

Which Institutional Investors Monitor?

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ABSTRACT

This paper shows that firms with large public pension fund (PPF) owners engage in less M&A activity, and firms with large insurance or investment company owners engage in more M&A activity. After controlling for firm-level governance provisions, firm characteristics, and ownership endogeneity, the presence of a 5% PPF blockholder is associated with a 48% reduction in the likelihood of acquisitions for the following 12 months, while the presence of an insurance company or an investment company blockholder is associated with a 4% increase in the likelihood. An extra 1% in ownership by the biggest PPF owner is associated with a decrease of 25.7 million in the deal size for completed deals. The same increase in ownership by the biggest investment company owner is associated with an increase in deal size of 4 million. The presence of concentrated PPF, bank, and independent advisor ownership are positively correlated with post M&A long-run abnormal returns, while the presence of investment company ownership is negatively correlated with long-run performance. The presence of PPF ownership is also positively correlated with post-M&A improvement in asset turnover rates. Among low Q firms, the negative association between PPF ownership and M&A likelihood is concentrated among cash-rich firms. The negative association is also more pronounced for “glamour” firms than for “value” firms. In addition, firms with higher PPF ownership are less likely to engage in “buying growth” acquisitions. Firms’ prior M&A activities are not significantly associated with PPF ownership. These findings are consistent with the argument that public pension funds play an important and unusual role in corporate governance.

Introduction

Institutional investors hold more than half of U.S. publicly traded equity (55.8% in 2001¹). The fastest growing institutional investors are public pension funds and mutual funds. Their assets have grown at compound annual growth rates of 14% and 20% respectively in the 1990s.² As of 2001, U.S. public pension funds held 8.0% of the total U.S. equity market.³ These funds have become active in submitting shareholder proxy proposals on corporate governance topics.⁴ From 1987 to 1994, their members sponsored 284 proxy proposals, about 61% of the total proxy proposals sponsored by institutional investors.⁵

Institutional investor activism has attracted both publicity in the press and substantial interest in academic research. It has come to be regarded as the new corporate governance mechanism, as various antitakeover measures adopted by management had rendered the takeover market ineffective during the 90s.⁶ Black (1992) and Pound (1992) argue that the market-and-transaction-based system of corporate governance has evolved into a political model of monitoring. While the takeover mechanism offers only a drastic remedy, the political model provides flexibility in addressing specific corporate mistakes and problems. Holmstrom and Kaplan (2001) express a similar view that the corporate governance mechanisms have evolved “from the leveraged hostile takeovers and buyouts of the 1980s to the incentive-based compensation, activist boards of directors, and shareholders in the 1990s.”

However, prior studies on the effectiveness of institutional investor activism have found only inconclusive results. Gillan and Starks (2000), Del Guercio and Hawkins (1999), Karpoff, Malatesta, and Walkling (1996), and Wahal (1996) find that shareholder proxy proposals had

¹Institutional Investment Report, The Conference Board, Volume 5, Number 1, March 2003.

²Davis and Steil (2001)

³The Conference Board.

⁴According to Gordon and Pound (1993), under SEC Rule 14A-8, established in 1942, shareholders may make proposals on corporate governance issues of up to 500 words in length, and management must include these proposals in their proxy materials and give shareholders an opportunity to vote. In 1992 the SEC amended its proxy rule to relax prior restrictions on direct communication among shareholders. This change allowed institutional investors to coordinate their voting activities without public disclosure. It not only reduced the cost of shareholder activism, but also facilitated the formation of shareholder coalitions.

⁵As recorded by the Investor Responsibility Research Center, Gillan and Starks (2000).

⁶For example, Bebchuk, Coates IV, and Subramanian (2002) find that “not a single hostile bid won a ballot box victory against an ‘effective’ staggered board.”

either insignificant effect or small negative effect on stock returns. On the other hand, Wahal (1996) finds that nonproxy proposal targeting receives significant and positive abnormal announcement returns. Smith (1996) finds that CalPERS (California Public Employees Retirement System) gained an estimated \$19 million from its activism at a cost of \$3.5 million from 1987 to 1993.

Most of these studies focus on the impact of shareholder proxy proposals. While this is the most visible output of institutional investors, there are several reasons to suspect that event responses to proxy proposals are not representative of the impact of shareholder activism. First, proxy proposals are advisory rather than binding (Pound (1988), Gordon and Pound (1993)). Managers are not obliged to adopt these proposals even if they receive a majority vote from shareholders.⁷ The data used in event study examining announcement stock returns will inevitably include many shareholder proposals that are never implemented.⁸ Consequently, it is not surprising that stock price reactions to these events are modest and difficult to detect. Second, proposals will be withdrawn and thus not disclosed if management voluntarily adopts them. The inclusion of the proposal in the proxy materials may reflect management's negative response to shareholder concerns, and may thus be associated with negative stock market reactions (Prevost and Rao (2000)).

