884		5.233	
	(0.95)	(0.81)	(1.04)	(1.35)		(0.11)	(0.47)		(0.92)	
$CSRcom_t$	7.812***	9.067***		7.904***		5.318*	6.056		7.012	
	(2.89)	(3.31)		(5.03)		(1.70)	(1.03)		(1.29)	
InsDbt	11.528***	13.119***	9.896**		8.133***	-5.024***	-3.527***	-3.715***		-4.519***
	(3.04)	(3.79)	(1.97)		(3.07	(-3.69)	(-2.61)	(-4.00)		(-6.11)
Dum	0.213**	0.602*	0.239***			-0.139*	-0.110*			-0.126***
CANIPR	(1.96)	(1.66)	(5.95)			(-1.66)	(-1.70)			(-5.91)
$Eq_{i,J,t}$ *	7.242	6.293	5.041	3.991	5.977	-0.487	-0.603*	-0.328	-0.298	-0.521
$LTL_{i,J,t}$	(1.62)	(1.20)	(1.04)	(1.03)	(0.74)	(-0.73)	(-1.65)	(-1.42)	(-0.27)	(-0.59)
%Insti	3.641***	4.069***	3.771***		3.377***	-2.254***	-2.162***	-2.142***	-3.098***	-2.678***
	(9.85)	(2.62)	(7.28)		(21.14)	(-16.10)	(-2.84)	(-11.12)	(-2.73)	(-9.39)
Invest/Assets	1.028		1.953	1.203	5.619	-3.297		-3.691	-4.183	
	(0.26)		(1.00)	(0.82)	(0.92)	(-0.39)		(-1.20)	(-1.52)	
$Leverage_{t-1}$	3.003***	3.713**	2.941**		2.890***	-5.110***	-4.396***	-5.564***		-6.297***
	(2.82)	(1.97)	(2.03)		(11.21)	(-4.04)	(-2.86)	(-3.41)		(-1.23)
LGG	-23.109***	-19.430***	-17.001***		-16.440***	26.001***		19.902***		21.443*
	(-9.03)	(-3.008)	(-5.710)		(-5.77)	(3.001)		(2.89)		(1.89)
MAQ	-4.033**	-4.901***		-3.710*	-3.074***	1.793***	2.035**	1.559***	1.301***	
	(-1.97)	(-3.63)		(-1.65)	(-2.74)	(6.009)	(2.15)	(13.61)	(7.33)	
MIAwDBT	0.165**		0.139***	0.192***		-1.912***		-1.023***	-1.231***	
	(1.97)		(7.47)	(2.94)		(-21.54)		(-5.93)	(-3.04)	
MIAwDBT	0.951***		1.157***	1.547***		-3.217***		-2.973***	-3.115***	
×Q(II)	(6.24)		(3.02)	(3.34)		(-6.85)		(-5.34)	(-2.91)	
MIAwDBT	4.478***		5.560***	5.487**		-6.840***		-5.008***	-7.370***	
×Q(III)	(3.97)		(4.75)	(2.08)		(-5.40)		(-3.13)	(-3.01)	
MIAwDBT	15.399***		17.445**	18.154 ***		-12.232**		-9.793***	-11.619**	
×Q(IV)	(4.35)		(2.14)	(-2.84)		(-2.11)		(-2.91)	(-2.47)	
MIAwEQ	-0.282***	-0.223***		-0.872*** (-	-0.319***	0.061***	0.068**		0.057*	0.071**
	(-9.03)	(-4.21)		12.93)	(-2.94)	(3.06)	(2.40)		(1.94)	(1.97)
MIAwEQ	-1.434***	-1.749***		-3.091***	-2.025***	0.206***	0.294**		0.260**	0.302***
×Q(II)	(-5.03)	(-3.13)		(-6.01)	(-6.55)	(3.84)	(1.98)		(2.23)	(2.61)
MIAwEQ	-8.381***	-10.056***		-12.708***	-9.260***	1.380**	1.461***		1.293***	1.625***
×Q(III)	(-3.50)	(-7.44)		(-5.23)	(-4.32)	(2.36)	(2.66)		(2.62)	(3.29)
MIAwEQ	-23.729***	-26.117**		-24.001***	-22.901***	4.202**	4.269***		5.341***	5.821***

×Q(IV)	(-2.69)	(-2.06)		(-2.85)	(-3.05)	(1.97)	(3.93)		(3.24)	(4.00)
PReturn	-0.169*		-0.108***	-0.121***	-0.187**	0.299***		0.412**	0.354***	0.257***
	(1.72)		(-2.59)	(3.31)	(-1.97)	(31.27)		(2.00)	(8.07)	(9.05)
PriceVol		7.127	5.918	5.960	7.036**		-0. 309	-0. 510	-0. 390*	-0. 505*
		(0.98)	(0.61)	(0.70)	2.57)		(-0.26)	(-0.95)	(-1.71)	(-1.70)
PUI	-0.232***	-0.187**		-0.169***	-0.204***	0.176**	0.154***		0.130**	0.189***
	(-3.97)	(-1.98)		(-3.26)	(-11.01)	(2.31)	(7.02)		(2.45)	(4.22)
$Q_{t\text{-}1}$		3.021	2.841	4.001	3.818		-3.980	-4.516	-3.128	-4.028
		(1.03)	(0.85)	(1.42)	(1.22)		(-0.81)	(-1.00)	(-0.63)	(-1.22)
RelIncentR	4.981***	5.493***	6.349**	7.004***	6.025***	-0.923*	-1.108**	-1.210*	-1.309***	-0.819**
	(7.03)	(5.62)	(2.52)	(4.26)	(3.13)	(-1.69)	(-2.16)	(-1.71)	(-2.61)	(-1.96)
R&D/Assets		12.033	10.984	8.216	9.671		-9.217	-8.023	-3.715	-8.491
		(0.32)	(1.22)	(0.41)	(1.00)		(-0.31)	(-0.57)	(-0.30)	(0.63)
RKRV-HP	-3.054**	-2.452***		-4.241***		13.948***	14.517**		15.031***	
	(-1.98)	(-2.65)		(3.01)		(3.06)	(1.92)		(4.62)	
$ROA_{t\text{-}1}$		9.23	10.514	7.247	7.816		-13.097	-11.830	-5.024	-11.003
		(1.24)	(0.52)	(0.32)	(1.10)		(-1.00)	(-0.41)	(-0.71)	(-0.86)
$Sales_{t\text{-}1}$		-2.034	-1.598	6.029	-2.302		2.510	3.281	4.291	3.917
		(-0.85)	(-0.55)	(1.00)	(-0.91)		(-0.69)	(1.16)	(0.27)	(1.03)
SAQ	3.029***	2.410***		2.506*	3.304***	-1.973***	-1.608***		-1.301***	-1.711**
	(11.24)	(9.03)		(1.89)	(4.15)	(-5.73)	(-2.90)		(-3.22)	(-2.03)
%ShortO	-0.447	-0.511			-0.524***	0.492	0.551	0.767***		
	(-1.54)	(-1.31)			(-2.74)	(0.92)	(1.11)	(3.71)		
Size of	-0.714**		-0.497***	-0.652***	-0.415**	1.034		1.064*	0.992	1.641
Acquirer	(-1.96)		(-14.68)	(-7.02)	(-2.52)	(0.68)		(1.84)	(0.45)	(0.39)
Turnover		0.360	1.023	0.955	2.057	0.462***	0.127*	0.409**	0.517**	0.358***
		(0.88)	(0.95)	(1.02)	(1.42)	(11.69)	(1.67)	(2.03)	(1.99)	(6.51)
VolatR	0.201***	0.361***	0.221***	0.213***	0.264**	-0. 907***	-0. 770**	-0.693**	-1.108***	-1.092***
	(3.22)	(2.79)	(3.61)	(3.44)	(2.13)	(-3.13)	(-1.99)	(-0.36)	(-3.20)	(-2.90)
IFE&YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.055	0.043	0.052	0.049	0.048	0.063	0.060	0.054	0.057	0.051

Table 3.7. Equity and bond price effects for M&A announcements sorted by method of payment

This table reports mean price effects in basis points (bps) for the announcement window [-1, 1] and three post-announcement windows after single sorted by method of payment for a sample of acquirers with M&A announcements between August 2009 and December 2015. Panels A and B report the means of the equity price effects not adjusted (CAR and Alpha) and adjusted (PCAR and PAlpha) for the equity issue effect, respectively, obtained using the Fama and French five-factor stock model (2015). Panels C and D report the means of the bond price effects not adjusted (CABR and BRALPHA) and adjusted (PCABR and PBRALPHA) for the equity issue effect, respectively, obtained using the Fama and French five-factor bond model (1993). Model coefficients estimated in a first step over the window [-200, -41] are used in calculating the announcement CAR or CABR for the window [-1, 1] in a second step (see related text, Table 3.8, Table 3.9, and Supplementary Appendices S2 and S3 for greater details). Post-announcement performances are the estimated intercepts of the appropriate five-factor model when estimated in sample for portfolios for windows of [2, 124], [2, 250] and [2, 498], which represent periods of about 6-, 12-, and 24-months, respectively. These portfolios are formed at each announcement month end provided that this month has a minimum of five such events as in Mitchell and Stafford (2000). The portfolios are then held unchanged until the ending day in the brackets in the column labeled "horizon". The number of such post-announcement portfolios is 259 for stock, 208 for mixed and 1089 for cash. The t-values for tests of the mean values are reported in the parentheses. *, ** and *** represent two-tailed significance at the 10%, 5% and 1% level, respectively.

Horizon	Method of Payment				
(Days)	All	Stock	Mixed	Cash	Stock-Cash
Panel A: CAR or Alpha (in bps) without adjustment for equity issue effect					
[-1, 1]	-61.73***	-325.41***	-184.01***	24.35***	-349.76***
	(-4.36)	(-5.17)	(-2.57)	(4.03)	(-11.25)
[2, 124]	-0.46**	-3.03***	-1.29**	0.31*	-3.34***
	(-1.99)	(-3.45)	(-2.13)	(1.65)	(-6.11)
[2, 250]	-0.17*	-1.39***	-0.52*	0.19	-1.58***
	(-1.73)	(4.21)	(-1.89)	(0.84)	(3.22)
[2, 498]	-0.08**	-0.68***	-0.32*	0.11	-0.79***
	(-2.01)	(2.91)	(-1.66)	(1.31)	(-2.63)
Panel B: PCAR or PAlpha (in bps) after the equity issue effect adjustment					
[-1, 1]	15.12***	-11.61*	0.07**	24.35***	-35.96***
	(3.07)	(-1.74)	(2.01)	(4.03)	(-2.95)
[2, 124]	0.34**	0.43**	0.36*	0.31*	0.12***
	(2.51)	(2.39)	(1.69)	(1.65)	(3.29)
[2, 250]	0.22**	0.34***	0.22**	0.19	0.15**
	(2.03)	(3.42)	(2.05)	(0.84)	(2.23)
[2, 498]	0.12*	0.16**	0.13*	0.11	0.05***
	(1.82)	(1.98)	(1.95)	(1.31)	(3.73)
Panel C: *CABR* and *BRAlpha* (in bps) without adjustment for equity issue effect					
[-1, 1]	2.956***	39.781***	16.458**	-8.381***	48.162***
	(7.042)	(5.109)	(2.035)	(-4.992)	(11.513)
[2, 124]	0.009**	0.109***	0.068***	-0.026**	0.135***
	(2.506)	(3.118)	(2.601)	(-1.997)	(4.002)
[2, 250]	-0.005**	0.051***	0.018**	-0.023***	0.074**
	(1.983)	(4.190)	(2.209)	(-3.291)	(2.559)
[2, 498]	-0.014**	0.032*	0.011**	-0.029***	0.061**
	(2.304)	(1.732)	(1.978)	(-2.603)	(1.977)
Panel D: *PCABR* and *PBRAlpha* (in bps) after the equity issue effect adjustment					
[-1, 1]	-6.301**	1.412	-5.013***	-8.381***	9.793***
	(-2.540)	(0.335)	(-6.074)	(-12.059)	(23.071)
[2, 124]	-0.019***	0.012	-0.018**	-0.026***	0.038***
	(-4.901)	(0.559)	(-1.973)	(-7.336)	(3.028)
[2, 250]	-0.018***	-0.005	-0.011***	-0.023**	0.018***
	(-3.002)	(-1.094)	(-2.581)	(-1.980)	(5.007)
[2, 498]	-0.021*	0.009	-0.016**	-0.029***	0.038**
	(-1.659)	(0.943)	(-1.972)	(-2.603)	(2.401)

Table 3.8.(Post-) announcement equity price effects for samples double-sorted by M&A payment method and each of four determinants

This table presents mean announcement window [-1, 1] *PCAR* and mean post-announcement window *PAlpha* for the shareholders of M&A acquirers double sorted by payment method and acquirer managerial interest alignments (*MIAwEQ*, *MIAwDBT*), abnormal insider trading by acquirer executives (*CANIPR*), or firm CSR ranking (*CSRcom*). The reported values in basis points (bps) are obtained using the five-factor model of Fama and French (2015) adjusted (PCAR and Palpha) for the equity issue effect (see related text, Table 3.7 and Supplementary Appendix S2 for greater details). N is the number of portfolios. *, ** and *** represent two-tailed significance at the 10%, 5% and 1% level, respectively.

Eval. Period		*MIAwEQ*					*MIAwDBT*				
(days)	All	I (lowest)	II	III	IV (highest)	I-IV	I (lowest)	II	III	IV (highest)	I-IV
Panel A: Acquirers using cash as the method of payment											
[-1, 1]	24.35***	12.01**	22.62***	29.35***	37.03**	-25.02***	31.02***	29.24***	26.42***	9.12***	21.90***
	(4.03)	(2.33)	(3.95)	(4.17)	(1.97)	(-5.11)	(5.12)	(4.01)	(2.94)	(3.23)	(2.80)
[2, 124]	0.31*	-14.50***	-9.21**	6.76*	25.11***	-39.61***	12.01**	9.01***	-9.82***	-13.65*	25.66***
	(1.65)	(-3.51)	(-2.03)	(1.57)	(3.73)	(-2.95)	(2.01)	(3.61)	(-3.42)	(-1.69)	(3.91)
[2, 250]	0.19	-11.94	-8.05**	4.71***	22.17**	-34.11***	12.71	10.23***	-11.99**	-14.17*	26.88**
	(0.84)	(-1.63)	(-2.21)	(2.39)	(2.33)	(-4.03)	(1.59)	(2.97)	(-2.35)	(-1.65)	(1.97)
[2, 498]	0.11	-9.11*	-5.29***	0.52**	19.72	-28.83**	9.29	7.10**	-8.78**	-10.11**	19.40**
	(1.31)	(-1.80)	(-2.66)	(2.01)	(1.62)	(-2.34)	(1.58)	(1.99)	(-2.43)	(-2.11)	(2.03)
N	1089	295	292	289	213		345	239	244	261	
Panel B: Acquirers using stock as the method of payment											
[-1, 1]	-11.61*	-23.11	-17.46**	-11.38**	12.03*	-35.14**	-1.35*	-7.01***	-19.35**	-21.24**	19.89***
	(-1.74)	(-1.64)	(-2.34)	(-2.01)	(1.66)	(-1.98)	(-1.67)	(-3.19)	(-2.49)	(-2.27)	(3.43)
[2, 124]	0.43**	-15.03**	-11.35**	14.27**	19.21**	-34.24***	18.63**	4.07**	-9.27**	-15.91***	34.54*
	(2.39)	(-1.97)	(-2.46)	(2.49)	(1.99)	(-3.28)	(2.14)	(1.98)	(-2.01)	(-4.98)	(1.89)
[2, 250]	0.34***	-15.36**	-8.19***	13.50***	15.92***	-31.28***	11.01**	9.21**	-7.79*	-14.09**	25.10**
	(3.42)	(-2.04)	(-3.61)	(4.07)	(3.80)	(-4.93)	(2.05)	(1.84)	(-1.72)	(-1.97)	(2.21)
[2, 498]	0.16**	-11.87*	-9.31**	12.48***	13.09**	-24.96**	13.40*	10.21**	-10.62*	-15.97	29.37**
	(1.98)	(-1.89)	(-1.97)	(2.63)	(2.14)	(-2.05)	(1.92)	(2.11)	(-1.66)	(-1.63)	(2.03)
N	259	44	71	87	57		73	65	62	59	
Panel C: All acquirers											
[-1, 1]	15.12***	-1.44***	9.09**	27.06***	30.11***	-31.55**	28.46***	14.01***	8.08***	6.73***	21.73***
	(3.07)	(-3.92)	(2.30)	(3.42)	(5.09)	(-2.02)	(7.31)	(3.28)	(5.01)	(2.86)	(4.91)
[2, 124]	0.34**	-12.39***	-5.08***	3.11***	21.63**	-34.02***	13.04**	3.75***	-7.52***	-11.13***	24.17***
	(2.51)	(-2.61)	(-4.01)	(4.97)	(2.15)	(-3.54)	(1.95)	(4.27)	(-2.68)	(-3.09)	(5.11)
[2, 250]	0.22**	-9.93**	-4.12*	0.81**	19.42**	-29.35***	11.43**	0.91***	-5.77***	-8.45**	19.88***
	(2.03)	(-1.98)	(-1.67)	(1.98)	(2.03)	(-2.71)	(2.31)	(3.05)	(-2.74)	(-2.30)	(3.72)
[2, 498]	0.12*	-11.03*	-6.29**	5.14**	17.54*	-28.57**	11.11*	-1.29***	-2.80**	-9.23**	20.34***
	(1.82)	(-1.79)	(-2.01)	(2.16)	(1.65)	(-2.11)	(1.92)	(-2.84)	(-1.97)	(-2.06)	(3.41)
N	1556	394	391	432	339		452	375	370	359	