This paper takes a different approach, contributing to the ongoing debate on the effectiveness of institutional investor activism by examining whether public pension ownership and other types of institutional ownership reduce corporate M&A activity, especially those leading to value reduction for bidder shareholders. I find that public pension funds are the only institutional investors whose presence is associated with reductions in firms' likelihood of acquiring other firms, and the reduction is greater for potentially harmful M&A activities.

Studies on corporate M&A activities provide inconclusive results on bidder announcement returns. Jensen and Ruback (1983) find positive and significant bidder abnormal returns in

⁷For example, in 1988, USAIR did not adopt CalPERS' anti-poison pill proxy resolution although the proposal received a majority of votes (Del Guercio and Hawkins (1999)).

⁸Wahal (1996) documents that 40 percent of proxy proposals on governance structures changes initiated by public pension funds were adopted by target firms.

successful tender offers, but approximately zero bidder abnormal returns in mergers. In their more recent summary paper, Andrade, Mitchell, and Stafford (2001) find on average insignificant bidder announcement abnormal returns, and negative announcement abnormal returns for bidders that financed the merger with stock. Many studies on acquirers' post-announcement performance reveal either negative abnormal returns or insignificant abnormal returns. For example, Agrawal, Jaffe, and Mandelker (1992), and Loughran and Vijh (1997) find evidence of poor bidder long-term performance. Mitchell and Stafford (2000) find no significant abnormal performance after accounting for the positive correlations among event-firm abnormal returns. Ravenscraft and Scherer (1987) and Healy, Palepu, and Ruback (1992) study post-M&A operating performances and reach different conclusions about whether mergers improve operating profitability.

There are many theories for why mergers occur: synergy gains, creating market power, market discipline of incompetent managers, response to industry-level shocks (technology shocks or deregulation), and agency costs. Insignificant announcement and post-announcement bidder performance is supportive of the argument that some M&A activities are driven by managerial private incentives rather than shareholder value maximization. Morck, Shleifer, and Vishny (1990) suggest that managerial objectives drove value-reducing acquisitions. Shleifer and Vishny (1989)'s model suggests that managers could overpay for acquisitions aimed at managerial-entrenchment. Amihud and Lev (1981), Agrawal and Mandelker (1987), as well as Morck, Shleifer, and Vishny (1990) point out that diversification of personal risk served as strong incentives for managers to seek out acquisitions. Avery, Chevalier, and Schaefer (1998) find that CEOs who completed acquisitions were more likely to gain outside directorships. Their results support the argument that the prestige associated with acquisitions may encourage M&A activity. Apart from being driven by managerial incentives, M&A activity may also be plagued by managerial "hubris". Roll (1986) points out that "bidding firms infected by hubris simply pay too much for their targets".

If M&A activity can reduce shareholder value for the acquirer, and *if* institutional investors are effective monitors, then the presence of institutional investors should reduce the frequency

of M&A, *ceteris paribus*. If institutional investors have the capacity to judge the quality of individual transactions and effectively intervene, or if their presence signals credible promise of punishing value-reducing actions motivated by managerial incentives, then their presence should reduce the frequency of negative bidder NPV M&A. I examine the M&A intensity of Execucomp firms from July 1993 to June 2001, and find that firms with higher public pension fund (PPF) ownership are less likely acquirers, while firms with higher insurance and investment company ownership are more likely acquirers.

A natural concern for this study is the possible existence of endogeneity between institutional ownership and institutions' preference for less/more acquisitive firms. This concern is alleviated by the finding that firms' M&A activities in the previous year have no effect on PPF holdings, a negative effect on investment company holdings, and marginally positive effect on insurance company holdings (the specification controls for firm characteristics and shareholder rights provisions). To further address the concern that other endogeneity may exist, both an IV panel data methodology and a standard panel data method are employed in the analysis. Both specifications yield similar and significant results.

Firm characteristics such as firm size, Q ratio, and firm prior performance may be correlated with both M&A likelihood and institutional ownership. These variables are included in my specifications as controls. The relations between various types of institutional ownership and firms M&A activities remain economically and statistically significant.

Another potential concern is the possible presence of confounding omitted variables. Gompers, Ishii, and Metrick (2003) find that firms with stronger shareholder rights made fewer acquisitions. My specifications control for firm-level shareholder rights provision using their index measure. Institutions (except investment companies in aggregate) do not exhibit a preference for firms with better governance provision. The observed relation between institutional ownership and M&A likelihood is independent of firm-level shareholder rights provisions.

For example, I find that a 1% increase of the top individual PPF ownership from the sample mean of 1.42% is associated with a 4.84% reduction of the estimated likelihood of

M&A in the following year,⁹ and a reduction of \$25.73 in the size of a deal.¹⁰ A 1% increase of the top insurance/investment company holdings from the sample mean of 2.54%/5.53% is associated with a 0.66%/0.63% increase of the estimated likelihood of M&A.¹¹ This increase in investment company ownership is associated with \$4.07 million increase in M&A deal size.¹² PPF ownership is also negatively associated with the frequency of M&A activities in the long-run (in the span of eight years covered by this study).

Theory suggests that PPF should reduce more ex-ante bad M&A if its monitoring is effective. Previous research suggest several scenarios in which M&A activities with negative abnormal returns are likely to be prevalent. In Jensen (1986), agency costs are highest for cash rich firms facing fewer positive NPV investment projects. Harford (1999) reports negative acquirer returns at M&A announcements by firms with excess cash. Blanchard, Lopez-de Silanes, and Shleifer (1994) find that within their small sample of low Q firms¹³ that received cash windfalls, managers wasted the resources in order to ensure their long-run survival. Thus, the literature suggests that the management of low Q firms with piles of free cash are more likely to waste the cash flow on bad investments. My paper examines this subsample and finds that the M&A reduction associated with PPF ownership is concentrated among low Q and cash rich firms. Rau and Vermaelen (1998) find that it is the “glamour” firms that dominate long-term underperformance of acquiring firms. They concluded that both the market and the bidder management overextrapolated past performance. I find that the negative association between PPF ownership and M&A likelihood is greater for “glamour” firms than for “value” firms within my sample. Within the subsample of M&A observations, I also find that PPF ownership is negatively associated with the probability of “buying-growth” acquisitions, which are identified in existing literature as value-reducing activities.

I also examine the relation between institutional ownership and post M&A performance. Although PPF ownership does not appear to have a significant relation with announcement

⁹Using instrumental variable technique.

¹⁰Conditional on deal size greater than zero.

¹¹Using instrumental variable technique.

¹²Conditional on deal size greater than zero.

¹³Low Q firms are more likely to be firms with few positive NPV investment opportunities.

abnormal returns, it is positively associated with bidder long-term stock performance and post-M&A asset turnover rate.

I interpret these results as supportive of the argument that PPFs actively monitor their equity holdings and reduce the likelihood of M&A.

Finally my paper also offers some findings on alternative variables and controls. Firm leverage is negatively associated with M&A likelihood. Higher CEO compensation is not significantly associated with M&A activity or deal size, and is negatively associated with post-M&A stock performance. Higher insider ownership is significantly associated with reductions in both the size and the likelihood of M&A, although it has no relation with post-M&A stock performance. Option grants are positively associated with M&A likelihood and negatively associated with deal sizes. There is a substitution effect between capital expenditures and M&A activity. A 1% increase in the capital expenditures ratio is significantly associated with a 0.77% decrease in M&A likelihood.

I Hypotheses

Black (1990) argues that public pension funds are in the forefront of institutional shareholder activism due to their size and independence; private pension funds, bank trusts and insurance companies remain mostly promanager in fear of losing current or prospective business. Several other characteristics of public pension funds also encourage and facilitate their roles as monitors of corporate governance. First, although most institutional investors outsource the management of some of their assets to external money managers, public pension funds appear to retain effective voting control of their assets. In 1993, PPFs retained voting control over 98.9% of the stock they own, compared to only 66.4% for the average institutional investor (Brancato (1993)). Retention of voting power provides the means of activism. Second, indexation is more popular with public pension funds. It accounts for 54% of public pension funds' domestic equity and only 24% of that of corporate funds (Davis and Steil (2001)). Indexation

provides incentives for activism aimed at improving overall market performance.¹⁴ Gillan and Starks (2000) also argue that selling constraints imposed by indexing strategies provided an important motivation for shareholder activism.

On the other hand, public pension funds may suffer their own agency costs. Romano (1993) argues that the political pressure faced by the managers of public pension funds may be in conflict with the goal of profit maximization. Murphy and Van Nuys (1994) find that state pension system officials manage the funds “more conservatively than their corporate counterparts to avoid drawing negative attention to the pension system”. Woitke (2002) finds that firm relative value is negatively related with public pension ownership. She concludes that administrators of public funds may be motivated more by political or social influences than by firm performance.

The principal interest of this paper is to differentiate between two hypotheses.

Hypothesis 1a: Public pension funds are effective monitors of corporate M&A activities. Public pension funds reduce value-reducing M&A.

Hypothesis 1b: Public pension funds are not effective monitors, and are not able to reduce value-reducing M&A.

Roe (1994) argues that American-style populism fragments financial intermediaries, making dispersed ownership inevitable in the United States. He regards institutional passivity as a direct result of regulations. For example, the modern banking laws¹⁵ block the development of big banks; insurance companies are historically constrained from owning influential blocks of stock; mutual funds have to diversify their portfolios¹⁶ to avoid corporate tax, and will become a statutory affiliate of a portfolio company and trigger undesirable transactional prohibitions if

¹⁴Richard Koppes, former chief counsel of CalPERS, remarked, “It makes sense for us to try to raise the ocean in order to lift our boat”, at Stanford University, March 21, 1996.

¹⁵McFadden Act, Glass-Steagall, the Federal Deposit Insurance Corporation Act, and the Bank Holding Company Act.