Table 3.8. Cont'd

Eval. Period		*CANIPR*					*CSRcom*				
(days)	All	I (lowest)	II	III	IV (highest)	I-IV	I (lowest)	II	III	IV (highest)	I-IV
Panel D: Acquirers using cash as the method of payment											
	24.35***	18.44**	22.20***	25.01***	35.05***	-16.61***	19.01***	24.62***	26.47***	28.03***	-9.02***
[-1, 1]	(4.03)	(2.23)	(3.43)	(6.24)	(9.81)	(-4.01)	(3.07)	(2.63)	(5.29)	(3.22)	(-5.01)
	0.31*	-9.93***	3.45***	5.21*	7.64***	-17.57***	-4.53*	-1.21***	3.34***	4.11**	-8.64***
[2, 124]	(1.65)	(-2.64)	(3.11)	(1.66)	(4.03)	(-3.21)	(-1.65)	(-2.58)	(2.67)	(2.01)	(-2.96)
	0.19	-5.34**	-2.68**	4.29	8.12**	-13.46***	-4.94**	-1.51	3.54**	4.17**	-9.11***
[2, 250]	(0.84)	(-1.99)	(-2.01)	(1.55)	(1.98)	(-2.89)	(-1.97)	(-0.75)	(1.96)	(1.99)	(-2.76)
	0.11	-9.07*	3.07**	4.87**	6.19	-15.26**	-3.11	-2.29**	2.15*	3.72***	-6.83***
[2, 498]	(1.31)	(-1.78)	(1.81)	(2.03)	(1.30)	(-1.96)	(-0.92)	(-1.98)	(1.75)	(2.58)	(-3.03)
N	1089	359	277	212	241		313	234	247	295	
Panel E: Acquirers using stock as the method of payment											
	-11.61*	-19.71*	-16.23***	-5.98***	-2.26***	-17.45***	-16.09***	-14.43***	-10.04***	-4.01*	-12.08**
[-1, 1]	(-1.74)	(-1.58)	(-3.01)	(-2.75)	(-2.61)	(-3.58)	(-2.61)	(-2.70)	(-2.59)	(-1.65)	(-2.05)
	0.43**	-11.11*	1.07**	5.46*	8.03**	-19.14***	-5.22*	-2.03***	4.58***	5.21**	-10.43***
[2, 124]	(2.39)	(-1.72)	(-2.03)	(1.66)	(1.96)	(-3.21)	(-1.71)	(-2.59)	(3.11)	(1.97)	(-2.70)
	0.34***	-8.47**	2.49***	1.94***	6.27**	-14.74*	-4.09***	-2.21**	3.63**	4.82*	-8.91*
[2, 250]	(3.42)	(-3.04)	(2.71)	(3.62)	(2.11)	(-1.74)	(-4.04)	(-1.98)	(2.01)	(1.65)	(-1.95)
	0.16**	-8.97*	2.39**	3.23**	4.99	-13.96**	-5.67*	-1.35***	4.05	4.41**	-10.08**
[2, 498]	(1.98)	(-1.67)	(1.99)	(2.12)	(1.49)	(-2.09)	(-1.65)	(-2.94)	(1.43)	(2.07)	(-1.97)
N	259	69	72	57	61		71	62	77	49	
Panel F: All acquirers											
	15.12***	8.01***	13.29***	19.01***	23.15***	-15.14***	11.48***	13.03***	16.23***	19.63***	-8.15***
[-1, 1]	(3.07)	(3.01)	(2.71)	(2.58)	(4.17)	(-3.21)	(2.61)	(3.10)	(2.73)	(2.97)	(-3.94)
	0.34**	-12.06***	3.94***	4.41***	7.37**	-19.43***	-4.78**	-3.07***	4.16**	5.11***	-9.89***
[2, 124]	(2.51)	(-2.73)	(2.58)	(3.32)	(2.11)	(-2.70)	(-2.01)	(-3.03)	(1.97)	(2.65)	(-3.14)
	0.22**	-11.16***	4.12***	4.89**	5.12**	-16.28**	-5.69***	0.91**	2.48***	3.71**	-9.40***
[2, 250]	(2.03)	(-3.03)	(2.59)	(2.03)	(1.97)	(-1.67)	(-3.13)	(1.96)	(2.67)	(1.72)	(-4.09)
	0.12*	-7.49**	2.17**	2.76***	4.54*	-12.03***	-7.06*	-2.41***	4.70**	5.61*	-12.67***
[2, 498]	(1.82)	(-1.67)	(1.71)	(2.59)	(1.74)	-(3.15)	(-1.65)	(-2.58)	(1.97)	(1.66)	(-3.04)
N	1556	435	480	285	356		426	351	362	417	

Table 3.9. (Post-) announcement bond price effects for samples double-sorted by M&A payment method and managerial interest alignments

This table presents mean bond price effects for the announcement window [-1, 1] and three post-announcement windows for M&A acquirers double sorted by payment method and acquirer managerial interest alignments (*MIAwEQ*, *MIAwDBT*). The reported values in basis points (bps) are obtained using the 5-factor bond model of Fama and French (1993) adjusted for the equity issue effects (see related text, Table 3.7 and Supplementary Appendix S3 for greater details). N is the number of portfolios. *, ** and *** represent two-tailed significance at the 10%, 5% and 1% level, respectively.

Eval. Period		*MIAwEQ*					*MIAwDBT*				
(days)	All	I (lowest)	II	III	IV (highest)	I-IV	I (lowest)	II	III	IV (highest)	I-IV
Panel A: Acquirers using cash as the method of payment											
[-1, 1]	-8.381***	-5.002*	-7.129***	-7.834***	-15.293***	10.291***	-15.010***	-9.620***	-4.303***	-3.034**	-11.976***
	(-12.059)	(-1.955)	(-9.031)	(-21.011)	(-9.712)	(5.067)	(-5.001)	(-8.341)	(-31.027)	(-2.459)	(-13.072)
[2, 124]	-0.026***	1.932***	0.895***	0.105***	-4.041**	5.973***	-1.594***	-0.214**	0.184***	2.119***	-3.713***
	(-7.336)	(3.756)	(12.033)	(17.001)	(-2.403)	(3.043)	(-3.551)	(-2.533)	(5.211)	(3.119)	(-7.455)
[2, 250]	-0.023**	1.942***	0.151**	-0.543***	-2.170***	4.112***	-1.945**	-1.052**	-0.114***	4.173***	-6.118**
	(-1.980)	(2.662)	(2.405)	(-5.791)	(-3.004)	(2.701)	(-2.340)	(-2.501)	(-3.702)	(2.623)	(-1.995)
[2, 498]	-0.029***	1.112*	0.297***	0.221**	-2.322***	3.434**	-2.011**	-1.259***	1.208**	2.724***	-4.735*
	(-2.603)	(1.689)	(2.799)	(2.510)	(-3.914)	(2.339)	(-1.995)	(-2.630)	(1.991)	(3.004)	(-1.664)
N	1089	289	290	293	217		295	292	289	213	
Panel B: Acquirers using stock as the method of payment											
[-1, 1]	1.412	7.110***	2.462***	1.976***	-5.039**	12.149***	-5.110***	-1.460***	2.428**	8.032***	-13.142**
	(0.335)	(11.340)	(15.094)	(6.009)	(-2.530)	(3.294)	(-3.629)	(-12.707)	(2.491)	(4.003)	(-2.503)
[2, 124]	0.012	1.133***	0.794**	0.337***	-2.215***	3.348***	-2.031***	-1.356**	0.061***	3.219***	-5.250***
	(-0.559)	(4.921)	(2.554)	(5.031)	(-2.942)	(2.579)	(-2.601)	(-1.970)	(5.021)	(3.114)	(-2.608)
[2, 250]	-0.005	2.966**	1.197***	-0.290**	-3.321*	6.287**	-4.360**	-0.199***	1.028*	2.021***	-6.381**
	(-1.094)	(2.001)	(3.405)	(-2.348)	(-1.660)	(1.983)	(-2.316)	(-3.414)	(1.953)	(2.840)	(-2.001)
[2, 498]	0.009	1.877*	1.312**	-0.112***	-3.095	4.972**	-2.272*	-1.615***	1.449*	1.594**	-3.866*
	(0.943)	(1.657)	(1.978)	(-2.599)	(-1.509)	(1.964)	(-1.751)	(-2.609)	(1.664)	(1.992)	(-1.809)
N	259	47	69	83	60		44	71	87	57	
Panel C: All acquirers											
[-1, 1]	-6.301**	-5.099***	-5.799***	-6.132**	-8.235***	2.937***	-7.213***	-6.710**	-6.678***	-4.289***	-2.924***
	(-2.540)	(-19.022)	(-31.051)	(-2.401)	(-7.033)	(12.447)	(-12.339)	(-2.001)	(-3.705)	(-5.249)	(-4.112)
[2, 124]	-0.019***	0.274***	0.038***	0.785***	-1.438***	1.713***	-0.971***	-0.501***	0.674***	0.760***	-1.731**
	(-4.901)	(7.540)	(14.239)	(3.001)	(-4.961)	(7.894)	(-3.949)	(-6.360)	(4.228)	(3.045)	(-2.461)
[2, 250]	-0.018***	1.322***	0.638***	-0.036***	-2.275***	3.597**	-1.094***	-0.634**	-0.011***	1.934***	-3.029***
	(-3.002)	(5.303)	(9.011)	(-5.007)	(-3.909)	(2.309)	(-8.090)	(-2.501)	(-2.751)	(3.240)	(-2.993)
[2, 498]	-0.021*	1.008***	0.280**	-0.659***	-0.728***	1.737***	-0.602***	-0.577***	-0.563**	1.987***	-2.589**
	(-1.659)	(2.894)	(2.103)	(-3.440)	(-4.073)	(2.579)	(-4.275)	(-3.712)	(-2.003)	(3.501)	(-1.983)
N	1556	387	395	433	341		394	391	432	339	

Table 3.10. Determinants of the M&A Announcement Pure Price Effects for Shareholders of the Acquirers

This table reports cross-sectional test results examining potential determinants of the *PCAR*s for acquirers which are the announcement stock price effects for an acquirer from day -1 to day 0 (the M&A announcement day), 1, 3 or 10. All of the included independent variables are lagged one year, and a Wu-Hausman test rejects the presence of an endogeneity problem with their inclusion. *CANIPR* is cumulative abnormal insider purchase ratios for the executives of acquirers averaged over two quarters. *ComLev* is compensation leverage. *ComTotl* is total executive compensation. *CSRcom* is CSR composite. *Eq*LTL* is the proportion of the acquirer's equity held by its executives divided by the proportion of the acquirer's long-term liabilities held by its executives. *InsDbt* is inside debt. *Leverage* is debt to equity ratio. *MIAwEQ* (*MIAwDBT*) is managerial interest alignment with shareholders (bondholders). Q(.) is a dummy variable representing quartiles II, III & IV. *PReturn* is the past stock return. *PriceVol* is share price volatility. *Prop. Cash (Stock) M&A* is the proportion of the M&As that are pure cash (stock). *RelIncentR* is the relative incentive ratio obtained as the product of debt & equity proportions held by the acquirer's managers. *ResCov* is residual analyst coverage. *RKRV-HP* is the RKRV valuation model estimate obtained using the three-step regression procedure of Hoberg and Phillips (HP) (2010). *%ShortO* is the ratio of shorting volume to total trading volume. *⊿%ShortO* is the change of *%ShortO* for the acquirer for the time period over which the dependent variable is measured minus the median *%ShortO* for the acquirer in the pre-event window [-22, -6]. *Size of Acquirer* is the acquirer's market capitalization. *Turnover* is share turnover on the M&A announcement day. *VolatR* is acquirer's stock return volatility. All the regressions include industry-fixed effects (IFE) based on the Fama-French (1997) 48 industries interacted with year-fixed effects (IFE). P-values are reported in the parentheses. *, **, and *** represent significance at 10%, 5%, and 1% levels, respectively.

	PCAR[-1,0]		*PCAR[-1,1]*		*PCAR[-1,3]*		*PCAR[-1,10]*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CANIPR	1.66*	0.91***	2.54**	2.47***	3.33	3.49***	5.01*	4.82**
	(0.078)	(0.001)	(0.048)	(0.001)	(0.103)	(0.006)	(0.63)	(0.001)
ComLev	-0.37	-0.42**	-0.51	-0.56*	-0.62	-0.71***	-0.67	-0.85***
	(0.414)	(0.038)	(0.147)	(0.045)	(0.208)	(0.000)	(0.303)	(0.002)
ComTotl	1.31***	1.18**		1.60***		1.92**		2.38***
	(0.002)	(0.019)		(0.002)		(0.024)		(0.006)
$CSRcom_t$	3.11***	2.87***	4.89**	5.01***	6.22**	5.51***	7.10**	8.25***
	(0.001)	(0.006)	(0.014)	(0.000)	(0.035)	(0.009)	(0.014)	(0.007)
*Eq * LTL*	-0.11	-0.23	0.89	0. 61	0. 21	0. 12*	0. 99	0. 97*
	(0.112)	(0.221)	(0.051)	(0.091)	(0.101)	(0.081)	(0.223)	(0.091)
InsDbt	-0.11	-0.17***	-0.12	-0.19***	-0.15	-0.21**	-0.31	-0.24***
	(0.175)	(0.009)	(0.165)	(0.001)	(0.207)	(0.014)	(0.266)	(0.009)
%Insti	0.61	0.41	0.69	.71		1.17	-0.31	1.01
	(0.331)	(0.151)	(0.211)	(0.087)		(0.073)	(0.234)	(0.156)
Leverage	-0. 49	-0. 44	-0. 69	-0. 78	-0. 88	-0.85	-1.10	-0.98
	(0.151)	(0.110)	(0.114)	(0.513)	(0.198)	(0.432)	(0.059)	(0.120)
LGG	0.97***	0.84**	0.71***	0.74***	0.53***	0.56**	0.33***	0.41***
	(0.000)	(0.031)	(0.001)	(0.006)	(0.004)	(0.0)	(0.000)	(0.003)
MAQ	-2.83***	-3.19***	-2.63***	-2.49**	1.15***	1.36***	0.68*	0.59***
	(0.005)	(0.000)	(0.002)	(0.0)	(0.008)	(0.001)	(0.054)	(0.001)
MIAwDBT	-0.07**		-0.08**		-0.11***		-0.13**	
	(0.022)		(0.012)		(0.009)		(0.041)	
MIAwDBT×Q(II)	-0.15***		-0.21***		-0.22***		-0.28***	
	(0.000)		(0.002)		(0.001)		(0.000)	
MIAwDBT×Q(III)	-0.43***		-0.46***		-0.53***		-0.69***	
	(0.007)		(0.003)		(0.001)		(0.000)	
MIAwDBT×Q(IV)	-1.85**		-2.01***		-2.31**		-2.93***	
	(0.019)		(0.008)		(0.012)		(0.005)	
MIAwEQ	0.03**	0.02***	0.05**	0.04***	0.06***	0.07**	0.08**	0.09***
	(0.019)	(0.00)	(0.015)	(0.00)	(0.00)	(0.013)	(0.021)	(0.006)
MIAwEQ×Q(II)	0.09***	0.08***	0.11***	0. 13***	0.14***	0.15**	0.18***	0.16***

	(0.001)	(0.002)	(0.004)	(0.005)	(0.000)	(0.001)	(0.000)	(0.000)
MIAwEQ×Q(III)	0.28***	0.23***	0. 33**	0. 31***	0.41***	0.48***	0.53***	0.61***
	(0.002)	(0.001)	(0.031)	(0.009)	(0.002)	(0.009)	(0.000)	(0.001)
MIAwEQ×Q(IV)	0.87***	0.91**	1.22**	1.15**	1. 31***	1. 43**	1.64***	1.49**
	(0.00)	(0.023)	(0.033)	(0.029)	(0.007)	(0.011)	(0.005)	(0.041)
PReturn	0.31***	0.29***	0.48**	0.40***	0.61*	0.53**	0.79***	0.91**
	(0.000)	(0.002)	(0.019)	(0.008)	(0.081)	(0.032)	(0.00)	(0.030)
PriceVol	39.61	12.94	32.34	29.31	16.91	15.46	13.11	13.01
	(0.053)	(0.132)	(0.110)	(0.087)	(0.113)	(0.211)	(0.095)	(0.105)
PUI	0.22***	0.25**	0.13***	0.11*	0.07***	0.06***	0.03***	0.04***
	(0.001)	(0.002)	(0.006)	(0.073)	(0.001)	(0.000)	(0.004)	(0.002)
Prop. Cash M&A	-0.10	-0.39	-0.12	-0.16	-0.16	-0.20	-0.28	-0.31
	(0.150)	(0.230)	(0.233)	(0.454)	(0.331)	(0.633)	(0.310)	(0.151)
Prop. Stock M&A	-4.32***	-4.39***	-5.89**	-5.47***	-7.54***	-6.22**	-8.91***	-7.93**
	(0.001)	(0.000)	(0.013)	(0.000)	(0.007)	(0.041)	(0.008)	(0.010)
RelIncentR	1.09	0.95	0.26	0. 11	1.02	0. 72	-0. 78	-0. 57
	(0.251)	(0.434)	(0.660)	(0.233)	(0.553)	(0.761)	(0.354)	(0.461)
ResCov		0.008		0.007		0.004		0.006
		(0.151)		(0.261)		(0.318)		(0.452)
RKRV-HP	0.05**		0.07*		0.03**		0.04*	
	(0.031)		(0.092)		(0.022)		(0.079)	
⊿%ShortO	-0.05***		-0.04***		-0.05***		-0.03***	
	(0.007)		(0.000)		(0.001)		(0.003)	
SAQ	9.06	7.58		10.71		8.03		11.19
	(0.117)	(0.231)		(0.108)		(0.350)		(0.406)
Size	-5.5***	-5.08***	-6.21***	-7.01***	-10.03***	-9.73***	-12.46*	-13.22**
	(0.000)	(0.001)	(0.001)	(0.005)	(0.009)	(0.008)	(0.055)	(0.023)
Turnover	0.98	0.75	0.94	1.12	0.98	0.79	1.35*	1.17
	(0.113)	(0.121)	(0.203)	(0.101)	(0.252)	(0.640)	(0.094)	(0.101)
VolatR	-0.81**	-0.93**	-1.09**	-1.02**	-1.30**	-1.42**	-1.93**	-1.54**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
Intercept	1.05	0.60*	1.62*	1.17*	1.81	1.79**	1.28	1.07
	(0.256)	(0.094)	(0.088)	(0.089)	(0.110)	(0.020)	(0.410)	(0.210)
IFE&YFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.1201	0.1314	0.1511	0.1108	0.0891	0.1533	0.0868	0.1501

Table 3.11. Covariance decompositions for the potential determinants of Acquirer PCAR