¹⁶The Investment Company Act of 1940 regulates that for three quarters of their portfolios, mutual funds can have no more than 5 percent of their assets in the securities of any one firm, and own no more than 10 percent of the stock of any firm if they want to advertise themselves as diversified.

they own 5 percent of the stock of the company; private pension funds are subjected to ERISA rules, which encourages excessive diversification.

Thus non-public-pension institutions may not want to or not able to be active monitors. Pound (1988) and Brickley, Lease, and Smith (1988) document that institutions like banks and insurance companies were more likely to side with management in proxy contests. Van Nuys (1993) analyzes the proxy solicitation and restructuring at Honeywell in 1989, and also finds that banks and insurance companies were more supportive of the management.¹⁷ On the other hand, there is also anecdotal evidence that these institutions, especially mutual funds, may have become viable monitors. For example, in 1992, Vanguard was involved in the succession and retirement of Chrysler's then-Chairmen Lee Iacocca.

This paper also intends to differentiate between two hypotheses on non-public-pension institutions.

Hypothesis 2a: Non-public-pension institutions have remained passive. Their presence has no effect on corporate M&A activities.

Hypothesis 2b: Non-public-pension institutions have become active in monitoring corporate governance. Their presence also reduces value-reducing M&A.

II Data and Methodology

The initial sample is drawn from the Execucomp data base. This data base lists each firm in the S&P 1500 (S&P 500, S&P Midcap 400, and S&P SmallCap 600). Corporate accounting information is obtained from COMPUSTAT and stock performance data from CRSP. The sample is limited to securities identified by CRSP as ordinary common shares (with share codes 10, 11 or 12),¹⁸ and excludes utilities, finance and insurance companies, and government agencies (2-digit SIC code 49, from 60 to 69, and above 89). Finally, I drop firms with December

¹⁷However, she concludes that existing business ties did not appear to explain the voting differences.

¹⁸This excludes American Depository Receipts, closed-end-funds, primes and scores, and Real Estate Investment Trusts.

market capitalization less than one-hundredth the level of S&P 500 index.¹⁹

Merger and acquisition information is obtained from the SDC domestic M&A database. To be included in my study, a deal has to be completed, with an acquisition of 100% of the target. The total number of m&a deals increases by 51 when considering deals in which acquirers acquired majorities of the targets. The results of the study do not change materially if the criterion of m&a deal inclusion is majority ownership of targets instead of 100% ownership. Both disclosed value and non-disclosed value deals are included, but, disclosed value deals must have a value of at least 1 million. The final M&A data contains both public and private targets. The following table provides a summary. Average deal values (in million dollars) are reported in parentheses.

	Target public company		Target non-public	
	disclosed	non-disclosed	disclosed	non-disclosed
Acquirer acquired 100% of the target	531 (1,897.82)	3	1,242 (254.51)	1,857
Acquirer acquired between 50% and 100% of the target	19 (1,724.43)	0	20 (476.80)	12

Due to multiple announcements during the 12-month period, the final sample consists of 2,025 M&A firm-year observations. Out of this total, 874 observations are for disclosed value M&A only, 761 observations are for undisclosed value M&A only, and 390 observations are for both types.

Institutional ownership data is obtained from Thomson Financial. Under the Securities Exchange Act of 1934 (Rule 13f), institutional investment managers who exercise investment discretion over accounts with publicly traded securities (section 13(f) securities) and who hold equity portfolios exceeding \$100 million are required to file Form 13f within 45 days after the last day of each quarter. Investment managers must report all holdings in excess of 10,000

¹⁹The robustness check using all firms with COMPUSTAT and CRSP data available (without insider ownership and compensation variables) shows the same results, which are available from author upon request.

shares and/or with a market value over \$200,000.

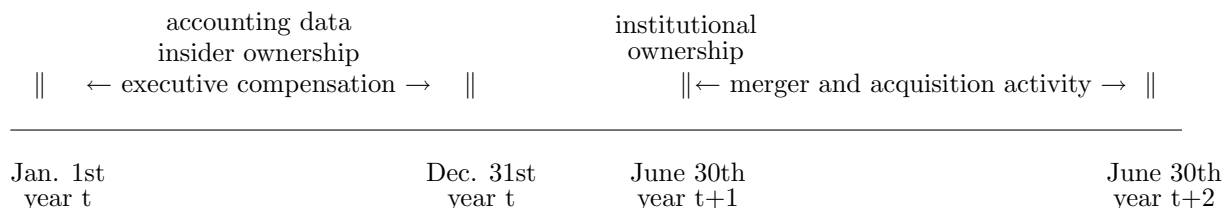
Thomson Financial classifies institutions into five categories: banks, insurance companies, investment companies (mostly mutual funds), independent investment advisors, and others. The last category includes public and private pension funds, and endowments. Within this last category, I identify public pension funds by their names. In total I find 15 public pension funds: California public employees retirement system, California state teachers retirement, Colorado public employees retirement association, Florida state board of administration, Kentucky teachers retirement system, Michigan state treasury, Montana board of investment, New Mexico educational retirement board, New York state common retirement fund, New York state teachers retirement system, Ohio public employees retirement system, Ohio school employees retirement system, Ohio state teachers retirement system, Virginia retirement system, and State of Wisconsin investment board. Not all state and local pension funds holdings are available because they are either too small and do not file 13f forms, or their assets are reported by their outside managers.