This table examines the determinants of the mean and variability of the acquirer pure price effects (*PCAR*) for the announcement window [-1, 1]. Panels A and B implement the two-stage procedure of Mitchell, Pulvino and Stafford (2004) to determine how much of the mean *PCAR* for acquirers using stock as the method of payment is explained by arbitrage short selling. Panel A presents the results of applying the first stage Probit model of Mitchell, Pulvino and Stafford (2004) where *⊿%ShortO* is regressed on a constant and the dummy variables, *Hostile* and *Relsize* (as in Liu and Wu, 2014) to obtain fitted values of the daily relative short selling volume (*Fit⊿ShortO*) in the announcement period of [-1, 1] where 0 is the announcement date. Panel B reports the results of regressions of *PCAR*[-1,1] against the dummy variables, *Cash* and *Stock*, with and without the inclusion of *Fit⊿ShortO*. The difference between the two coefficients for *Stock* represent the portion of the mean *PCAR*[-1,1] explained by arbitrage short selling. Panel C reports a covariance decompositions of the explained portion of the variability of *PCAR*[-1,1] to quantify the relative contribution of the significant determinants in explaining the variability of acquirer pure stock price effects for the announcement window [-1, 1]. BHZ and LRZ refer to the covariance decomposition methodologies of Bekaert, Hodrick and Zhang (2012), and Lemmon, Roberts and Zender (2008), respectively. The reported values are for the regression that includes the independent variables and their interactions that are found to be significant in a previous regression including more variables as in Bekaert, Hodrick and Zhang (2012). *CANIPR* is the cumulative abnormal net insider purchase ratio for acquirer executives. *CANIPR_Diff* is the difference in *CANIPR* for acquirers versus targets. *CSRcom_Diff* is the difference in *CSR* rankings of the acquirer and its target. *CSRcom*RKRV-HP* is the interaction of *CSRcom* with the misvaluation estimate from the model of Rhodes-Kropf, Robinson and Viswanathan (RKRV, 2005) obtained using the three-step regression procedure of Hoberg and Phillips (HP) (2010). *MIAwEQ* (*MIAwDBT*) is managerial interest alignment with shareholders (bondholders), and *MIAwEQ_Diff* (*MIAwDBT_Diff*) is the difference in managerial interest alignment with shareholders (bondholders) between acquirers and targets. *MB ratio* is the market-to-book ratio of acquirers as in DHRT (2006). *PAIT* is abnormal insider trading (PAIT) measured as in Akbulut (2013). *RKRV_FIRM*, *RKRV_TIME* and *RKRV_LONG* are the three components of the decomposed MB ratio of RKRV. *RKRV-HP_Diff* is the difference in *RKRV-HP* between the acquirer and its target. *⊿%ShortO* is the average relative short selling volume over the event window [-1, 1] minus the median for window [-22, -6]. Coefficients for Cash and Stock are in basis points. The number of observation is 1,348. P-values for t-tests of the means are reported in the parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: First-stage regression subsequently used to obtain fitted values for *⊿%ShortO* [-1,1]

	Hostile	*Relsize*	Intercept	R^2
Coeff	-89.11*	31.92***	211.60***	0.072
t-Stat	-1.78	3.12	2.84	

Panel B: Second-stage regression to explaining the mean *PCAR* [-1, 1]

	Second-stage regression		Second-stage regression		
	Cash	Stock	Cash	Stock	Fit*⊿%ShortO*
Coeff	24.35***	-11.61**	29.04***	-5.21***	59.31**
t-Stat	(2.76)	(-1.96)	(3.01)	(-4.32)	(-2.38)
R^2	0.112		0.187		

Panel C: Second-stage regressions explaining the variability in *PCAR* [-1, 1]

			Cov Decomposition	
Variable	Coeff.	t-Stat.	BHZ	LRZ
CANIPR	116.14***	7.02	0.095	0.081
CANIPR_Diff	-22.32***	-2.95	0.051	0.059
CSRcom	10.19***	3.01	0.025	0.021
CSRcom_Diff	-3.02**	-2.41	0.027	0.031
*CSRcom*RKRV-HP*	8.56**	1.90	0.029	0.036
LGG	35.19***	4.24	0.006	0.005
MAQ	-6.14***	-2.78	0.004	0.003
MIAwEQ	1.73***	3.95	0.091	0.079
MIAwEQ_Diff	-0.84***	-2.94	0.083	0.078
MIAwDBT	-2.391***	-5.01	0.055	0.047

MIAwDBT_Diff				
MB ratio				
PAIT	33.01*	1.70	0.012	0.022
PUI	1.07**	2.33	0.003	0.002
RKRV_FIRM				
RKRV_TIME				
RKRV_LONG				
RKRV-HP	19.22***	7.23	0.041	0.048
RKRV-HP_Diff	-27.06**	-2.24	0.029	0.023
⊿%ShortO [-1, 1]	-321.19***	-4.29	0.390	0.406
Cash	33.71***	3.03	0.027	0.031
SAQ				
Stock	-2.27*	1.69	0.042	0.038
Constant	39.04*	1.71	0.000	0.000
R^2	0.213			

Table 3.12. Simultaneous 3SLS estimations for changes in managerial interest alignments and conservatism, abnormal net insider purchase ratios and CSR

The results reported in this table are for a simultaneous system of five equations estimated using 3SLS for a sample of 1556 firms and 7812 firm-years. The five dependent variables in the system, *MIAwEQ*, *MIAwDB*, *InsDbt*, *CANIPR*, *CSRcom*, and all regressors are for differences between their mean values during window [2, 12] and window [-261, -251] (about one year prior to announcement date 0). 0-lag differences for annual (monthly) data for the dependent variables are computed as the difference between the year (month) of day [2] and the year (month) of day [-261], i.e., the year of the post- M&A announcement and about the year prior the M&A announcement window [-1, 1]. The 0-lag differences for the controls based on daily data are computed as the difference in the means during window [2, 12] and window [-261, -251] where the latter window is about one year prior to the M&A announcement; The 1-lag differences for the controls based on annual (monthly) data are computed as the difference between the year (month) of day [-261] and the year (month) of day [-509], i.e., one year and two years prior to the M&A announcement. The 1-lag differences for the controls based on daily data are computed as the difference in its means during window [-261, -251] and window [-509, -499] where the two windows are about one year and two years, respectively, prior to the M&A announcement window [-1, 1]. For ΔMAQ (ΔSAQ), we first obtain the mean value of MAQ (SAQ) for year t, t-1, and t-2 (if there is no MAQ (SAQ) bid in a given year, its mean value for that year is 0). Next, we calculate 0- and 1-lags of ΔMAQ (ΔSAQ). For more details about the calculation of changes, see the description to Table S4.2 of the Online Appendix S4. All variables are defined in Appendix 3.A. Year dummy variables are included in all specifications. The goodness of fit measure (GOF) is the square of the correlation coefficient between actual and fitted values (Haessel, 1978). All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. The t-values reported in the parentheses are based on robust, firm-clustered standard errors. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Ind. Variable	[I] *ΔMIAwEQ*	[II] *ΔMIAwDBT*	[III] *ΔInsDbt*	[IV] *ΔCANIPR*	[V] *ΔCSRcom*
ΔCANIPR					0.109***
					(3.015)
ΔCANIPR $_{t-1}$				0.052***	
				(2.941)	
ΔComLev	-0.911***	0.307***	1.308**		1.249***
	(-3.814)	(2.951)	(1.970)		(3.212)
ΔComTotl	-0.607***	0.034***			-0.945***
	(-5.291)	(3.177)			(-11.213)
ΔCSRcom	0.019**	0.017***	0.117***	0.312***	
	(2.003)	(3.307)	(3.114)	(2.671)	
ΔCSRcom $_{t-1}$					0.027***
					(3.372)
ΔRelIncentR	-3.049***	5.061***	23. 811***		1.701**
	(-2.891)	(7.271)	(2.901)		(2.013)
ΔInsDbt	-0.449***	0.147***			1.903***
	(-2.794)	(2.838)			(5.234)
ΔInsDbt $_{t-1}$			0.015***		
			(11.471)		
Δ%Insti	0.011**	-0.015**	0.079***	0.017***	0.008***
	(1.981)	(-2.362)	(2.580)	(9.027)	(3.021)
ΔLeverage	0.102***	-0.045**	0.433*		-0.012***
	(7.645)	(-2.315)	(1.661)		(-4.113)
ΔLGG			-0.141***		
			(-7.251)		
ΔMAQ				-0.299***	
				(-3.001)	
ΔMIAwDBT	-1.161***		1.409**		1.594**
	(-3.519)		(2.172)		(1.992)

ΔMIAwDBT $_{t-1}$		0.008*** (4.790)			
ΔMIAwDBT × *StockM&A*				0.117*** (8.003)	
ΔMIAwEQ		-1.615*** (-2.609)	-0.102*** (-5.119)		0.413*** (6.094)
ΔMIAwEQ $_{t-1}$	0.007** (2.194)				
ΔMIAwEQ × *StockM&A*				-0.036*** (-2.781)	
ΔPReturn			0.089** (1.961)		
ΔPUI			-0.005*** (-12.309)		
ΔResCov					0.212*** (3.002)
ΔRKRV-HP				0.130** (2.417)	
ΔSAQ				0.047** (2.039)	
ΔSize			-0.017* (-1.692)		0.939*** (5.622)
ΔTurnover$_i$				0.208*** (2.790)	
ΔVolatR			-0.092*** (-5.914)	0.095*** (3.118)	
Δ%Eq	0.091*** (2.831)	-0.038* (-1.710)	0.218** (1.985)		
ΔStateLaw					0.205*** (4.023)
ΔDivers					0.122*** (7.849)
ΔGIndex					0.581*** (6.008)
ΔEntIndex					0.240*** (2.949)
ΔCEOnom					0.036* (1.710)
Δ%Director					0.031** (2.018)
Δ%Board					0.022*** (4.294)
ΔDebt/Assets					-4.002** (-3.401)
ΔR&D					-0.091*** (-2.652)
ΔROA					-0.012** (-1.972)
Constant	4.179*** (2.887)	-0.021 (-0.897)	-0.343 (-1.332)	0.933 (1.587)	2.638* (1.691)
GOF	0.721	0.809	0.667	0.955	0.901
Pseudo R^2	0.213	0.154	0.121	0.131	0.165

Table 4.1. Sample firm statistics

This table presents descriptive statistics for the variables used in the paper for our final sample of 25,571 firm-year observations for 2803 firms for the period between 1992 and 2013. The variables are described in Appendix 4.B.

Variable	Mean	Std. dev.	25^{th} percentile	Median	75^{th} percentile
CSR	0.3913	0.4933	0.0000	0.0000	1.0000
CSRnet	0.2749	2.3024	-1.0000	0.0000	1.0000
CSRcom	0.4517	0.0473	0.3987	0.4501	0.4764
ComTotl	5.9841	2.9594	1.6801	3.9064	6.4992
InsDbt	0.0512	4.0031	0.0000	0.0000	1.7241
ComLev	0.0840	0.3014	0.0000	0.0000	0.3202
FamilyFirm	0.1003	0.3016	0.0000	0.0000	0.0000
Divers	0.5064	0.4999	0.0000	1.0000	1.0000
Assets	6.6754	1.6741	6.1477	7.3652	8.8912
Debt/Assets	0.2415	0.2349	0.0199	0.0284	0.3955
R&D/Sales	0.0615	0.0650	0.0241	0.0421	0.0690
IndexGIM	15.5862	3.0640	14.0000	16.0000	18.0000
Duality	0.7702	0.4699	1.0000	1.0000	1.0000
CEOnom	0.2314	0.4231	0.0000	0.0000	0.0000
%Director	0.0229	0.0721	0.0142	0.0203	0.0609
%Board	0.5871	0.2147	0.3600	0.7000	0.8200
%Insti	0.5201	0.3641	0.2354	0.4615	0.7412
MP^{HP}	0.0253	0.8123	-1.2070	-0.0134	1.3050
ResCov	0.2947	1.0967	-1.1873	0.0000	1.3483

Table 4.2. Correlation coefficients among the explanatory variables

This table reports the correlation coefficients among the variables used herein for the 25,571 firm-year observations for 2803 firms over the period from 1992 to 2013. Variable definitions are provided in Appendix 4.B. [a], [b], and [c] indicate significance at the 1%, 5%, and 10% levels, respectively.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
CSRcom	(1)	1																								
CSRcom $_{t-1}$	(2)	.23[a]	1																							
ComTotl	(3)	-.09[a]	-.05	1																						
ComTotl $_{t-1}$	(4)	-.01	-.01	.25[a]	1																					
InsDbt	(5)	-.08[a]	-.02	.13[a]	.03	1																				
ComLev	(6)	-.07[a]	-.04	.16[a]	.04	.47[a]	1																			
FamilyFirm	(7)	-.03	-.02	.07[c]	.01	.02	.02	1																		
R&D/Sales	(8)	.09[b]	.05	-.06[a]	-.03	.08[a]	.06[c]	-.11[a]	1																	
Divers	(9)	.09[a]	.06[c]	-.05	-.05	-.02	-.04	-.02	-.09[a]	1																
Duality	(10)	.15[a]	.00	.10[b]	.03	-.01	-.03	-.08[a]	-.07[a]	.03	1															
CEOnom	(11)	.21[a]	.03	-.02	-.04	-.03	-.01	-.09[a]	-.07[b]	.06[a]	.21[a]	1														
IndexGIM	(12)	-.22[a]	-.02	-.09[b]	-.03	-.05[c]	-.07[b]	.07	.03	.07[a]	.11[a]	.06	1													
IndexGIM $_{t-1}$	(13)	-.01	-.04	-0.5[c]	-.06	-.03	-.04	.01	.03	.05	.02	.02	.32 [a]	1												
%Board	(14)	.18[a]	.03	-.18[a]	-.02	.03	.01	-.26[a]	.09[a]	-.09[a]	.14[a]	.25[a]	.08[a]	.05	1											
%Director	(15)	.15[a]	-.05	-.02	-.03	-.08[a]	-.10[a]	.18[a]	.05[b]	-.02	-.01	-.11[a]	-.05	-.01	-.21[a]	1										
%Insti	(16)	.21[a]	.06	-.06[a]	-.02	-.07[a]	-.05[b]	-.15[a]	.14[a]	-.05[b]	.10[a]	.08[a]	.04	.03	.21[a]	-.11[a]	1									
ResCov	(17)	.32[a]	0.4	-.02	-.05	.06[b]	.04	-.08[a]	.33[a]	.02	.15[a]	.11[a]	-.36[a]	-.03	.11[a]	-.05[c]	.09[a]	1								
Firmage	(18)	.26[a]	.03	-.02	-.06	-.09[a]	-.01	-.12[a]	-.12[a]	.09[a]	.12[a]	.17[a]	-.05	-.02	.24[a]	-.15[a]	-.06[a]	.13[a]	1							
Assets	(19)	.13[a]	.03	.12[a]	.04	.11[b]	.11[a]	.06[c]	.23[a]	.06[c]	.03	.08[a]	.05	.04	.16[a]	-.06[c]	.11[a]	.07[a]	.05[c]	1						
Debt/Assets	(20)	-.08[a]	-.04	-.10[b]	-.03	.08[a]	.10[a]	-.01	.09[a]	.22[a]	.02	.04	-.06	-.03	.07[a]	-.12[a]	.17[a]	.13[a]	.05	-.06[a]	1					
MP^{HP}	(21)	.03	.02	-.11[a]	-.01	-.07[a]	.06[a]	.02	-.13[a]	-.08[b]	-.12[a]	.02	-.16[a]	-.04	-.07[b]	.11[a]	-.14[a]	.08[a]	-.03	.12[a]	.09[a]	1				
CSR	(22)	.36[a]	.10[a]	-.09[a]	-.04	-.12[a]	-.08[a]	-.06[a]	-.07[b]	.11[b]	.12[a]	.18[a]	-.16[a]	-.04	.21[b]	-.11[a]	.20[a]	.33[a]	.27[a]	.11[a]	-.07[a]	.11[a]	1			
CSRnet	(23)	.39[a]	.11[a]	-.15[a]	-.02	-.14[a]	-.21[a]	-.07[a]	-.06[c]	.26[a]	.16[b]	.22[a]	-.17[a]	-.01	.31[a]	-.17[a]	.24[b]	.32[a]	.25[a]	.06[a]	-.04[a]	.15[a]	.31[a]	1		
Uvdum	(24)	.28[a]	.05	-.05[a]	-.03	.07[b]	.12[a]	.28[a]	.07[a]	.09[a]	.05[b]	.06[a]	-.13[a]	-.02	.08[a]	.16[a]	-.12[a]	.19[a]	.03	.08[a]	-.11[a]	.08[a]	.28[a]	.33[a]	1	
Uvdum $_{t-1}$	(25)	.04	.02	.03	-.00	.03	0.6[c]	-.04	.02	.05	.01	.02	-.06	-.05	.04	.01	-.02	.03	.01	.05	-.01	.03	.04	.02	.26[a]	1

Table 4.3. Annual cross-sectional regressions with insider transaction type as the dependent variable

This table reports the time-series averages of the estimated coefficients from the annual cross-sectional regressions (see equation C.1 in Appendix 4.C) of insider transactions (i.e., open-market purchases and sales and option-exercise purchases) on the control variables over the period from 1992 to 2013. The variables for equation C.1 are as defined in Appendix 4.C. Each insider is matched to a peer by propensity score matching based on logistic regressions on five variables: *Ownership*, *Assets* (the nearest dollar value of shareholdings), *%Insti*, *InConcen* and if the firm of the peer insider is also a (no) CSR-firm from year *t*-1 to *t*. All transaction variables are expressed as a fraction of the trading volume in year *t* and winsorized at the 1% level. The prior-trading of the firm of interest and its peer are scaled by dividing its initial value by 1000. The t-statistics are based on Newey-West (1987) corrected standard errors. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively. Number of observations is 25,571.

	Open Market Purchases		Open Market Sales		Option Exercise Purchases	
Variable /	[1]	[2]	[3]	[4]	[5]	[6]
Statistic	Mean	t-stat	Mean	t-stat	Mean	t-stat
Intercept	-0.2892**	-1.99	49.0412***	2.85	1.6340	1.22
$InTrading_{t-1}$	0.4732***	6.58	0.2014***	16.23	0.2307***	21.62
Ptrading	0.0055**	2.03	0.0311*	1.65	0.0059***	4.99
Assets	-0.0254***	-11.65	-0.5908***	-7.23	-0.0167***	-5.77
%ComTotl	-0.0085***	-2.63	-0.2132***	-2.22	-0.5236***	-12.36
Ownership	0.0311**	1.97	0.0006*	1.69	-0.0189***	-10.78
%Insti	-0.3309***	-2.81	3.4575***	2.98	0.1164**	1.98
InConcen	0.0002***	24.36	-0.0031**	-2.13	0.0001***	3.69
%InsDbt	-0.0008***	-10.92	41.0157***	3.41	-0.1503***	-5.24
IndexGIM	0.2103***	3.06	-3.4581***	-3.04	-0.5855**	-2.54
ComTotl	0.0496***	3.04	0.6468***	2.67	0.3010***	7.19
ResCov	-0.0026***	-6.78	-0.0038***	-2.979	-0.0094***	-11.44
R^2	0.039		0.021		0.113	

Table 4.4. Summary distributional statistics for the *AIB* undervaluation estimates for positive, negative and no changes in the composite CSR rankings

This table reports the distributional statistics for the total abnormal net buy ratios for insiders (*AIB*) in year *t* for firm *i* for various samples of the changes in the composite CSR rankings ($\Delta CSRcom_i$). *AIB* for a given year is computed as described in Appendix 4.C. Specifically, open market sales, open market purchases, and option-exercise purchases for each insider are the residuals from annual cross-sectional regressions, that are then aggregated to compute the abnormal net buy ratio for each firm for each year. ***, ** and * represent significance at 1%, 5% and 10% levels, respectively.