Four different variables are used to measure institutional ownership. (All variables are described in Table I.)

1. The first is the aggregate holdings by each category.
2. The second is the highest individual holdings within each category.
3. The third is a dummy variable which equals one if there is at least one 5% block holder within a category.
4. The last one is the Herfindahl concentration measure normalized by aggregate holdings of each category.

The firm-level shareholder rights variable (the governance index) is obtained from Gompers, Ishii, and Metrick. They constructed this index by examining firm-level provisions of 24 governance rules (mostly takeover related). Gompers, Ishii, and Metrick (2003) provide the details on the construction of this index. A higher index value reflects weaker shareholder

rights. This index is available for the full sample of Investor Responsibility Research Center (IRRC) firms for each publication of Corporate Takeover Defenses [Rosenbaum 1990, 1993, 1995, 1998, 2000]. For years (1992, 1994, 1996, 1997, 1999) during which there is no publication to provide up-to-date governance provision information, I use the most adjacent data as a proxy.



The figure above demonstrates the timeline of the research design. During the calendar year t, corporate accounting data, insider ownership data, and executive compensation data are recorded. The majority of the firms end their fiscal year in December. At the end of June, year t+1, institutional ownership is recorded. The six-month lag ensures that all relevant information is public when institutional ownership data is considered. If the firm announces at least one merger and acquisition deal during the period July, year t+1 to June, year t+2, this firm is considered to be an M&A firm for data year t. That is, the dependent variable (M&A dummy variable) is 1.

Thomson Financial institutional ownership data is available until 2000. Execucomp data is available from 1992. Thus my final sample represents the overlapping between Execucomp firms (with both accounting data and stock performance data available) and IRRC firms from 1992 to 1999. There are 1,363 firms and a total of 6,693 firm-year observations. Table II shows that this sample is biased towards larger firms. In 1992 dollars, the median market capitalization is \$1,029.87 million and the median total assets is \$922.35 million. Ranked by year-end market capitalization each year, 5,882 observations (87.88%) are above the median market capitalization of NYSE and AMEX firms.²⁰

²⁰The results remain if only the top 50% firms are included. Thus, my conclusions are not driven by the smaller firms in the sample.

Among my 6,693 firm-year observations, there are in total 2,025 (30.26%) M&A observations. M&A firm-years have higher Q ratios and lower capital expenditures ratios than non-M&A firm-years. As demonstrated in Table III, M&A firms are larger, have lower insider ownership, higher governance index, higher cash flow ratios, and better prior performances. Table IV shows that there are no strong correlations among key variables of this study.

A Specification

I use random effects logistic regressions in my study. This model allows for firm-level unobserved heterogeneity in merger and acquisition decisions, and utilizes both the time-series and the cross-sectional dimensions of the data. Unobserved industry-level heterogeneity is incorporated in this firm-level random effects.²¹ Random effects logistic regression is a better specification for this study due to its ability to include the full sample in the study. Fixed effects logistic regression results are similar.²² However, this regression does not include firms with no M&A activity throughout the period and firms did M&A for every year in the sample, because this analysis is conditional on at least one positive/negative outcome within a group. About one-third of the observations are thereby lost. Table V compares the value of key variables among firms with different M&A frequency. Aggregate PPF ownership, aggregate investment company ownership, and aggregate independent advisor ownership in 0 M&A firms is not much different from those in more frequent M&A firms. However, other types of institutions in aggregate hold more shares in frequent M&A firms. In addition, 0 M&A group has smaller average size and higher leverage ratio and capital expenditures ratio. Excluding the 0 M&A group and the all M&A group may cause selection bias in the sample.

The specification of random effects logistic regression is:

²¹During the sample period 1992-1998, telecommunication and broadcasting industry went through major deregulation (1996). A dummy variable capturing this shock is not significantly associated with M&A activity. This dummy variable equals one for firms in telecommunication and broadcasting at year 1996 and later, and equals zero otherwise. Results are available upon request.

²²Available upon request.

$$\begin{aligned}
\text{Log}\left(\frac{y_{it}}{1-y_{it}}\right) = & \beta_0 + \beta_1 \text{PubPension}_{it} + \beta_2 \text{PvtPension}_{it} + \beta_3 \text{Bank}_{it} \\
& + \beta_4 \text{Insurance}_{it} + \beta_5 \text{Investment}_{it} + \beta_6 \text{Advisor}_{it} \\
& + \phi X_{it} + \gamma \text{Year}_t + u_i + \epsilon_{it}
\end{aligned} \tag{1}$$

y is the dummy variable measuring firms' M&A activity. t is a time subscript. i denotes each firm. u_i is the firm-level random effect. Year_t are dummy variables for years 1992 - 1998. X_{it} are the control variables including managerial ownership, managerial compensation, the governance index, leverage ratio, cash flow ratio, Q ratio, firm size, capital expenditures ratio, firm prior performance, and industrial concentration. The other six variables (PubPension, PvtPension, Bank, Insurance, Investment, Advisor) are the ownership variables for each category of institutions.

B M&A performance

This study also intends to find out whether institutions have the ability to differentiate between good and bad M&A, and discourage the value-reducing ones. Announcement stock abnormal returns, long-term stock abnormal returns, and post-M&A operating performance are examined to judge whether an M&A deal is good or bad. Appendix A provides the details on the methods used to calculate these performance measures.

My study of post-M&A acquirer stock abnormal returns is not intended to test market efficiency. Individual acquirer's long-term abnormal return is used in my analysis to gauge whether institutional ownership has any effect on acquirers' post-M&A performances. In this paper I use three methods—cumulative abnormal returns, buy-and-hold abnormal returns, and Fama-French 3-factor abnormal returns—to measure long-run post-M&A abnormal returns.

Abnormal post M&A operating performance is measured by changes in industry-adjusted operating cash flow returns, cash flow margins, and asset turnover rates. Barber and Lyon

(1996) evaluate methods used to measure accounting-based operating performance and find the change models to be more desirable than the level models. In this study, I follow the both methodologies used in Barber and Lyon (1996) and in Healy, Palepu, and Ruback (1992). The details of calculation methods are in Appendix A.

III Endogeneity Concerns

If institutions have preferences for acquisitive or non-acquisitive firms, I would observe a significant relation between firms' prior M&A activities and institutional ownership. Table VI reports the fixed effects regression results on the determinants of institutional ownership.²³ The two independent variable dummies measure firms' prior M&A. The first dummy equals one if a firm announced a deal in the prior year which received positive announcement abnormal return. It equals zero for all others. The second dummy equals one if a firm announced a deal in the prior year which received negative announcement abnormal return, and zero for the rest.

PPF ownership is not affected by firms' M&A activities in the previous year. Public pension funds do not appear to avoid firms with weaker shareholder rights. Individual private pension fund appears to avoid firms whose prior M&A activities received negative market response. Banks prefer firms with higher insider ownership. In aggregate, banks hold more shares in firms whose prior M&A activities received positive market response, and in firms with weaker shareholder rights. Insurance companies in aggregate actually hold more shares in firms whose prior M&A received negative announcement returns. Investment companies reduce their shareholdings in firms with prior M&A activities regardless of their announcement returns. In aggregate, investment companies hold less shares of companies with weaker shareholder rights. Independent advisors in aggregate hold more shares of a company after its prior M&A received negative market response. Individual advisor holds more shares in firms with higher insider ownership.

²³This specification is the same as the one used in the first stage of Wu-Hausman endogeneity test.

There is no overwhelming evidence that institutions avoid acquisitive firms.²⁴ Nevertheless, there may be other endogeneity problems. Wu-Hausman endogeneity tests are performed to determine whether instrumented variable technique is required.

However, it is very difficult to find an ideal instrument for institutional ownership. Demsetz and Lehn (1985) finds that instability of firm profit is a determinant of firm ownership. Gompers and Metrick (2001) find that dividend yield, volatility of the stock and the stock turnover ratio are determinants of institutional ownership. Woidtke (2002) uses transaction cost²⁵ as one of her instruments. Following their results, I use firm beta, the standard error of firm beta from the market model, dividend yield over the previous year, volatility of monthly returns over the previous two years, turnover ratio and transaction cost as instruments. Unfortunately, these instruments are determined to be weak instruments from first-stage F tests. Their correlations with institutional ownership are too small to detect possible endogeneity. Using these instruments, I was not able to reject the null of Wu-Hausman test that standard panel data regression is sufficient. My last resort is to use previous ownership as an instrument. If we are willing to accept that this lagged term is contemporaneously independent from the error term, then it can be considered to be predetermined. Thus previous ownership is considered not to be correlated with current M&A activity. I add firm beta as the additional instrument for institutional ownership. Firm beta, or firm's systematic risk, is not correlated with M&A activities. By adding this additional instrument, I am able to use the overidentification test to verify the validity of this set of instruments. Test statistics are reported in Table VII. The first-stage F stats are much greater than 10. The overidentification tests conclude that this set of instruments are valid. Although I am concerned with possible correlation between prior ownership level and the error term in equation (1), these test results give me some confidence in the overall set of instruments.

According to the test results, all four measures on public pension fund ownership and the measure on aggregate independent advisor ownership are endogenous. Thus throughout the

²⁴In results not reported, I examine the relation between firms' prior M&A activity and PPF ownership for up to previous four years, and find no significant relation. Results are available upon request.