AIB	All	$\Delta CSRcom_{i,t} > 0$	$\Delta CSRcom_{i,t} = 0$	$\Delta CSRcom_{i,t} < 0$
Maximum	0.5681	0.5681	0.5125	0.4872
25th percentile	0.0525	0.0593	0.8080	0.0456
Mean	0.0044***	0.0147***	0.0045***	-0.0091***
Median	0.0046	0.0146	0.0046	-0.0044
75th percentile	-0.0467	-0.0426	-0.0456	-0.0565
Minimum	-0.5407	-0.4643	-0.4803	-0.5408
Std. dev.	0.0211	0.0223	0.0209	0.0216
N	25,571	1311	23,115	1145

Table 4.5. Average firm characteristics for three *AIB* terciles and tests of their differences

Table 4.5 reports the mean values of various firm characteristics for three *AIB* terciles. A firm is placed in the High (Low) *AIB* tercile in year *t* if its *AIB* is in the top (bottom) 33% of the distribution of *AIB* for all firms in the year, and in the Medium *AIB* tercile otherwise. All the variables are as described in Appendix 4.B. Differences in the mean values between the firms in the High and Low *AIB* terciles for each variable are presented and tested using a two-sample t-test. ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively. Obs. is the number of observations.

Variable	High *AIB* (I)	Medium *AIB* (II)	Low *AIB* (III)	Difference (I) – (III)	t-stat
CSRcom	0.0348	0.0011	-0.0227	0.0575	6.512***
ΔCSRcom>0	0.0167	0.0149	0.0126	0.0041	2.984***
ΔCSRcom<0	0.0048	-0.0131	-0.0190	0.0238	7.397***
ComTotl	5.6993	6.0138	6.5284	-0.8291	-21.387***
IndexGIM	7.9251	9.4022	10.4390	-2.5139	-3.064***
MP^{HP}	0.3104	0.0309	-0.2376	0.5480	3.911***
InsDbt	0.5736	1.3974	1.5942	-1.0206	-1.978**
ComLev	0.0844	0.2241	0.2967	-0.2123	-2.883***
%Director	0.0992	0.0842	0.0592	0.0401	0.362
%Board	0.6501	0.6013	0.5637	0.0864	11.093***
Duality	0.8639	0.7911	0.7693	0.0946	3.005***
CEOnom	0.5135	0.3498	0.2129	0.3007	1.669*
CRISIS	0.8124	0.6917	0.5042	0.3082	6.960***
FamilyFirm	0.0922	0.0923	0.1069	0.0147	1.882*
%Inst	63.0512	51.0490	47.9233	15.1289	3.692***
ResCov	0.9006	0.2770	-0.7826	1.6832	7.261***
Divers	0.7022	0.5529	0.4938	0.2084	3.021***
Firmage	34.8422	23.0285	13.8463	20.9960	1.701*
Assets	8.7029	7.2023	5.9273	2.7756	9.035***
Debt/Assets	0.2394	0.2481	0.2492	-0.0098	-4.972***
R&D/Sales	0.0351	0.0345	0.0341	0.0010	36.498***
PAIT	0.0264	0.0039	-0.0153	0.0417	1.975**
Tobin's Q	-0.1895	-0.2011	-0.2203	0.0308	2.470**
PV_MB	-1.5072	-1.7109	-1.9201	0.4129	1.679*
DHRT	-1.6032	-1.6401	-1.6938	0.0906	1.470
RKRV_Long	0.0614	-0.1807	-0.3319	0.3933	1.721*
RKRV_Sector	-0.0632	-0.1753	-0.2105	0.1473	1.242
RKRV_Firm	-0.3029	-0.4714	-0.5570	0.2541	2.394**
Obs.	8524	8523	8524		

Table 4.6. Firm undervaluation regressions using Heckman and IV estimation approaches

This table presents summary panel regression results using various model specifications and two estimation approaches for a sample of 2803 firms and 25,571 firm-years. Firm undervaluation (*Uvdum*) is the dependent variable in the second stage of both estimation approaches. All regressors are lagged one year and are defined in Appendix 4.B. For the Heckman two-stage treatment effect estimation approach, the inverse Mills' ratio (gamma) obtained from a Probit model estimated in the first stage is included as a regressor in the second stage estimation. For the two-stage IV approach, *firmage* is chosen as our instrumental variable since *firmage* is highly correlated with *CSRcom* but only influences *Uvdum* through *CSRcom* (i.e., Cov(*firmage*, ε) = 0). Year dummies are included in all specifications. The t-statistics reported in the parentheses are based on robust, firm-clustered standard errors. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Variable /	Heckman two-stage treatment effect				Instrumental variable approach			
Statistic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
CSRcom	0.027***	0.024***	0.021***	0.014***	0.014***	0.019***	0.020***	0.012***
	(3.001)	(6.263)	(2.979)	(9.174)	(4.625)	(12.390)	(2.984)	(5.036)
ComTotl	-0.003***	-0.006***	-0.009***	-0.005***	-0.011***	-0.009***	-0.004**	-0.008***
	(-9.038)	(-3.544)	(-2.646)	(-12.091)	(-8.646)	(-2.623)	(-2.364)	(-5.003)
IndexGIM		-0.019***		-0.016***		-0.007***		-0.014***
		(-5.394)		(-3.034)		(-4.870)		(-21.361)
MP^{HP}	0.007***	0.010***	0.008**	0.010***	0.011***	0.009***	0.011*	0.008***
	(9.014)	(4.230)	(2.317)	(12.261)	(2.875)	(3.979)	(1.842)	(17.031)
InsDbt	0.015***	0.011**	0.018***	0.016***	0.017***	0.015***	0.014**	0.016*
	(6.032)	(2.357)	(4.625)	(9.005)	(2.989)	(3.087)	(2.031)	(1.709)
ComLev		0.021*		0.019***		0.022**		0.015**
		(1.752)		(4.174)		(2.201)		(2.492)
%Director			0.006**	0.004**			0.007***	0.005***
			(1.975)	(2.301)			(15.085)	(6.061)
%Board			0.004***	0.005**			0.008***	0.005***
			(3.071)	(1.990)			(2.950)	(8.724)
Duality			0.016***	0.012***			0.011*	0.016**
			(3.923)	(4.674)			(1.859)	(2.223)
CEOnom			0.001**	0.006			0.002**	0.001*
			(2.481)	(1.131)			(2.465)	(1.711)
CRISIS			-0.021***	-0.012***			-0.030***	-0.022***
			(-3.025)	(-12.073)			(-9.410)	(-5.119)
Family Firm			0.003***	0.004**			0.002***	0.003***
			(4.211)	(2.301)			(4.112)	(6.117)
%Insti			-0.009**	-0.005***			-0.017	-0.008*
			(-2.264)	(-4.141)			(-1.319)	(-1.950)
ResCov			0.004***	0.003***			0.005***	0.007***
			(2.818)	(9.054)			(11.31)	(3.484)
Divers			0.018***	0.014***			0.012**	0.011***
			(10.087)	(2.921)			(2.087)	(3.614)
Assets	0.033***	0.042***	0.023***	0.021***	0.041***	0.032***	0.027***	0.036***
	(11.033)	(2.891)	(3.128)	(3.16)	(7.122)	(2.755)	(21.033)	(3.635)
Debt/Assets	-0.011**	-0.007***	-0.014***	-0.008**	-0.006**	-0.024	-0.009***	-0.012***
	(-2.016)	(-5.235)	(-8.412)	(-2.147)	(-1.990)	(-1.029)	(-7.034)	(-3.989)
R&D/Sales	0.005***	0.003**	0.007*	0.006***	0.007***	0.008**	0.006***	0.009**
	(24.058)	(2.362)	(1.897)	(6.387)	(2.878)	(2.110)	(3.001)	(1.967)
Gamma	-0.012***	-0.014***	-0.013***	-0.017***				
	(-12.934)	(-11.113)	(-10.847)	(-6.021)				
F-F 48 industry	Yes	Yes	Yes	Yes				
Wald χ^2	6938.01	6304.21	5971.78	7204.11				
Adj. R^2					0.071	0.076	0.133	0.140

Table 4.7. Panel regressions with time and industry fixed effects

This table reports panel regression results for the marginal effects of the differences of CSR rankings for a sample of 25,571 firm-year observations for 2803 firms. Dependent dummy variables are: *DΔCSRcom* for changes in the annual CSR-combined scores, *DΔCSRstr* for the changes in the annual combined strengths *CSRstr*, and *DΔCSRcon* for the changes in the annual combined concerns *CSRcon*. The regressions are run separately for positive and negative changes of the CSR used in constructing each dependent variable. All the dependent and independent variables are described in Appendix 4.B. All independent variables are lagged one year. Standard errors are robust to industry clustering based on the Fama-French 48-industry classification scheme. P-values are reported in parentheses. *, **, and *** represent two-tailed significance at the 10%, 5%, and 1% levels, respectively. Obs. is the number of observations. FE refers to fixed effects.

	DΔCSRcom				*DΔCSRstr*				*DΔCSRcon*			
	If Δ*CSRom* > 0		If Δ*CSRcom* < 0		If Δ*CSRstr* > 0		If Δ*CSRstr* < 0		If Δ*CSRcon* > 0		If Δ*CSRcon* < 0	
Ind. variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Uvdum	0.062***	0.085***	-0.095***	-0.183***	0.089***	0.092**	-0.137***	-0.214***	-0.153***	-0.171***	0.091***	0.082***
	(0.001)	(0.008)	(0.002)	(0.005)	(0.001)	(0.031)	(0.002)	(0.000)	(0.000)	(0.001)	(0.002)	(0.008)
ComTotl	-0.063***	-0.074***	0.056***	0.067***	-0.075***	-0.042***	0.047**	0.061***	0.040***	0.048***	-0.058***	-0.036***
	(0.002)	(0.001)	(0.000)	(0.004)	(0.003)	(0.002)	(0.011)	(0.001)	(0.004)	(0.000)	(0.001)	(0.004)
IndexGIM		-0.013***		0.022***		-0.007***		0.019**		0.018***		-0.008***
		(0.002)		(0.006)		(0.005)		(0.023)		(0.000)		(0.003)
MP^{HP}	0.043	0.039*	-0.046	-0.044	0.051	0.042	-0.063	-0.069	-0.071*	-0.083	0.058	0.062
	(0.122)	(0.094)	(0.163)	(0.632)	(0.320)	(0.102)	(0.520)	(0.101)	(0.052)	(0.332)	(0.219)	(0.452)
InsDbt	-0.011*	-0.009	0.021	0.012	-0.013**	-0.015	0.027*	0.024	0.015	0.010	-0.019	-0.024*
	(0.059)	(0.106)	(0.210)	(0.140)	(0.031)	(0.210)	(0.060)	(0.120)	(0.226)	(0.265)	(0.329)	(0.057)
ComLev	-0.015	-0.012	0.025	0.014	-0.017*	-0.021	0.034	0.033	0.022	0.011*	-0.027*	-0.029
	(0.193)	(0.231)	(0.112)	(0.173)	(0.099)	(0.141)	(0.173)	(0.230)	(0.325)	(0.062)	(0. 070)	(0.112)
%Director	0.006*	0.019	-0.017	-0.021	0.001	0.023	-0.020	-0.029	-0.031	-0.016	0.005	0.018
	(0. 084)	(0.302)	(0.119)	(0.160)	(0.110)	(0.132)	(0.163)	(0.108)	(0.423)	(0.177)	(0.330)	(0.194)
%Board	0.019***	0.012***	-0.041***	-0.057***	0.033***	0.024***	-0.049***	-0.077***	-0.011***	-0.017***	0.008***	0.005***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.009)	(0.003)	(0.001)	(0.000)	(0.005)
Duality	0.014	-0.009*	-0.012	0.011	0.076*	0.043	-0.015	-0.037	-0.036	0.029	0.021	-0.026
	(0.231)	(0. 094)	(0.124)	(0.301)	(0.083)	(0.125)	(0.241)	(0.149)	(0.410)	(0.194)	(0.172)	(0.261)
CEOnom	0.027**	0.029***	-0.034***	-0.053**	0.063**	0.051***	-0.088***	0.079**	-0.021***	-0.034***	0.024***	0.037***
	(0.011)	(0.003)	(0.000)	(0.017)	(0.012)	(0.006)	(0.006)	(0.024)	(0.001)	(0.000)	(0.000)	(0.005)
CRISIS	-0.013***		0.016***		-0.051***		0.074***		-0.013***		0.014***	
	(0.000)		(0.001)		(0.000)		(0.000)		(0.003)		(0.007)	
FamilyFirm	0.120		-0.122		0.231		-0.267		-0.192		0.074	
	(0.230)		(0.136)		(0.342)		(0.110)		(0.295)		(0.147)	
%Insti	0.008***	0.009***	-0.018**	-0.021***	0.009	0.011*	-0.024*	-0.016	-0.016***	-0.010***	0.005***	0.007***
	(0.005)	(0.008)	(0.022)	(0.002)	(0.167)	(0.071)	(0.079)	(0.217)	(0.001)	(0.006)	(0.002)	(0.000)

Table 4.7. Cont'd

Variable / Statistic	*DΔCSRcom*				*DΔCSRstr*				*DΔCSRcon*			
	If Δ*CSRcom* > 0		If Δ*CSRcom* < 0		If Δ*CSRstr* > 0		If Δ*CSRstr* < 0		If Δ*CSRcon* > 0		If Δ*CSRcon* < 0	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ResCov		0.006***		-0.009***		0.010***		-0.001**		-0.007***		0.009***
		(0.000)		(0.001)		(0.008)		(0.015)		(0.000)		(0.007)
Divers		0.031***		-0.044***		0.003***		-0.002***		0.094***		-0.057***
		(0.000)		(0.002)		(0.001)		(0.000)		(0.004)		(0.001)
Assets	0.117***		-0.056***		0.101***		-0.053***		0.049***		-0.111***	
	(0.001)		(0.000)		(0.000)		(0.002)		(0.008)		(0.002)	
Debt/ Assets$_{t-1}$	-0.584***		0.613***		-0.187***		0.249***		0.110***		-0.207**	
	(0.001)		(0.002)		(0.000)		(0.001)		(0.003)		(0.020)	
R&D/ Sale $_{t-1}$	0.166***		-0.147***		0.270***		-0.124***		-0.073***		0.086***	
	(0.000)		(0.003)		(0.001)		(0.009)		(0.003)		(0.001)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald χ^2	5225.94	6301.72	6933.41	5817.46	4926.31	5514.87	7106.44	6179.01	4599.51	5231.89	6725.63	6167.05
Adj. R^2	0.294	0.341	0.207	0.392	0.195	0.263	0.312	0.273	0.333	0.202	0.291	0.389
Obs.	1311	1311	1145	1145	1311	1311	1145	1145	1311	1311	1145	1145

Table 4.8. Simultaneous 3SLS estimations for four dependent variables: CSR, undervaluation, executive compensation, and governance

The results reported in this table are for a simultaneous system of four equations estimated using 3SLS for a sample of 2803 firms and 25,571 firm-years. The dependent variables in the system are *CSRcom*, *Uvdum*, *ComTotl* and *IndexGIM*. All variables are defined in Appendix 4.B, and 1-lag of the dependent variable is included as a regressor in each equation. The goodness of fit measure (GOF) is the square of the correlation coefficient between actual and fitted values (Haessel, 1978). All models include year and industry dummy variables (YFE&IFE) where the latter use the Fama-French (1997) 48 industry classifications. The t-statistics reported in the parentheses are based on robust, firm-clustered standard errors. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

	[I]	[II]	[III]	[IV]
Ind. Variable	*CSRcom*	*Uvdum*	*ComTotl*	*IndexGIM*
CSRcom		0.011***	-0.332***	-0.012***
		(3.078)	(-11.751)	(-3.041)
Uvdum	0.011***		-0.021***	-0.023***
	(9.421)		(-3.671)	(-6.854)
ComTotl	-0.015***	-0.012***		-0.037
	(-2.811)	(-4.036)		(-1.204)
IndexGIM	-0.072***	-0.094***	-0.312*	
	(-13.022)	(-3.341)	(-1.793)	
$CSRcom_{t-1}$	0.114**			
	(2.241)			
$Uvdum_{t-1}$		0.172***		
		(6.977)		
$ComTotl_{t-1}$			0.094***	
			(9.847)	
$IndexGIM_{t-1}$				0.226**
				(2.329)
MP^{HP}	0.087	0.053***	-0.187*	
	(0.987)	(21.347)	(-1.688)	
InsDbt	-0.031	0.069		-0.122
	(-1.147)	(1.253)		(-0.599)
Comlev	-0.096*	0.075		-0.023
	(-1.715)	(1.084)		(-0.415)
%Director	0.053**	0.010**		
	(2.340)	(1.978)		
%Board	0.006***	0.109***		0.011***
	(7.022)	(4.001)		(8.087)
Duality	0.275***	0.007***	0.657***	
	(5.021)	(2.890)	(31.747)	
CEOnom	0.010***	0.002*		
	(2.904)	(1.794)		
CRISIS	-0.071***	-0.173		
	(-23.063)	(-0.912)		
FamilyFirm		0.330***		
		(3.942)		
%Insti	0.203***	-0.424	-0.318***	
	(7.325)	(-0.617)	(-7.034)	
BlockH			0.089***	0.612***
			(3.069)	(23.044)
ResCov	0.012***	0.095***		
	(7.087)	(7.493)		
Divers	0.132***	0.208***		

	(6.098)	(10.110)		
Assets	0.602***	0.057***	0.135***	
	(3.367)	(2.990)	(3.684)	
Debt/Assets	-0.490***	-0.709***		
	(-2.858)	(-6.112)		
R&D/Sales	0.035***	0.067**		
	(3.392)	(1.991)		
StateLaw	0.002***			
	(2.665)			
EntIndex	0.011**			
	(2.112)			
PReturn			0.124**	-0.401**
			(2.017)	(-1.986)
Turnover		0.012***		
		(12.682)		
ComCash				0.028***
				(4.396)
Spreads				0.065***
				(2.981)
VolatR		0.105**	0.037	
		(1.971)	(0.612)	
CBO				0.033***
				(3.250)
Constant	0.012*	-0.384	0.772	-0.065
	(1.892)	(-0.3122)	(1.093)	(-0.455)
(YFE&IFE)	Yes	Yes	Yes	Yes
GOF	0.895	0.930	0.492	0.675
Pseudo R^2	0.189	0.171	0.123	0.210

Table 4.9. Summary results for representative level-level and change-change regressions between the controls as the dependent variables and the other variables

This table presents summary results for representative level-level and change-change OLS regressions between four control variables and the other variables for a sample that includes 2803 firms and 25,571 firm-year observations. The four representative control variables are inside debt (*InsDbt*), board independence (*%Board*), institutional ownership (*%Insti*), and log Assets (*Assets*). The other variables include the dependent variables in the simultaneous system of equations: CSR composite changes (*CSRcom*), undervaluation (*Uvdum*), total compensation (*ComTotl*) and shareholder rights (*IndexGIM*). They also include inside compensation leverage (*ComLev*), CEO is chair or nomination committee member (*CEOnom*), debt/assets ratio (*Debt/Assets*), R&D expenditure ratio (*R&D/Sales*), and alternative undervaluation estimate (MP^{HP}). In the level-level regression results reported in Panel A, the dependent variables are their levels for period *t* and the independent variables are their levels for period *t*-1. In the change-change regression results reported in Panel B, the dependent variables are their changes from period *t*-1 to *t* and the independent variables are their changes from period *t*-2 to *t*-1. The *t*-values reported in the parentheses are based on robust standard errors. All specifications include year dummies. ***, **, and * represents significance at the 1%, 5%, and 10% levels, respectively.

Variable / Statistic	Panel A: Level at *t* against level at *t*-1				Panel B: Change to *t* against change to *t*-1			
	InsDbt	*%Board*	*%Insti*	*Assets*	*ΔInsDbt*	*ΔBoard*	*Δ%Insti*	*ΔAssets*
CSRcom	-0.012***	0.023***	0.011**	0.401	-0.036***	0.027**	0.018***	0.421
	(-46.023)	(3.009)	(1.745)	(1.024)	(-12.951)	(2.123)	(5.038)	(0.589)
Uvdum	0.009***	0.012**	-0.028***	0.012**	0.017***	0.016***	-0.003**	0.018**
	(8.022)	(1.978)	(-2.621)	(1.982)	(7.074)	(4.105)	(-1.995)	(2.091)
ComTot	0.001**	-0.007***	-0.014**	0.007***	0.008**	-0.021***	-0.055**	0.010***
	(2.201)	(-3.360)	(-1.990)	(5.060)	(2.391)	(-3.097)	(-2.298)	(8.037)
IndexGIM	-0.009***	0.025*	0.025	0.010	-0.049**	0.015***	0.014**	0.033
	(-2.964)	(1.653)	(0.850)	(0.235)	(-2.012)	(6.029)	(2.334)	(0.423)
MP^{HP}	0.022***	-0.017**	0.009***	0.031**	0.054***	-0.031***	0.019*	0.042**
	(11.068)	(-1.989)	(2.712)	(2.134)	(2.861)	(-12.317)	(1.701)	(2.141)
InsDbt		0.009**	-0.014**	0.025		0.011***	-0.008***	0.016**
		(1.978)	(-1.959)	(0.279)		(4.470)	(-8.902)	(2.330)
ComLev	0.164***			0.025	0.211**		-0.008***	
	(1.036)			(0.279)	(2.455)		(-8.902)	
%Director	0.011***	0.006***	0.003*	0.012***	0.015*	0.007	0.014***	0.009**
	(2.933)	(9.041)	(1.701)	(3.009)	(1.691)	(0.219)	(7.964)	(2.350)
%Board	0.014***		0.011**	0.018*	0.006**		0.010**	0.003***
	(4.039)		(2.455)	(1.721)	(1.695)		(2.063)	(3.268)
Duality	0.024**	0.024	0.081	-0.234	0.065	0.003***	0.411	-0.149
	(1.978)	(0.941)	(0.632)	(-1.208)	(0.393)	(4.395)	(0.628)	(-1.012)
CEOnom		0.024	0.081	-0.234	0.065	0.003***	0.411	-0.149
		(0.941)	(0.632)	(-1.208)	(0.393)	(4.395)	(0.628)	(-1.012)
FamilyFirm	0.006	0.001	0.004	0.002*	0.001	0.003	0.001	0.002
	(1.025)	(0.693)	(0.671)	(1.162)	(1.011)	(0.903)	(0.787)	(0.903)
%Insti	0.029***	0.071***		0.004**	0.003***	0.019*		0.027*
	(3.255)	(3.006)		(2.360)	(11.290)	(1.758)		(1.747)
ResCov	0.011***	0.005**	0.003*	0.032	0.028***	0.007*	0.017	0.009*
	(4.258)	(2.239)	(1.681)	(1.350)	(6.361)	(1.601)	(1.012)	(1.922)
Divers	0.007***	0.006*	0.002**	0.011***	0.002**	0.001***	0.002*	0.004**
	(8.122)	(1.693)	(2.362)	(6.451)	(2.440)	(3.009)	(1.712)	(2.066)
Assets	0.006***	0.009***	0.006		0.018***	0.017**	0.030	
	(4.208)	(11.942)	(0.358)		(21.046)	(2.003)	(1.267)	
Debt/Assets	-0.047*	-0.103**	-0.083	0.179	-0.204**	-0.101***	-0.830	0.367
	(-1.710)	(-2.413)	(-0.870)	(0.506)	(-1.993)	(-9.743)	(-0.198)	(0.895)
R&D/Sales	0.102	0.197	0.142	0.026	0.076	0.322	0.301	0.059
	(0.429)	(1.204)	(0.341)	(0.947)	(1.106)	(0.228)	(0.648)	(1.360)
R^2	0.294	0.553	0.742	0.470	0.268	0.612	0.331	0.097

Table 4.10. The System-GMM estimates

This table reports the summary statistics from the System-GMM estimations of the following model for a sample of 2803 firms and 25,571 firm-year observations between 1992 and 2013: $Y_{i,t} = \alpha + \beta Y^*_{i,t-1} + \gamma Z_{i,t-1} + D_{i,t} + \eta_{i,t} + \epsilon_{i,t}$; t = 1994, …, 2013, where $Y_{i,t}$ is one of the four dependent variables (i.e., *CSRcom*, *Uvdum*, *ComTotl*, and *IndexGIM*); $Y^*_{i,t-1}$ is a vector of one or more lagged dependent variables other than Y_{t-1} included in the equation as regressors; $Z_{i,t-1}$ includes the independent variables; $D_{i,t}$ includes year dummies. The firm characteristics are obtained from Compustat and CRSP. All variables are defined in Appendix 4.B. The board structure variables are from RiskMetrics. T-statistics are reported in the parentheses. All specifications include two lags of the dependent variable. *AR*(1) and *AR*(2) are estimations for the first- and second-order serial correlation, respectively, of the first-differenced residuals, under the null hypothesis of no serial correlation. The over-identification Hansen test is under the null hypothesis of valid instruments, with p-values reported. The exogeneity tests of the Difference-in-Hansen is under the null hypothesis of exogenous instruments for the equations in levels, with p-values reported. The GMM estimation uses $\Delta familyfirm_{i-1}$, $\Delta firmage_{i,t-1}$, $\Delta Tenure_{i,t-1}$, and $\Delta TobinQ_{i,t-1}$ as instruments for level equations [I] to [IV], respectively, and $familyfirm_{i-1}, firmage_{i,t-1}, Tenure_{i,t-1}$ and $TobinQ_{i,t-1}$ as instruments for differenced equations [I] to [IV], respectively. All t-statistics are based on robust, firm-clustered standard errors. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Independent Variable	*CSRcom*	*Uvdum*	*ComTotl*	*IndexGIM*
CSRcom$_{t-1}$		0.001***	-0.642***	-0.132***
		(6.589)	(-4.054)	(-7.062)
Uvdum $_{t-1}$	0.009***		-0.321*	-0.024***
	(22.251)		(-1.73)	(-4.730)
ComTotl $_{t-1}$	-0.018***	-0.002***		-0.009***
	(-6.084)	(-5.622)		(-3.296)
IndexGIM $_{t-1}$	-0.012***	-0.007***	-0.808**	
	(-2.901)	(-7.559)	(-2.523)	
MP^{HP} $_{t-1}$	0.006	0.007***	-0.216**	0.022**
	(1.297)	(13.028)	(-1.994)	(2.061)
InsDbt $_{t-1}$	-0.005***	0.0002***	0.008***	-0.003***
	(-26.110)	(5.065)	(6.399)	(-6.121)
Comlev $_{t-1}$	-0.007***	0.0003***	0.011**	-0.004**
	(-3.857)	(12.032)	(2.239)	(-1.969)
%Director $_{t-1}$	0.003***	0.0002**	-0.053***	-0.007*
	(9.748)	(2.309)	(-3.565)	(-1.660)
%Board $_{t-1}$	0.005***	0.0004**	-0.163*	0.027
	(6.030)	(2.003)	(-1.749)	(0.841)
Duality $_{t-1}$	0.003***	0.022***	0.098*	0.002**
	(13.001)	(2.827)	(1.821)	(2.341)
CEOnom $_{t-1}$	0.008**	0.011***	-0.032	0.004
	(1.987)	(6.233)	(-1.512)	(0.291)
CRISIS $_{t-1}$	-0.009***	-0.023*	0.108	-0.091
	(-13.004)	(-1.806)	(0.459)	(-1.031)
FamilyFirm $_{t-1}$		0.009***	0.965	0.012
		(3.698)	(1.127)	(0.621)
%Insti $_{t-1}$	0.032***	-0.034***	-0.129***	0.028
	(8.188)	(-2.706)	(-3.801)	(1.325)
ResCov $_{t-1}$	0.056***	0.502***	-0.178*	-0.001**
	(14.021)	(11.094)	(-1.801)	(-2.209)
Divers $_{t-1}$	0.055**	0.801**	-0.452	0.012
	(1.969)	(4.117)	(-1.232)	(0.548)
Assets $_{t-1}$	0.011*	0.068***	0.207***	0.005
	(1.912)	(9.661)	(11.110)	(1.032)
(*Debt/Assets*) $_{t-1}$	-0.007***	-0.011**	0.063	-0.008
	(-3.461)	(-5.033)	(0.958)	(-0.921)
(*R&D/Sales*) $_{t-1}$	0.008***	0.039***	-0.194	0.023
	(3.264)	(3.560)	(-0.369)	(0.823)
AR(1)/*p*-value	0.002	0.000	0.003	0.000
AR(2)/*p*-value	0.231	0.190	0.337	0.412
Hansen test	0.310	0.192	0.225	0.361
Difference-in-Hansen	0.129	0.210	0.431	0.294

APPENDICES

Appendix 2.A. Definition of the Variables

This appendix presents variable definitions used in this paper, where *t* represents the announcement year. The inside debt and compensation leverage metrics are similar to those used by Eisdorfer, Giaccotto and White (2015), and CEO and director compensation variables and firm characteristics variables are similar to those used by Brick, Palmon and Wald (2006), Akbulut (2013) and Blau, Fuller and Wade (2014). Descriptions are arranged alphabetically under the following categories: Price Effects; Compensation Variables; Firm/Issuer Characteristics; CEO and Firm Governance Characteristics; and Issue Characteristics.

Moniker	Name and Definition
	Price Effects (computations are more fully discussed in Appendix 2.B)
Alpha	Alpha is the intercept from an estimation of either a four- or five-factor model using the observations for each of the three post-announcement windows. It provides an estimate of the average daily abnormal return over the window.
BHAR	The buy-and-hold abnormal return is equal to the compounded return relative for the firm of interest minus the compounded return relative for the benchmark firms where a return relative is equal to one plus the decimal return.
CAR	The cumulative abnormal returns for a three-day announcement window using a four- or five-factor model and a two-step estimation procedure. In the first step, the parameters of the model are estimated over the window [-200, -41] where 0 is the announcement day. In the second step, the AR for each day in the announcement window [-1, 1] is computed using the parameter estimates from the first step and the firm and factor realizations for that day in window [-1, 1].
P prefix	PAlpha, PBHAR and PCAR refer to their pure values in the sense that any equity issue effect has been accounted for.
	Compensation Variables
CEO CComp	CEO Cash Compensation. CEO salary plus bonus as described by Execucomp (in dollars).
CEO TComp	CEO Total Compensation. The sum of salary, bonus, total value of stock options granted using a Black-Scholes model, total value of restricted stock granted, long-term incentive payouts, and all other payments reported in Execucomp (in dollars).
CompLev	Compensation Leverage. Our calculation method follows that in Eisdorfer, Giaccotto and White (2015, p. 265). We use the following equation for the CEO (and separately for typically the five top executives) in a firm: $CompsLev = \sum_{i=1}^{I} PVB_i / \{\sum_{i=1}^{I} (Stocks_i + Options_i + PVB_i)\}$
ΔCompLev	Pre-to-post change in compensation leverage, which is defined as $\Delta CompsLev = \sum_{i=1}^{I} PVB_{post,i} / \{\sum_{i=1}^{I} (Stocks_{post,i} + Options_{post,i} + PVB_{post,i})\} - \sum_{i=1}^{I} PVB_{pre,i} / \{\sum_{i=1}^{I} (Stocks_{pre,i} + Options_{pre,i} + PVB_{pre,i})\}$
CompLev-Rel	Relative differences of compensation leverage for the CEO (and separately for typically the five top executives) between the acquirer and the target.
Dir CComp	Director Cash Compensation. The annual fee paid for each outside director plus per meeting fee times the number of director meetings (in dollars).
Dir TComp	Director Total Compensation. Base cash compensation plus the value of stock and options granted for external directors. Because Execucomp does not supply a value for the directors' options and the proxy statements suggest that these options are often similar, we follow Brick, Palmon, and Wald (2006) and set each per-option value of director's options equal to the per-option value of the CEO's options. Results (in dollars) are similar when director options are valued as Core, Holthausen and Larcker (1999) value CEO options; i.e., 0.25 times the exercise price.
DQ(x)	Dummy variable indicating whether the value of the interacting variable belongs to quartile x, where x = I, II, III, or IV.
InsDebt	Inside Debt. This variable is obtained as the present value of the pensions (PVB) for the CEO and for typically the five top executives divided by the book value of the firm's total assets.

ΔInsDebt1	Pre-to-post change in inside debt, which is defined as ΔInsDebt1 = [PVB_{post} /TA_{post}] - [PVB_{pre} /TA_{pre}].
ΔInsDebt2	Pre-to-post change in inside debt, which is defined as ΔInsDebt2 = [PVB_{post} /TA_{pre}] - [PVB_{pre} /TA_{pre}] = [PVB_{post} - PVB_{pre}] / TA_{pre}.
ΔInsDebt3	Pre-to-post change in inside debt, which is defined as ΔInsDebt3 = [PVB_{post} /(TA_{post} − $TA_{acquired}$)] - [PVB_{pre} /TA_{pre}].
InsDebt-Rel	Relative inside debt differences for the CEO (and separately for typically the five top executives) between acquirer and target.
PVB	Present value of pension (PVB). Our calculation method follows that in Eisdorfer, Giaccotto and White (2015, p. 262) for each executive in a firm: $PVB = \sum_{n=\max(0,R-A)}^{\tau-A} \pi(n) \frac{X}{(1+d)^n}$ where X is the amount of the annual pension for the executive, A is the current age of the executive, R is the minimum retirement age to achieve full benefits, τ is the final year that the executive draws a pension, and $\pi(n)$ is the probability that the executive will continue to draw retirement benefits in future year n. The mortality probabilities for an executive of age A are based on the projected life expectancy from the Period Life Table that is available from the U.S. Social Security Administration. Since year 119 is the last year for which a period life expectancy at a given age is reported in this table, τ is set to 120 (also assumed in Sundaram and Yermack, 2007). The annualized Moody's Seasoned AAA-rated bond yield for a given year obtained from the Federal Reserve Board's H.15 release is used as the rate of discount, d. This is similar to the rate used by firms that voluntarily disclosed PVB values prior to 2006, which was the yield on either 10-year Treasuries or AAA-rated corporates. We obtain the PVB for all executives of a firm by adding up the PVBs over the executives in a firm.
Firm/Issuer Characteristics	
Adv/Assets	Advertising /Assets. Ratio of advertising expenditures to total assets. Zeros for missing values.
Ann Return	Announcement returns controlled for the equity issue effect. Computed as the cumulative market-adjusted returns over the 3-day window [-1, +1] around the M&A announcement, minus equity issue effect (IssueCAR) if the method of payment is stock.
AT(H)	Dummy variable indicating whether an observation belongs to the top 33% of the distribution of managerial conservatism for the year prior to an acquisition for the entire sample.
AT(L)	Dummy variable indicating whether an observation belongs to the bottom 33% of the distribution of managerial conservatism for the year prior to an acquisition for the entire sample.
BM Ratio	Book value of equity divided by market value of equity before the M&A announcement.
Cap	Market Capitalization (in 000s of dollars). Number of shares outstanding times the stock price.
Cashhold	Cash plus cash equivalents divided by the book value of total assets before the M&A announcement.
CF/EQ	Income before extraordinary items + depreciation - dividends on common and preferred stock / market value of equity before the M&A announcement.
CashFlowRisk	Cash Flow Risk. The standard deviation of the first differences in ROA for the prior 8 years.
Cash M&A	Dummy variable indicating whether the method of payment for an M&A is 100% cash.
Debt/Assets	Debt /Assets. The ratio of total debt to total assets.
Debt/Assets-Rel	Relative difference of Debt/Asset ratio between the acquirer and the target.
DebtP	The ratio of debt used to pay for the transaction. The net increase in firm debt 3 months after the announcement divided by the transaction value.
Income ratio	Operating income before depreciation divided by the book value of total assets before the M&A announcement.
Ins Ownership	Institutional Ownership. Fraction of shares outstanding owned by institutional investors.
IssueCAR	Equity issue effect of stock-financed acquirer (see Appendix 2.B for more detailed procedure of the estimation).
Inv/Assets	Investments /Assets. The ratio of capital expenditures to total assets.
LGG	Low GDP Growth dummy variable, which is based on the years when the normalized GDP growth rate based on constant 2015 US dollars obtained from World Bank is below the bottom 20th percentile of the distribution of normalized GDP growth for 648 country-year observations (Erel, Jiang & Minton, 2017). Because distributions of GDP growth are country specific, the