²⁵Calculated as $0.687 + 0.239*(\text{Nasdaq dummy}) - 0.076*(\log \text{ of market value of equity}) + 9.924*(\text{inverse of price})$, based on Keim and Madhavan (1997)'s model.

paper I report the regression results both from random effects logistic regressions and from instrumented random effects logistic regressions.

IV Likelihood of M&A

It is easier for managers to undertake M&A motivated by their own incentives when there is no effective monitoring. Controlling for firm-level governance provisions and firm characteristics which may affect M&A likelihood, I would expect to observe, *ceteris paribus*, that firms with no effective institutional monitoring are more likely to engage in M&A activities than firms with effective institutional monitoring. I first examine whether institutional ownership reduces the overall M&A frequency and deal sizes. M&A can be value-enhancing or value-reducing for bidder shareholders. The subsequent specifications examine whether institutional ownership reduces *ex ante* value-reducing acquisitions.

A Full sample results

Institutional Ownership

As a first pass, I proceed to examine the relation between overall institutional ownership (sum of all types) and firms' future M&A likelihood. Table VIII presents the results from random effects logistic regressions in which the dependent variable is 1 if there is at least one M&A deal announced during the 12-month period after the institutional ownership recording date, and 0 if there is no M&A announcement (during the same period). In the first regression, the institutional ownership variable is the aggregate institutional ownership; in the second, the highest individual institutional ownership of the firm; in the third, 5% block holder dummy; in the fourth, institutional ownership concentration.

The overall institutional ownership is positively and significantly associated with M&A activity in the following 12 months. In the next table, Table IX, I separate the overall institutional ownership into six types as detailed earlier. This table reports results for both random

effects logistics regressions and instrumented random effects logistic regressions. Public pension funds appear to be the only institutions whose presence is negatively associated with future M&A likelihood. The positive association between overall institutional ownership and M&A is mainly driven by the positive association between insurance and investment companies and M&A.

PPF ownership is significantly and negatively correlated with M&A likelihood in both instrumented and non-instrumented regressions (with stronger results from the instrumented version). In the instrumented regressions reported in Table IX, the coefficients on all four measures of PPF ownership are negative and significant at the 1% level. A 1% increase in the aggregate PPF ownership is correlated with a 3.07% decrease in M&A likelihood; a 1% increase in the top individual PPF ownership is correlated with a 4.87% decrease in M&A likelihood; the presence of a 5% PPF block holder is correlated with a 48.61% decrease in M&A likelihood; and a one unit increase in the PPF Herfindahl concentration measure (normalized) is correlated with a 6.08% decrease in M&A likelihood. These results suggest that concentrated public pension ownership has stronger influence than diffused public pension ownership.

In contrast, insurance and investment company ownership is significantly and positively associated with M&A activity. The presence of a 5% insurance block holder is associated with a 4-5% increase in M&A likelihood; and the presence of a 5% investment company (mutual fund) block holder is associated with a 3% increase in M&A likelihood.

The significant negative relation between PPF ownership and M&A appears to remain in the long-run. Table X reports the results from negative binomial regressions on factors predicting M&A frequency in the long-run. Only observations from year 1992 are included in the regression for the independent variables, which are the same set of variables used in table IX. The dependent variable is the number of M&A years during the period of the eight years (July 1993 - June 2001) for this study. Negative binomial regression is employed because goodness-of-fit test indicates overdispersion of Poisson model. PPF ownership is negatively and significantly correlated with M&A frequency in the long run. A 1% increase in top individual PPF ownership is associated with a 4% reduction in the number of M&As in eight years.

The positive association between insurance company ownership and M&A remains in the long-run only for the aggregate insurance ownership. The relationship between investment company ownership and M&A disappears in the long-run.

The fact that PPF ownership is significantly and negatively associated with future M&A activity, and insignificantly associated with firms' past M&A activity, is strongly supportive of the argument that the presence of PPF ownership does reduce firms' M&A activities.

Controls

Table IX also reports results on relevant controls. Gompers, Ishii, and Metrick (2003) find that firms with stronger shareholder rights made fewer corporate acquisitions. Their finding is confirmed within my sample. An increase of one unit on their governance index, which means worsening of shareholder rights, is correlated with an increase of about 0.60% in M&A likelihood. The statistical significance of this variable is not very strong because this measure does not vary much over time for individual firms.

The coefficients on insider ownership are significantly negative, but its economic significance is not that strong. One standard deviation difference (8.72%) in insider ownership is associated with only 2% difference in M&A likelihood.

CEO compensation does not appear to be significantly associated with M&A activity after controlling for firm-level shareholder rights. Executive options have a marginal economic effect: a 1% increase in options granted as a fraction of total compensation is correlated with 0.08% increase in M&A likelihood, at the 1% significance level.

Firm characteristics

Firm characteristics have definitive effects on firm's M&A decision. My specification (random effects logit regression in equation (1)) also includes several firm characteristics variables as necessary controls. Table IX reports the results.