	GDP growth is normalized by subtracting the mean and dividing by the standard deviation of each country to identify abnormal levels of GDP growth rates. The mean and standard deviation used to normalize GDP growth for a specific country and year are estimated from a time-series of GDP growth rates over a prior 20-year period ending two years prior to the event (i.e. from t-23 to year t-3).
Mixed M&A	Dummy variable indicating whether the method of payment for an M&A is cash and stock.
MP-HP	Mispricing measure. RKRV valuation model using three-step estimation approach of Hoberg and Phillips (2010) that uses an unbalanced, rolling ten-year panel with firm fixed effects for all the firms in each industrial sector.
MAQ	Multiple acquirer, an acquirer that made more than one successful acquisition during the previous two years (Ismail and Abdallah, 2013).
Price	Share price. Measured in dollars.
Public Target	Dummy variable indicating whether the target is traded on the stock market.
PUI	Policy uncertainty index (PUI) obtained from the website of Baker, Bloom, and Davis. This index has four components (i) a comprehensive measure of uncertainty based on the number of articles about economic policy uncertainty in ten large newspapers; (ii) taxation uncertainty based on data from the Congressional Budget Office (CBO) on expiring tax provisions, (iii) taxation uncertainty, and (iv) expenditure uncertainty, where the latter two components are based on the dispersions in professional analyst forecasts. Baker et al. (2016) report that the PUI captures periods of heightened policy uncertainty around such events as elections, policy debates, and government policy changes. PUI is used in various studies (e.g., Pastor and Veronesi, 2013; Gulen and Ion, 2016; and Francis et al., 2014).
Q	Q-ratio. The market value of common stock plus the book value of total debt divided by the book value of total assets in the year prior to the M&A announcement.
R&D/Assets	R&D/Assets. The ratio of the firm's research and development expenditures to total assets. Missing values are replaced by zeros.
Return	Stock Return. The holding period stock return for the past three years, equal to the ratio of the price at the end of year *t* - 4 to the end of year *t* - 1, adjusted for dividends and splits, minus 1.
ROA	Return on Assets. The earnings before interest, taxes, depreciation, and amortization (EBITDA), divided by the firm's total assets.
Sales ($)	Sales. Logarithm of the dollar value of sales in the year prior to the M&A announcement.
SAQ	Single acquirer, which is defined as an acquirer that made no successful acquisition during the previous two year (Ismail and Abdallah, 2013).
Stock M&A	Dummy variable indicating whether the method of payment for an M&A is 100% stock.
TA	Total assets.
Turnover	Turnover. The annual split-adjusted trading volume divided by the average number of split-adjusted shares outstanding over the year before the M&A announcement date.
TranValue	Transaction Value. In millions of dollars.
TranSize	Transaction size. Transaction value scaled by the acquirer's market capitalization.
Volatility	Volatility. The Black–Scholes volatility measure given by Execucomp.
Withdrawn	Dummy variable indicating whether an M&A was withdrawn.
	CEO and Firm Governance Characteristics
CEO Age	The natural logarithm of the age of current CEO.
CEO Chair	CEO Is Board Chair. A dummy variable that equals one if the CEO is also the chair of the Board and zero otherwise.
CEO Gender	A dummy variable that equals one if the CEO is female. The gender results reflect a relatively small number of observations.
CEO Tenure	The number of years that the CEO has served as CEO at the firm.
ExpTenure	CEO expected tenure is based on the assumption that CEO decision horizon can be adequately approximated by the CEO's expected tenure with the firm (Jensen and Meckling, 1979) and that CEOs estimate their tenure by comparing themselves with the length of current tenure and age of other CEOs in their industry (Antia, Pantzalis and Park, 2010). Given by: ExpTenure = TenuInd – Tenu + AgeInd – Age, where tenu is the number of years the CEO has been in that position, Age is the age of that CEO for the firm in year *t*, and TenuInd and AgeInd are the industry median of tenure and age based on the Fama-French 12 industry classification scheme. A positive

	(negative) value suggests that the CEO's expected tenure is longer (shorter) than the industry median.
%Equity	% of Equity Owned by the CEO. The percentage of the firm's equity owned by the CEO.
Hubris	Dummy variable equal to 1 if the CEO holds stock options that are more than 67% in the money, 0 otherwise (Malmendier and Tate, 2008; Campbell et al., 2011).
%Internal	% of Internal Directors. The percentage of board members that are managers of the firm, which is used to check for robustness in a sub-sample, if applicable.
Internal CEO	A dummy variable that equals one if the CEO joined the company more than a year before taking the position of CEO.
MGR Rep	Republican party orientation of managers. As in Hutton, Jiang and Kumar (2014), we focus on the CEO and on typically the five top executives according to their reported annual Execucomp salary, which provides the title and full name of top managers for every fiscal year and allows for a determination of their individual political contributions on the FEC file. A manager-specific Republican dummy variable (MGR RepCycle) takes the value of 1 if all political contributions are directed towards the Republican Party in a given election cycle, 0 otherwise. A manager-specific political orientation index MGR Rep is equal to the mean value of MGR RepCycle across all election cycles that the manager contributes or zero if the manager never contributes (Hong and Kostovetsky, 2012). MGR Rec represents the percentage of election cycles a manager actively and strongly financially supports the Republican party.
Issue Characteristics	
Combined	Dummy variable equal to 1 if the equity offer includes secondary shares (identified by Thomson Financial SDC), 0 otherwise.
Diversific	Dummy variable equal to 1 if the deal is cross-industry, 0 for same industry. Industries are defined using Fama-French 48 industries classification.
Hostile	Dummy variable equal to 1 for a deal labeled as "hostile" or "unsolicited" (identified by Thomson Financial SDC), 0 otherwise.
Multibid	Dummy variable equal to 1 if it is a deal involving multiple bidders (identified by Thomson Financial SDC), 0 otherwise.
Pure Primary	Dummy variable equal to 1 if the equity offer consists of only newly issued shares (identified by Thomson Financial SDC), 0 otherwise.
Tender	Dummy variable equal to 1 if it is a tender offer (identified by Thomson Financial SDC), 0 otherwise.

Appendix 2.B. Methods used to estimate M&A price effects on acquirers and to control for the equity issue effect when the stock method of payment is used

B.1 Adjusting for factor-model equity price effects for the announcement window for acquirers using the stock method of payment

Our method is similar to Golubov, Petmezas and Travlos (2016) with the exception that they use the single-factor model while we use multi-factor models.

B.1.1 Not accounting for equity issue effects

The CAR (Cumulative Abnormal Returns) for the [-1, +1] window are obtained for a sample of 7372 SEO announcements between 1992 and 2014 which were obtained from the SDC. In the first step, we estimate the coefficients for each of two factor models over the window [-200, -41] relative to the day of the first bid announcement (day 0). The four-factor model of Carhart (1997) and the five-factor model of Fama and French (2015) for acquirer *j* are given by:

$$r_{j,t} - r_{f,t} = \alpha_0 + \beta_{1j}\left(r_{M,t} - r_{f,t}\right) + \beta_{2j}SMB_{\mathrm{t}} + \beta_{3j}HML_{\mathrm{t}} + \beta_{4j}WML_t + \varepsilon_{j,\mathrm{t}} \quad \text{(B.1)}$$

$$r_{j,t} - r_{f,t} = \theta_0 + \gamma_{1j}\left(r_{M,t} - r_{f,t}\right) + \gamma_{2j}SMB_{\mathrm{t}} + \gamma_{3j}HML_{\mathrm{t}} + \gamma_{4j}RMW_t + \gamma_{5j}CMA_t + \epsilon_{j,\mathrm{t}} \quad \text{(B.2)}$$

In these equations, $r_{j,t}$ is the return of acquirer *j* on day *t*; $r_{f,t}$ is the return on the risk-free asset on day *t*; $r_{M,\mathrm{t}}$ is the return of the market on day *t*; SMB_{t}, HML_{t} and WML_{t} are the size, book-to-market and momentum factor returns on day *t*; RMW_t is the difference in returns between diversified portfolios of stocks with robust and weak profitability; CMA_t is the difference in returns between diversified portfolios of stocks with low (conservative) and high (aggressive) investments; and $\varepsilon_{j,\mathrm{t}}$ and $\epsilon_{j,\mathrm{t}}$ are the error terms.

In the second step, we calculate the abnormal return (AR) for each day in the announcement window [-1, 1] for each acquirer *j*. To illustrate for day $\tau = -1$ (i.e., the day immediately before the announcement day) and the five-factor model (B.2), this is obtained as follows for each acquirer *j*:

$$AR_{j,t} = \left(r_{j,\tau} - r_{f,\tau}\right) - \left[\hat{\gamma}_{1i}\left(r_{M,\tau} - r_{f,\tau}\right) + \hat{\gamma}_{2j}SMB_\tau + \hat{\gamma}_{3j}HML_\tau + \hat{\gamma}_{4j}RMW_\tau + \hat{\gamma}_{5j}CMA_\tau\right] \quad \text{(B.3)}$$

In eq. (B.3), the five $\hat{\gamma}$ are the estimates from equation (B.2) obtained in the previous step, and $r_{j,\tau}$, $r_{f,\tau}$, $r_{M,\tau}$, SMB_τ, HML_τ, RMW_τ and CMA_τ are the returns for these variables for day $\tau = -1$ (i.e., the day immediately before the announcement day). A similar procedure is used to compute the AR for each acquirer *j* for $\tau = 0$ and for $\tau = +1$. By cumulating the AR over the three days in the announcement window of [-1, 1] for each acquirer *j*, we obtain its $CAR_{j,[-1,1]}$.

B.1.2 Removal of the equity issue effects

We use the two methods used by Golubov, Petmezas and Travlos (2016) to estimate the required adjustment for the equity issue effect for each acquirer *j* only for acquirers using the stock method of payment. This is designed to isolate the price effects of the investment (M&A) decision when it is combined with the implicit financing decision when the method of payment is stock. We refer to the isolated price effects of the investment decision as being pure indicated by adding the suffix *P* to our labels for the price effect measures.

The first method is a linear prediction method where we predict the equity issue effect for each acquirer *j* based on its CAR for window [-1, 1] as if it had undertaken an SEO. To do so, we estimate the CAR for each SEO *s* in a sample of SEOs using the procedure detailed for acquirers in section B.1.1. We then run the following cross-sectional regression of the CARs for the announcement window [-1, 1] for the sample of SEOs:

$$CAR_s = X_s\delta + \vartheta \tag{B.4}$$

where X_s is a matrix of issue and pre-announcement issuer characteristics used by Golubov, Petmezas and Travlos (2016); specifically TranSize, TranValue, BM ratio, Cap, Cashhold, CF/EQ, Debt-to-Assets, Income Ratio Return, and Volatility; δ is a vector of parameters; and ϑ is a vector of error terms.

The equity price effect for M&A acquirer *j* is then obtained using the realizations for the issue and issuer characteristics of this acquirer and the estimated δ coefficients from eq. (B.4). We use PCAR to represent the pure CAR for each acquirer after the removal of the equity issue effect for the stock method of payment. It is obtained by adding the CARs obtained in sections B.1.1 and B.1.2.

Unlike the first method, the second method for removing the equity issue effect associated with each M&A acquirer is obtained for each M&A acquirer *j* using m-nearest-neighbor propensity score matching where the propensity scores are obtained using a Probit regression where the dependent variable is one for an SEO and zero for an M&A using stock as the method of payment.[109] To ensure that the findings are robust to the choice of *m* we use values of *m* of 1, 20 and 40. Specific details on the results of the propensity matching are presented in Online Table O.1 and O.2 for the five- and four-factor models. The results reported in the paper are based on an *m* of 20 matches. [110] Based on the results summarized in Table B.1, both the mean (median) CAR for our SEO sample of -2.97% (-3.19%) for the five-factor model and -3.03% (-3.22%) for the four-factor model are quite similar to the -3.16% (-3.05%) found by Golubov, Petmezas and Travlos (2016) for a smaller sample of 3212 SEOs over the 1985-2009 period.

[109] See Li and Zhao (2006) for the use of propensity score matching to examine SEO performance.
[110] Alderson and Betker (2006) conclude that it is very important to match each sample firm to a control group rather than a single control firm that shares similar pre-event characteristics.

We then estimate the CAR for window [-1, 1] for each SEO *s* in the SEO sample matched with acquirer *j* using the procedure detailed for acquirers in section B.1.1. The average of these CARs is used as the estimate of the equity issue price effect that needs to be added to CAR for acquirer *j* to obtain its PCAR. In the tables, we report the cross-sectional mean PCAR for various categories of acquirers.

B.2 Determination of factor-model performance for acquirers for three post-announcement windows

We use an approach for measuring performance that is commonly used in tests of fund performance. We evaluate such performance for post-announcement windows of [2, 64], [2, 124] and [2, 250] days, which are approximate windows of 3, 6 and 12 months of trading days. We measure the performance of portfolios formed at the end of each announcement month that have a minimum of five such events as in Mitchell and Stafford (2000) and are held unchanged until the final relative day specified in each window. This involves the estimation of equations (B.1) and (B.2) for each acquirer *j* and each of the 20 SEOs that have been matched to acquirer *j* that are in portfolio *p*. The intercept or alpha (*Alpha*) from each of these estimations measures the average performance of each firm over an estimation window. We obtain the pure alpha (*PAlpha*) for each portfolio *p* as the average *Alpha* for the acquirers in that portfolio plus the average of all the *Alphas* for all the SEOs in the matched samples for all the acquirers in portfolio *p*. In the tables, we report the cross-sectional mean *PAlpha* for various categories of acquirers.

B.3 Determination of BHAR and PBHAR performance for acquirers for the pre- and post-announcement windows

As an extension to Golubov, Petmezas and Travlos (2016) and as a further test of robustness, we compute pure Buy-and-Hold Abnormal Returns (*PBHAR*) for each acquirer *j* for each of the four windows. This computation is slightly more complicated because each *BHAR* and any adjustment for an equity issue effect involve the differences in two sets of compounded return relatives (i.e., one plus the total return).

To get the BHAR for the M&A acquirers regardless of their method of payment, we first match each M&A acquirer *j* with a sample of nonacquirers *k* (*k* = 1, …, *K*) using propensity score matching. For consistency, we use the same covariates that we used to determine the equity issue effect to obtain the PCAR and the same matching K of 20. We then calculate the BHAR for each acquirer *j* in portfolio *p* formed in calendar time as previous discussed for each window. To illustrate using the [-1, 1] window, this is given by:

$$BHAR_{j,[-1,1]} = \prod_{\tau=-1}^{1} (1 + R_{j,\tau}) + \frac{1}{K}\sum_{k=1}^{K}\left(\prod_{\tau=-1}^{1} (1 + R_{k,\tau})\right) \quad \text{(B.5)}$$

Where j is an index for the acquirer, k is an index for each non-acquirer in the sample matched to M&A acquirer j, τ is an index for time relative to the M&A announcement day 0, K is the number of matches taken for each acquirer j, R is a *total* daily return, and 1+R is a total daily return relative.

To get the equity price effect required to adjust the BHAR that is required for only the M&A acquirers using the stock method of payment, we first match each M&A acquirer j with a sample of nonSEO issuers q (q = 1, …, Q) using the propensity score matching procedure described earlier. The equity price effect adjustment for each acquirer j in portfolio p for each window is found as the difference between two sample averages where each sample has been propensity score matched to each acquirer j using the same covariates. To illustrate using the [-1, 1] window, this is given by:

$$AdjBHAR_{j,[-1,1]} = \frac{1}{S}\sum_{s=1}^{S}\left(\prod_{\tau=-1}^{1}(1+R_{s,\tau})\right) + \frac{1}{Q}\sum_{q=1}^{Q}\left(\prod_{\tau=-1}^{1}(1+R_{q,\tau})\right) \quad \text{(B.6)}$$

The pure BHAR or PBHAR for each portfolio p is equal to the sum of the mean of the BHAR for the acquirers included in portfolio p obtained using eq. (B.5) and the mean of the *AdjBHAR* for the acquirers in portfolio p obtained using equation (B.6). In the tables, we report the cross-sectional mean *PBHAR* for the various categories of acquirers.

Table B.1. CAR[-1,1] for the SEO sample

This table reports the CAR in % over the three-day announcement window [-1, 1] for a sample of 7372 SEO announcements between 1992 and 2014 which is drawn from the SDC. The abnormal return (AR) for each day in the [-1, 1] window for each SEO is computed using the parameters of both the Carhart (1997) four-factor model and the Fama-French (2015) five-factor model using daily returns over the window [-200, -41] and the returns for the issuer and each model's factors for each day in the [-1, 1] window. The cross-sectional mean and median three-day CAR are tested for significance using t- and Wilcoxon tests, respectively, whose p-values are reported in the last two columns of the table.

Model	Mean	SD	Min	25%	Median	75%	Max	Wilcoxon	T-test
5-factor Fama-French	-2.97	10.46	-25.13	-6.43	-3.19	-0.15	22.14	0.00	0.12
4-factor Carhart	-3.03	9.17	-24.97	-6.38	-3.22	-0.15	21.98	0.01	0.03
Wilcoxon or t-test	0.00				0.00				

Appendix 3.A. Definition of the Variables

This appendix defines the variables used in this paper, generally after presenting the equation to which they apply. RKRV (2005) refers to Rhodes-Kropf, Robinson and Viswanathan (2005).

Symbol	Name	Definition
Age	Age	Number of days since an insider first reported for any firm in a quarter.
AIS	Open market sale	The abnormal number of shares sold/bought on the open market or option exercises during a quarter expressed as a fraction of that quarter's trading volume.
AIB	Open market purchase	
AIBO	Purchase through option exercise	
AINPR	Abnormal net purchase ratio	Equal to *AIB* + *AIBO* - *AIS* for an acquirer expressed as a fraction of the trading volume for that firm during a quarter.
#Analyst	Analyst coverage	The number of analysts following the firm (IBES database).
AT(H)		Dummy variable indicating whether an observation belongs to the top 33% of the distribution of managerial interest alignment for the year prior to an acquisition for the entire sample.
AT(L)		Dummy variable indicating whether an observation belongs to the bottom 33% of the distribution of managerial interest alignment for the year prior to an acquisition for the entire sample.
CAINPR	abnormal trading of firm insiders	Sum of the AINPR for the two quarters prior to the M&A announcement quarter.
#Bidders	Number of bidders	Number of bidders during the M&A process
Bid Prm	Bid Premium	As in Officer (2003), the bid premium for public targets only is given by [bidder's offer divided by target's pre-bid market value of equity − 1], where value of the bidder's offer is in the order of availability in the SDC by the sum of the value of all consideration offered, or the initial offer price, or the final offer price.
BM Ratio	Firm BM Ratio	Book value of equity divided by its market value before the SEO or M&A announcement.
%Board	% of independent directors	Number of independent directors/Total number of board members (source: RiskMetrics).
CAR	Cumulative equity abnormal returns	A two-step estimation procedure is used. First, the parameters of a five-factor model are estimated for the window [-200, -41] where 0 is the M&A announcement day. Second, the resulting parameter estimates and the firm and factor realizations for a day in a specific announcement window are used to compute that day's AR.
CABR	Cumulative bond abnormal returns	A two-step estimation procedure as CAR.
%Cash	Cash payment %	Percent of target payment that is cash.
CashFlow	Free cash flow	Operating cash flows minus capital expenditures (Source: Compustat).
CashHld	Cash holding	Ratio of cash plus cash equivalents to the value of the firm's total assets before the M&A announcement.
CashM&A	Dummy variable	Indicates whether the method of payment is 100% cash.
CEOnom	CEO nomination committee	Dummy variable equal to 1 if a CEO is a chair or a member of nomination committee (source: RiskMetrics).
CF/EQ	SEO firm income return on equity	Income before extraordinary items + depreciation - dividends on common and preferred stock / market value of equity before the M&A announcement
CG	Corporate governance dummy	Indicator that takes the value of one for a firm with CG that is above the sample industry median CG calculated in each year and zero otherwise. CG is the first principal component of board independence, compensation committee independence, institutional ownership, and independent & long-term institutional ownership as described in Dai et al. (2016).
CGbroad	Comprehensive	The first principal component of board independence, compensation

	governance measure	committee independence, institutional ownership, independent & long-term institutional ownership, and seven other governance attributes described in Dai, et al. (2016).
CombCAR	Combined CARs	Involving public targets only. Value-weighted average of acquirer and target pure price effects using day −3 market values.
ComLev	Compensation leverage	Present value of all executive pensions divided by the sum of this value and the values of all stocks and stock options owned by the top five managers, i.e., $ComLev = \sum_{i=1}^{I} PVB_i / \{\sum_{i=1}^{I} (Stocks_i + Options_i + PVB_i)\}$
Complete	Dummy variable	Equals one for M&As that eventually complete; zero otherwise
ComTotl	Total executive compensation	From ExecuComp item "TDC1", which is the sum of salary, bonus, other annual pay, the total value of restricted stock granted that year, Black-Scholes value of stock options granted that year, long-term incentive payouts, and all other compensation (in thousands) for top five executives.
Congl	Dummy variable	Equal to one if target and acquirer have different four-digit SIC codes; zero otherwise.
ConInsti	Concentration of Institutional investors	Herfindahl index calculated over the distribution of the fraction of company stock owned by institutional investors at beginning of the current quarter.
CSRcom	CSR composite	Arithmetic average of combined scores of KLD strengths minus concerns for the dimensions of community, environment, diversity, employee, and product. Annually for each firm equal to (Sum of all strength scores ***plus*** total maximum possible number of community concern scores ***minus*** sum of all concern scores) **d*ivided by*** (total maximum possible number of strength scores ***plus*** total maximum possible number of concern scores).
DealSize	Transaction value	In millions of dollars for the M&A or SEO used in computing pure price effects.
Debt/Assets	Debt to assets	Ratio of long-term debt to total assets (Source: COMPUSTAT).
$DefComp_t$	Deferred compensation	Portion of an employee's income paid out at a later date, excluding pensions and stock options.
%Director	% of director's shares	Percentage of shares owned by directors (source: RiskMetrics).
Divers	Diversification	Dummy variable equal to 1 if a firm has more than one business segment (source: COMPUSTAT).
DumCANIPR	Abnormal insider trading dummy variable	Equal to 1 if the acquirer's *CANIPR* in a quarter is in the top 33% of the distribution of *CANIPR* for all firms in that quarter, otherwise equal to 0.
DumCSR	CSR dummy variable	Dummy variable equal to 1 if the firm has more CSR strengths than concerns, 0 otherwise.
DumMRC	MRC dummy variable	Equal to 1 if the *MRC* for the acquirer in a quarter is in the top 33% of the distribution of *MRC* of all firms in that quarter, otherwise equal to 0.
DumMRCO	MRCO dummy variable	Equal to 1 if the *MRC* for the acquirer in a quarter is in the top 33% of the distribution of the *MRCO* of all firms in that quarter, otherwise equal to 0.
EntIndex	Entrenchment index	Bebchuk et al. (2009) entrenchment index. (source: RiskMetrics)
%Eq	Equity percentage	Proportion of equity held by the mangers given by (Stock + Options) / Equity.
%Eq/%Ltl	Ratio of equity to LT liabilities	Proportion of equity holdings divided by proportion of long-term liabilities held by the executives of an acquirer.
%Equity	Ratio of equity to total compensation	Given by: 1 – (Salary + Bonus)/TDC1, where TDC1 is from the ExecuComp database.
FamilyFirm	Family firm	Dummy variable equal to 1 if a firm is a family owned firm; otherwise equal to 0.
Firmage	Firm age	Firm age is calculated from the beginning of the year from the CRSP database (source: CRSP).

GIndex	GIM index	The index of Gompers, Ishii and Metrick (2003; 2010) based on the incidence of 24 different corporate-governance provisions. (source: RiskMetrics)
Hostile	Dummy variable	Equal to 1 if deal is viewed as being "hostile"; 0 otherwise.
Income ratio	SEO issuer Income ratio	Operating income before depreciation divided by the book value of total assets for the matching SEO issuer before the M&A announcement date.
InsDbt	Inside debt	Present value of all top five executives' pensions (×1000) divided by the book value of their firm's total assets.
%Insti	Ratio of institutional investors	Ratio of a firm's shares held by institutional investors relative to total shares outstanding, measured at the beginning of the current quarter.
InsPTrd	Peer trading	The number of shares bought (or sold) through open market purchases (or sales or exercises of stock options) by an insider of the acquirer or a peer at another firms, expressed as a fraction of trading volume in the quarter for their firm.
InsTrd	Insider trading	
Invest/Assets	Investments to assets	Proportion of capital expenditure to total assets.
Leverage	Firm leverage	Total debt to total equity (Source: Compustat).
LTL	Long-term liabilities	Long-term liabilities of the firm.
LGG		Low GDP Growth dummy variable, which is based on the years when the normalized GDP growth rate based on constant 2015 US dollars obtained from World Bank is below the bottom 20th percentile of the distribution of normalized GDP growth for 648 country-year observations (Erel, Jiang & Minton, 2017). Because distributions of GDP growth are country specific, the GDP growth is normalized by subtracting the mean and dividing by the standard deviation of each country to identify abnormal levels of GDP growth rates. The mean and standard deviation used to normalize GDP growth for a specific country and year are estimated from a time-series of GDP growth rates over a prior 20-year period ending two years prior to the event (i.e. from t-23 to year t-3).
MAQ		Multiple acquirer, an acquirer that made more than one successful acquisition during the previous two years (Ismail and Abdallah, 2013).
MIAwDBT	Interest alignment measure	Managerial interest alignment with debtholders, which is given by the proportion of *LTL* held by the managers.
ΔMIAwDBT1	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwDBT1_{i,J,t} = \left(Debt_{post,i,J,t} + PVB_{post,i,J,t} + DefComp_{post,i,J,t}\right)/ LTBk_{post,i,t} - \left(Debt_{pre,i,J,t} + PVB_{pre,i,J,t} + DefComp_{pre,i,J,t}\right)/LTBk_{pre,i,t}$
ΔMIAwDBT2	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwDBT2_{i,J,t} = [\left(Debt_{post,i,J,t} + PVB_{post,i,J,t} + DefComp_{post,i,J,t}\right) - \left(Debt_{pre,i,J,t} + PVB_{pre,i,J,t} + DefComp_{pre,i,J,t}\right)]/LTBk_{pre,i,t}$
ΔMIAwDBT3	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwDBT3_{i,J,t} = \left(Debt_{post,i,J,t} + PVB_{post,i,J,t} + DefComp_{post,i,J,t}\right)/ (LTBk_{post,i,t} - LTBk_{acquired,i,t}) - \left(Debt_{pre,i,J,t} + PVB_{pre,i,J,t} + DefComp_{pre,i,J,t}\right)/LTBk_{pre,i,t}$
MIAwEQ	Interest alignment measure	Managerial interest alignment with equity holders, which is the proportion of a firm's equity (*Eq*) held by its mangers.
ΔMIAwEQ1	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwEQ1_{i,J,t} = \left(Stock_{post,i,J,t} + Options_{post,i,J,t}\right)/EqBk_{post,i,t} - \left(Stock_{pre,i,J,t} + Options_{pre,i,J,t}\right)/EqBk_{pre,i,t}$
ΔMIAwEQ2	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwEQ2_{i,J,t} = [\left(Stock_{post,i,J,t} + Options_{post,i,J,t}\right) - \left(Stock_{pre,i,J,t} +$

		$Options_{pre,i,J,t}\big)\big]/EqBk_{pre,i,t}$
ΔMIAwEQ3	Changes in interest alignment measure	Pre-to-post change in interest alignment measure, which is defined as $\Delta MIAwEQ3_{i,J,t} = \big(Stock_{post,i,J,t} + Options_{post,i,J,t}\big)/(EqBk_{post,i,t} - EqBk_{acquired,i,t}) - \big(Stock_{pre,i,J,t} + Options_{pre,i,J,t}\big)/EqBk_{pre,i,t}$
Mixed M&A	Dummy variable	Equal to 1 if the method of M&A payment includes both cash and stock.
MB	Market-to-book ratio	MB ratio, which is used in, e.g., Dong, Hirshleifer, Richardson, and Teoh (2006).
MRC	Relative managerial interest alignment	Combined managerial interest alignment to stockholders and bondholders given by: (Stock + Options + Debt + PVP) / (Eq + LTL) where the numerator represents the holdings of the firm's managers.
Ownership	Manager equity ownership	Ownership is percentage of shares held by insiders, excluding shares held in a fiduciary capacity, divided by outstanding shares at the beginning of a quarter (Iliev et al., 2015). Ownership is defined as percentage of closely held shares in Worldscope, and as the sum of the holdings of all institutions domiciled in the United States in FactSet Ownership database (LionShares).
PAIT	Misvaluation measure	Misvaluation measure of Akbulut (2013).
Price	Share price	Measured in dollars.
PriceVol	Equity price volatility	Difference between daily high and low price, divided by daily high price (Diether, Lee and Werner, 2009).
PriceVolB	Bond price volatility	Difference between daily high and low price, divided by daily high price.
PReturn	Past return	Stock return over the previous 4 quarters.
Public Target	Dummy variable	Equal to one if target is listed on the stock market; 0 otherwise.
PUI		Policy uncertainty index (PUI) obtained from the website of Baker, Bloom, and Davis. This index has four components (i) a comprehensive measure of uncertainty based on the number of articles about economic policy uncertainty in ten large newspapers; (ii) taxation uncertainty based on data from the Congressional Budget Office (CBO) on expiring tax provisions, (iii) taxation uncertainty, and (iv) expenditure uncertainty, where the latter two components are based on the dispersions in professional analyst forecasts. Baker et al. (2016) report that the PUI captures periods of heightened policy uncertainty around such events as elections, policy debates, and government policy changes. PUI is used in various studies (e.g., Pastor and Veronesi, 2013; Gulen and Ion, 2016; and Francis et al., 2014).
PVP	Present value of pensions	Calculation method closely follows Eisdorfer, Giaccotto and White (2015, p. 262). It is the sum of the following for each executive in a firm: $PVB = \sum_{n=\max(0,R-A)}^{\tau-A} \pi(n)X(1+d)^{-n}$ *X* is the executive's annual pension, *A* is the executive's current age, *R* is the minimum retirement age to achieve full benefits, τ is the final year that the executive could draw a pension (set to 120 as in Sundaram and Yermack, 2007), and $\pi(n)$ is the probability that the executive will continue to draw retirement benefits in future year *n*. The projected life expectancy from the Period Life Table that is available from the U.S. Social Security Administration up to and including year 119 is used for the mortality probabilities for an age of A. Rate to discount, d, is the annualized Moody's Seasoned AAA-rated bond yield for a given year obtained from the Federal Reserve Board's H.15 release. Firms that voluntarily disclosed PVP values prior to 2006 used a similar rate; namely, the yield on 10-year Treasuries or AAA-rated corporates.
PVolatR	Past return volatility	Annualized volatility of daily stock returns over quarters $t-4$ through $t-3$.

Q	Q-ratio	Market value of common stock plus book value of total debt divided by book value of total assets in the year prior to the M&A announcement.
Q(*i*)	Dummy variable	Dummy variable indicating whether the value of the interacting variable belongs to quartile *i*, where *i* = I, II, III, or IV.
Relative Size	Relative transaction size	Transaction value to the market capitalization of the acquirer or matching SEO issuer.
RelIncentR	Relative incentive ratio	Given by ($\Delta Debt_{CEO}/\Delta Debt_{FIRM}$) ÷ ($\Delta Dquity_{CEO}/\Delta Equity_{FIRM}$), as in Wei and Yermack (2011).
Relsize	Exchange ratio	Actual fixed exchange ratio for all announced deals to capture the extent of aribtrage driven short selling, as in Liu and Wu (2014).
Return	Stock Return	Holding period stock return for the past three years, obtained as the ratios of the price at the end of years *t* - 4 and year *t* - 1, adjusted for dividends and splits, minus 1.
RKRV_FIRM	RKRV measure components	RKRV (2005) Firm-specific short-run pricing error.
RKRV_TIME		RKRV (2005) Time-series sector short-run error.
RKRV_LONG		RKRV (2005) Long-run pricing to book.
RKRV-HP	Mispricing measure	Obtained using the RKRV valuation model and the three-step regression procedure of Hoberg and Phillips (HP) (2010) on an unbalanced, rolling ten-year panel with firm fixed effects for all firms in each industrial sector.
R&D	R&D expenses	Research and develop expenses.
ROA_{t-1}	Return on Assets	Ratio of earnings before taxes, interest, depreciation, and amortization (EBITDA) to the firm's total assets.
R&D/Assets	R&D to assets	Firm's research and development expenditures divided by its total assets. Zeros replace missing values as in Brick et al. (2006).
ResCov	Residual coverage	Residual coverage using the Yu (2008) calculation method.
SAQ		Single acquirer, which is defined as an acquirer that made no successful acquisition during the previous two year (Ismail and Abdallah, 2013).
%Short	Short interest ratio	Ratio of short sales volume to total trade volume (e.g., Diether, Lee and Werner, 2009; Christophe, Ferri and Angel, 2004; Christophe, Ferri and Hseih, 2010).
∠*%ShortO*	Change in short interest ratio	Difference between the *%Short* for a specific day and the median *%Short* for window [-22, -6] as in Liu and Wu (2014) which represents normal stock short selling activity.
%ShortO	Short turnover	Daily short selling volume as a percentage of shares outstanding.
StateLaw	Anti-take-over laws	The number of anti-take-over laws a firm incorporated in states. (Source: RiskMetrics, GIM index)
%Stock	% of stock in M&A payment	Percent of stock in the amount paid to a M&A target.
Size of Acquirer	Market Cap	Market value (i.e., number of shares outstanding times the share price) at day −64 relative to the M&A announcement day (day 0).
Sales	Sales	Natural log of dollar sales in the year before the M&A announcement.
StockM&A	Dummy variable	Equal to one if the method of payment is 100% stock; 0 otherwise.
TA		Total assets.
TargetSub	Subsidiary target	Percentage of targets that are subsidiaries.
TargetCANIPR	Target CANIPR	Percentage of targets with a *MIAwEQ* or *MIAwDBT* in the top third of all targets.
TargetAR	Target's abnormal return premium	For public targets only. Target's CAR for the window [−63, 126] relative to the M&A announcement day 0.
TargetCAR	Target's cumulative abnormal returns	Measured for the 3-day window around the announcement date using the Fama-French (2015) 5-factor model estimated using return data for the 1-year period ending at day −64 relative to the announcement date.
Tenure	Tenure	Number of days as of that quarter since the insider first reported in the insider data file under his current firm.
Turnover	Share turnover	Trading volume in a quarter divided by shares outstanding at the beginning

		of that quarter.
ΔTurnover	Change in share turnover	Difference between share turnover measured over a subsequent number of days and share turnover measured over the prior two quarters.
Volatility	Firm volatility	Black–Scholes volatility measure available from Execucomp.
VolatR	Return volatility	Standard deviation of daily returns over window [-11, -2], where day 0 is the M&A announcement date.
ΔVolatR	Change in equity return volatility	The volatility computed over quarter *t*-2 through *t*-1 minus the volatility computed over quarter *t*-4 through *t*-3.
ΔVolatRB	Change in bond return volatility	The volatility computed over quarter *t*-2 through *t*-1 minus the volatility computed over quarter *t*-4 through *t*-3.
Withdrawn	Dummy variable	Equal to one if M&A was withdrawn according to SDC; 0 otherwise.

Appendix 4.A. Selective Literature Review of the Relationship between Firm Value and CSR

The theoretical models examining the relationship between CSR and expected returns assume capital market segmentation based on the different investor preferences for firm CSR activities (e.g., Heinkel, Kraus and Zechner, 2001; Fama and French, 2007; Mackey, Mackey and Barney, 2007). While socially responsible investors use both financial and nonfinancial criteria when making their investment decisions, investors with no CSR preferences exclusively use financial criteria. According to these models, socially responsible investors obtain increased value from holding firms with CSR activities where the incremental value of such holdings is viewed as consumption goods that are unrelated to expected returns (Fama and French, 2007). A prediction derived from these theoretical models is that a firm's expected returns (risks) are positively (negatively) related to the size of its investor base based on the incomplete information model of Merton (1987) and the related shunned-stock hypothesis (Derwall, Koedijk and Horst, 2011).[111] Lee and Faff (2009) demonstrate that the Merton (1987) model supports findings that the transparency and the risk management practices associated with CSR are priced by investors. Hong and Kacperczyk (2009) show that sin firms (tobacco, gaming and alcohol) that are ignored by institutional investors such as pension funds who uphold social norms, have less analyst coverage, and require higher expected returns than otherwise comparable but non-sin firms.

Although the balance of empirical studies supports the finding that CSR and firm value are positively related, many studies find a negative or no significant relation (e.g., see the review by Margolis, Elfenbein and Walsh, 2009). The differences at least partly are attributable to model misspecification (e.g., Margolis and Walsh, 2001). Among the more recent papers that account for various potential model misspecifications and find that CSR can add value,[112] Servaes and Tamayo (2013) find that CSR and firm value are positively (negatively or insignificantly) related for firms with high (low) customer awareness, and that the directional effect of awareness on this relation depends upon the prior reputation of the firm as a good corporate citizen.

With regard to the many channels though which CSR may be related to firm value, the risk mitigation channel which is grounded in the stakeholder-based theory supports the notion that CSR is positively related to a firm's value since the risk reduction is value enhancing. The underlying argument is that CSR

[111] Other market imperfection models for stock returns are developed by Levy (1978), Kryzanowksi and To (1982), and Mao (1971).

[112] Other papers in this category include Lins, Servaes and Tamayo (2016) who find that CSR pays off when markets and the aggregate level of corporate trust suffer a negative shock, Deng, Kang and Low (2013) who find that CSR creates value for acquiring firms' shareholders, and Edmans (2012) who finds that CSR that increases job satisfaction creates firm value.

activities can produce goodwill or moral capital among shareholders,[113] which preserves financial performance by providing an insurance-like reduction in a firm's risk exposure (Godfrey, 2005: Godfrey, Merrill and Hansen, 2009). Furthermore, CSR engagement may increase firm value by decreasing the operating and financial risks associated with social issues (Sharfman and Fernando, 2008; El Ghoul, Guedhami, Kwok and Mishra, 2011; Feldman, Soyka and Ameer, 1997). For example, CSR activities such as the reduction of pollution and emissions decrease a firm's expected cash outflows due to possible compensation, compliance costs, fines, clean-up costs and settlements in case of an environmental disaster (Sharfman and Fernando, 2008).

In contrast, the overinvestment channel which is grounded in agency-based theory argues that CSR activities based on managerial opportunism and entrenchment decrease firm value. To illustrate, managers may over-invest in CSR activities to improve their firm's CSR score in order to build their personal reputations as socially responsible citizens (Barnea and Rubin, 2010) or to lower their replacement risk by gaining the support of social and/or environmental groups (Cespa and Cestone, 2007). According to Surroca and Tribo (2008), a firm's financial performance is adversely affected by higher CSR when combined with managerial entrenchment strategies.

[113] Benefits identified by Godfrey (2005) include greater legitimacy among regulators and communities, more effective commitment by employees, greater trust by suppliers, and enhanced brand and credibility with customers. Other identified benefits include less severely affected by a crisis (Bouslah, Kryzanowski and M'Zali, 2016), less intense scrutiny (Luo and Bhattacharya, 2009) and a greater decoupling of the effects of negative events from the rest of the firm (Bansal and Clelland, 2004).

Appendix 4.B. Definition of the Variables used in this Paper

Variable	Name	Definition
$AIB_{i,t}$	Lagged abnormal insider buys	$AIB_{i,t} = B_{i,t} + BO_{i,t} - S_{i,t}$, expressed as a fraction of the trading volume of the year *t* for firm *i*.
Assets	Assets	Total assets (source: COMPUSTAT). Its natural log is used.
BlockH	Blockholdings	Log of sum of total blockholdings of no less than 5%.
$B_{i,t}$	Open market buys	Abnormal number of shares of firm *i* bought through open market trades or
$BO_{i,t}$	Purchases through option exercise	through option exercises during year *t,* expressed as a fraction of the trading volume of the year.
%Board	% of independent directors	Number of independent directors/Total number of board members (source: RiskMetrics).
CBO	Corporate board ownership	Median Dollar Value of Director Ownership. As in Bhagat and Bolton (2006), the median of the holdings of all directors is our governance measure as this individual can have the 'swing' vote in governance related matters. This variable is calculated from data provided by IRRC and TCL.
CEOnom	CEO nomination committee	Dummy variable equal to 1 if a CEO is a chair or a member of nomination committee (source: RiskMetrics).
ComCash	Cash compensation	Executive Cash Compensation. Executive salary plus bonus as described by Execucomp (in dollars).
ComTotl	Total CEO compensation	ExecuComp item "TDC1", which is calculated as the sum of salary, bonus, other annual pay, the total value of restricted stock granted that year, the Black-Scholes value of stock options granted that year, long-term incentive payouts, and all other compensation (in thousands) for the CEO.
ComLev	Compensation leverage	The present value of the pensions of all executives divided by the sum of this value and the values of all stocks and stock-options held by the executives.
%ComTotl	Ratio of equity to total compensation	Ratio of equity to total compensation for the CEO which is defined as: 1 – (Salary + Bonus)/TDC1, where TDC1 or Total Compensation is from the ExecuComp database.
CRISIS	Financial crisis dummy	Dummy variable indicates whether the observation lies in the financial crisis of 2008-2009 as in Bouslah, Kryzanowski and M'Zali (2016).
CSRcc	Combined component scores	(Sum of all *j* strength scores for firm *i* for year *t* ***plus*** total maximum possible number of community concern scores for year t ***minus*** sum of all *j* concern scores for firm *i* at year *t*) ***divided by*** (total maximum possible number of *j* strength scores for year *t* ***plus*** total maximum possible number of *j* concern scores for year *t*), where j = 1 (Community), 2 (Environment), 3 (Diversity), 4 (Employee Relations) and 5 (Product).
CSRs	Component strength scores	Sum of the strength scores for each component *j* for firm *i* for year *t* ***divided by*** total maximum possible number of such scores during year *t,* where *j* = 1, 2, 3, 4, 5. See *CSRcc* for a description of the five *j* components.
CSRc	Component concern scores	Sum of the concern scores for each component *j* for firm *i* for year *t* ***divided by*** total maximum possible number of such scores during year *t.* where *j* = 1, 2, 3, 4, 5. See *CSRcc* for a description of the five *j* components.
CSRstr	CSR strength	$1/5 * \sum_{j=1}^{5} CSRs_j$
CSRcon	CSR concern	$1/5 * \sum_{j=1}^{5} CSRc_j$
CSRcom	CSR composite	Arithmetic average of the combined scores of KLD strengths minus concerns of all five dimensions with the exception of the exclusionary items, i.e., community, environment, diversity, employee, and product dimensions, for firm *i* for year *t*, given by: $1/5 * \sum_{j=1}^{5} CSRcc_j$.
DCSR	DCSR(0, 1)	Dummy variable equal to 1 if firm *i* has CSR status (having more strengths than concerns) in *t*, 0 otherwise.
DΔCSRnet	DΔCSRnet(0, 1)	Dummy variable equal to 1 if the gain during *t* – 1 to *t* of *CSRnet* has changed. *CSRnet* is the differences between the number of all strengths a firm has and its number of concerns.

DΔCSRstr *DΔCSRcon* *DΔCSRcom*	Dummy Variables	Dummy variable equal to 1 if the net gain during $t-1$ to t is not zero for each of the three metrics.
DHRT	DHRT ratio	Mispricing ratio of Dong, Hirshleifer, Richardson & Teoh (2006).[114]
Debt/Assets	Debt to assets ratio	Long-term debt divided by total assets (source: COMPUSTAT).
%Director	% of director's share	Percentage of shares owned by directors (source: RiskMetrics).
Divers	Diversification	Dummy variable equal to 1 if a firm has more than one business segment (source: COMPUSTAT).
Duality	Duality as a measure of board leadership	Dummy variable equal to 1 if a CEO is also chair of the board; otherwise equal to 0 (source: RiskMetrics).
EntIndex	Entrenchment index	Bebchuk et al. (2009) entrenchment index. (source: RiskMetrics)
FamilyFirm	Family firm	Dummy variable equal to 1 if a firm is a family owned firm; otherwise equal to 0.
Firmage	Firm age	Firm age is calculated from the beginning of the year from the CRSP database (source: CRSP).
Gamma		Inverse of Mills' ratio.
InConcen	Concentration of institutional investors	Measured at the beginning of the current year, set to 10,000 if it is greater than 10,000, the maximum of the Herfindahl index.
InsDbt	Inside debt	Given by the present value of all executives' pensions (×1000) divided by the book value of the firm's total assets.
IndexGIM	Measure of shareholder rights	Measure of shareholder rights equal to 25 – GIM Index, where GIM Index is the index of Gompers, Ishii and Metrick (2003; 2010) based on the incidence of 24 different corporate-governance provisions. A higher measure indicates greater shareholder rights.
InTrading	Insider trading	For insider (self-trader) *j*, the number of shares bought (or sold) through open market purchases (or sales or exercises of stock options), expressed as a fraction of trading volume in the year for firm *i* in Eq (2).
%Insti	% of institutional ownership	Percentage of institutional share ownership (source: CDA/Spectrum 13 (f) filings).
MP^{HP}	Alternate mispricing estimate	RKRV valuation model using three-step regression approach of Hoberg and Phillips (2010) which uses an unbalanced, rolling ten-year panel with firm fixed effects for all the firms in each industrial sector.
Ownership	Ownership	Shares held by the insider divided by shares outstanding at the beginning of the year (winsorized at 1% level to remove the effects of outliers).
ResCov	Residual coverage	Residual coverage (Yu, 2008).
RKRV_Firm		RKRV (2005) firm specific short-run pricing error.
RKRV_Sector	RKRV measures	RKRV (2005) time-series sector short-run error.
RKRV_Long		RKRV (2005) long-run pricing to book.
PAIT	Akbulut measure	Akbulut (2013) mispricing measure PAIT.
PReturn	Past return	Stock return over the previous 4 quarters.
Ptrading	Peer trading	For peer insider (self-trader) *j*, the number of shares bought (or sold) through open market purchases (or sales or exercises of stock options), expressed as a fraction of trading volume in year *t* for firm *i*.
PV_MB	Mispricing MB ratio	Mispricing measure developed by Pastor and Veronesi (2003).
R&D/Sales	R&D expenditure ratio	Research and development expense divided by total sales (source: COMPUSTAT).
S	Open market sales	For firm *i,* the abnormal number of shares sold through open market sales during year *t,* expressed as a fraction of the trading volume of the year *t*.
SOXpost	Dummy variable	Dummy variable is equal to 1 if a firm appointed expert directors to the audit committee in a year of the post-SOX period, i.e., between 2003 to 2013. Similar to Davidson, Xie and Xu (2004), our expert directors include *accounting experts* (i.e., directors who are audit committee financial experts

[114] Since higher values of *Uvdum* indicate greater undervaluation, all the other mispricing measures are multiplied by minus one so that their higher values also indicate greater undervaluation. The measures are *PAIT*, *DHRT*, MP^{HP}, *RKRV_Firm*, *RKRV_Sector*, *RKRV_Long*, *PV_MB* and *TobinQ*.

		and have work experience in accounting or finance (such as a CFO, CAO, and VP-Finance), or have experience in auditing) and *other experts* (i.e, directors who are designated as ‘‘audit committee financial experts’’ by the company who cannot be classified as accounting experts).
Spreads	Bond yield spreads	The difference between the weighted average yield on the firm's outstanding debt and the yield on a Treasury security with a similar duration.
StateLaw	Anti-take-over laws	The number of anti-take-over laws a firm incorporated in states. (Source: RiskMetrics, GIM index)
TobinQ	Tobin’s Q	Natural log of the firm’s Q / median Q in the firm’s industry (Campbell, 1996).
Turnover	Share turnover	Trading volume in a quarter divided by shares outstanding at the beginning of that quarter.
Uvdum	Undervalued dummy	Dummy variable equal to 1 (undervalued) if the *AIB* of the firm in year *t* is in the top 33% of the distribution of the *AIB* of all firms in year *t*, -1 (overvalued) if in the bottom 33% of the distribution, otherwise 0.
VolatR	Return volatility	Standard deviation of daily returns over window [-11, -2], where day 0 is the M&A announcement date.

Appendix 4.C. The Aggregated Abnormal Net Buy Ratio (*AIB*) as a Measure of Firm Undervaluation

Since the required raw data for estimating our *AIB* measure are reliable open-market sales, open-market purchases and option-exercise purchases (codes "P", "S" and "M", respectively) by managers,[115] it does not include amended or inconsistent insider trades (i.e., those with codes "S" and "A" as in Blau, Fuller and Wade, 2014), and insider trades by non-manager directors, large individual shareholders, institutional shareholders and trusts. The resulting sample consists of 23,309 insiders for 25,571 firm years and 2803 firms. The average and median time between the transaction and report dates for this sample is 23 and 9 days.

We obtain the *AIB* misvaluation estimates following the two-step procedure used by Akbulut (2013).[116] In the first step, we estimate the following cross-sectional regression to obtain the abnormal ratios for each of three dependent variables:[117]

$$\begin{aligned} InTrading^{k}_{j\epsilon i,t} = {} & b_0 + b_0 InTrading^{k}_{j\epsilon i,t-1} + b_1 PTrading^{k}_{j\epsilon i,t} + b_3 LnAssets_{j\epsilon i,t} \\ & + b_4 \%ComsTotal_{j\epsilon i,t} + b_5 Ownership_{j\epsilon i,t} + b_6 \%Insti_{j\epsilon i,t} + b_7 InConcen_{j\epsilon i,t} \\ & + b_8 InsDbt_{j\epsilon i,t} + b_9 IndexGIM_{j\epsilon i,t} + b_{10} ComTotl_{j\epsilon i,t} + b_{11} \#Analyst_{j\epsilon i,t} + \varepsilon^{k}_{j\epsilon i,t} \end{aligned} \quad \text{(C.1)}$$

$InTrading^{k}_{j\epsilon i,t}$ is the natural log of the trading ratio for insider *j* who is a member of firm *i* during time *t* for trade type *k*, where *k* is the ratio of open market sales (S) or open market purchases (B) or option exercises (BO) to annual trading volume.[118] Prior studies (e.g., Akbulut, 2013) find that an insider's prior-trading is positively related to her current trading.

$PTrading^{k}_{j\epsilon i,t}$ is the natural log of the trading ratio for the chosen peer to insider *j* using propensity score matching (PSM) where insider *j* is a member of firm *i* during time *t* for trade type *k*.[119] The use of

[115] Managerial position codes include: VP, VC, OB, OD, OE, OT, OX, P. SVP, TR, COO. CT, EVP GC, GM, GP, H, O, AV, C, CB, CEO, CFO, CI and VP.
[116] Similar measures are used by Beneish and Vargus (2002), Core, Guay, Richardson and Verdi (2006), and Billett and Qian (2008).
[117] Past return, age, tenure, turnover and past volatility are not included since our regression results are not qualitatively affected by including these variables, and excluding these variables also helps to avoid a multicollinearity problem. In one of our specifications using all the variables, we find variance inflation factors (VIF) as high as 10.175.
[118] As argued by Billett and Qian (2008) and Akbulut (2013), we focus on sales that reflect managerial opinions about firm value and not on the sales immediately following option exercises that are more likely to be noninformation motivated.
[119] Our PSM uses the following five variables: firm size, ownership, compensation, board independence, and residual coverage.

peer trading with similar ownership in a firm with similar firm size helps to account for normal trading across years and different insider trading periods.

Ln $Assets$ is included since Seyhun (1986) finds that insiders at large (small) firms tend to be net sellers (purchasers).

$ComTotl$ and $Ownership$ are included since Beneish and Vargus (2002) report that insider compensation level and ownership form have an impact on the insider's liquidity, portfolio rebalancing and diversification motivated trading. Furthermore, previous studies find that managerial stock ownership is positively (negatively) related with open market trading (purchases through options exercise).[120]

Institutional ownership fraction ($\%Insti$), Concentration ($InConcen$) of institutional ownership and residual coverage ($ResCov$) are included to proxy for firm governance. Prior studies find that the levels of corporate governance negatively impact the open market purchases of managers.

Inside debt ($InsDbt$) and the shareholder rights index ($IndexGIM$) are also included since unreported panel regressions indicate that these two variables capture unique information about the trading propensity of managers.

$\%ComTotl$ is included since studies (e.g., Akbulut 2013) find that executives with a higher ratio of equity to total compensation purchase less through open market and option exercises.

$\varepsilon^{k}_{j\epsilon i,t}$ represents abnormal insider trading for trade type k (buy, sell or option exercise) of manager j in firm i in year t.[121] Abnormal changes in insider trading are captured well since our model allows the coefficients to change. A significantly positive and large value indicates that managers believe that their firms are undervalued, so that they buy more and sell less.

In the second step, we obtain a value for aggregated managerial beliefs about the extent of firm undervaluation for firm i in year t as $AIB_{i,t}$ (aggregated abnormal net buy ratio) :

$$AIB_{i,t} = B_{i,t} + BO_{i,t} - S_{i,t} \quad \text{(C.2)}$$

where $B_{i,t}$, $BO_{i,t}$, and $S_{i,t}$ are the abnormal insider trading buy, stock-option exercise and sell ratios, respectively, estimated in the first step, where each is aggregated over all the managers J in firm i in year t.

[120] See, e.g., Beneish and Vargus (2002), and Akbulut (2013).

[121] In order to control for cross-sectional changes of trading volume in a year, we divide each abnormal insider trading variable by the total trading volume for that year to normalize these variables. This accounts for seasonal changes in market trading volume.

Appendix 4.D. List of the Strength and Concern Items for Five Categories in the KLD Database

This appendix provides a list of the strength and concern items for five KLD categories that are bolded. Two not listed categories: Corporate governance; & human rights. KLD exclusionary items (controversial business items): Alcohol; Gambling; Tobacco; Firearms; Military; & Nuclear. Strengths and concerns included in data set from 1992 to 2014, unless otherwise indicated. Items added or removed (i.e. ended) or moved between categories in intermediate years are indicated as such. Greater details about each item are available at: http://cdnete.lib.ncku.edu.tw/93cdnet/english/lib/Getting_Started_With_KLD_STATS.pdf

Community
Strengths: Charitable giving; Innovative giving; Support for housing; Support for education (added 1994); Indigenous peoples relations (added 2000 moved to human rights 2002); Non-U.S. charitable giving; Volunteer programs (added 2005); Other strength.
Concerns: Investment controversies; Negative economic impact; Indigenous peoples relations (’00, moved ’02 to human rights); Tax disputes (moved here 2005); & Other concern.

Environment
Strengths: Beneficial products & services; Pollution prevention; Recycling; Clean energy (renamed from alternative fuels); Communications (added 1996); Property, plant, and equipment (no assignments since 1996); Management systems (from 2006); & Other strength.
Concerns: Hazardous waste; Regulator problems; Ozone depleting chemicals; Substantial emissions; Agricultural chemicals; Climate change (added 1999); & Other concern.

Diversity
Strengths: CEO; Promotion; Board of directors; Work/life benefits (renamed 2005 from family benefits); Women/minority contracting; Employment of the disabled; Gay & lesbian policies; & Other strength.
Concerns: Controversies; Non-representation; & Other concern.

Employee Relations
Strengths: Union relations; No layoff policy (ended 1994); Cash profit sharing; Employee involvement; Retirement benefit strength; Health and safety strength (added ‘03); Other strength.
Concerns: Union relations; Health & safety concern; Workforce reductions; Retirement benefits concern (renamed 2004 from pension/benefit concern); Other concern.

Product Quality
Strengths: R&D/innovation; Benefits to economically disadvantaged; & Other strength
Concerns: Product safety; Marketing/contracting concern; Antitrust; & Other concern.