Jensen (1986) points out that debt committed management to pay out a steady stream of cash in the future and thereby reduced the amount of free cash flow available for discretionary spending. The requirements of debt service also provided incentives to motivate managers. Myers and Majluf (1984)'s pecking order theory predicts that investment projects would be financed by internal cash whenever it is available. Investment projects financed by external debt or stock issuance required higher rates of returns. In this theory, a high leverage ratio correlates with less internal free cash, which causes a higher threshold of profitable investment returns. Both theories predict that higher leverage ratio should correlate with less M&A activity. Berger, Ofek, and Yermack (1997) find that managerial entrenchment was higher for less leveraged firms. The agency conflict associated with managerial entrenchment is positively correlated with agency-driven M&A. Their findings suggest that higher leverage is associated with less managerial entrenchment and thus less frequent M&A.

In this study, the leverage ratio is calculated as the sum of current debt and long-term debt divided by non-cash total assets. Firm leverage does exhibit a negative correlation with M&A activity as predicted by theories. However, its economic effect is not large: a 1% increase in the ratio is correlated with only a 0.10% decrease in M&A likelihood on average. Given one standard deviation difference (24.34%) in firm leverage ratios within my sample, the change in M&A likelihood is approximately 2.43%. My calculation of the leverage ratio did not differentiate between bank debt and public debt. It is possible that a measure using bank debt only may yield a stronger result.

Tobin's Q ratio has been used widely by researchers as a measure of growth opportunities. As found in many previous studies, a higher Q ratio is correlated with more investment opportunities and hence higher M&A frequency. Table IX reports that within my sample, an increase of 1 in the Q ratio is associated with a 2% increase in M&A likelihood on average, significant at the 1% level.

The firm size measured as the total assets is positively correlated with M&A. A one unit increase in the log of total assets²⁶ of the firm (a 272% increase) is associated with a 3%

²⁶Adjusted by CPI, CPI base year 1992.

increase in M&A likelihood on average, significant at the 1% level.

There is a substitution effect between capital expenditures and M&A activity within my sample of firms. A 1% increase in the capital expenditures ratio is correlated with about 0.80% decrease in M&A likelihood on average, significant at the 1% level.

Finally, M&A activity is also motivated by firm's prior performance. I use four measures for prior performance: a one-year sales growth rate, cumulative abnormal returns using the benchmark method, cumulative abnormal returns using Fama-French 3-factor model, and buy-and-hold abnormal returns. A 1% increase in benchmarked CAR (over 12-month period prior to the institutional ownership recording date) is associated with a 0.07% increase in M&A likelihood on average, significant at the 1% level. This suggests that firms either extrapolate their prior performances when making investment decisions or take advantage of their relatively high valuations. A difference in prior CAR of one standard deviation is associated with a 2% difference in M&A likelihood. A 1% increase in prior sales growth rate, prior 3-factor CAR, and prior buy-and-hold return is associated with 0.03%, 0.07%, and 0.08% increase of M&A likelihood respectively.²⁷

Investment horizon

It is possible that an institution with a shorter investment horizon may have less incentive to engage in active monitoring.²⁸ However, there is no reason for an institution not to stop a bad M&A, even if it intends to sell its holdings soon.

As a robustness check, I examine the relation between institution investment horizon and M&A likelihood. For each type of institutions, I calculate the average annual turnover ratio by averaging over individual institution's annual "churn rate" on the portfolio of sample stocks over the period 1992-1999. The "churn rate" of investor i at time t is defined as

²⁷I report the rest of my results using benchmarked CAR throughout this paper. Results using other measures are similar both in economic and statistical significance, and are available upon request.

²⁸Gaspar, Massa, and Matos (2003) find that firms with short-term investors are more likely to be bidders. Their paper also looks at the effect of activism on the likelihood of being a bidder. However, they find a positive and significant relation.

$$CR_{i,t} = \frac{\sum_{k=1}^S |N_{k,i,t}P_{k,t} - N_{k,i,t-1}P_{k,t-1} - N_{k,i,t-1}\Delta P_{k,t-1}|}{\sum_{k=1}^S \frac{N_{k,i,t}P_{k,t} + N_{k,i,t-1}P_{k,t-1}}{2}}$$

where $P_{k,t}$ is the price of stock k at time t , $N_{k,i,t}$ is the holding of institution i of stock k at time t . This ratio is calculated for each institution at each quarter. The annual turnover ratio for individual institution is the average of this quarterly “churn rate” over four quarters. Then I calculate the representative turnover ratio for each type of institutions as the average of individual turnover ratio over the sample period. The following table provides a summary.

Average annual turnover ratio within the sample					
	Mean	Median	Std Dev	Min	Max
Public pension	0.17	0.16	0.10	0.03	0.57
Private pension	0.24	0.18	0.23	0.00	1.90
Banks	0.20	0.17	0.16	0.00	1.92
Insurance company	0.28	0.23	0.21	0.00	1.30
Investment company	0.32	0.27	0.22	0.00	1.91
Independent advisor	0.36	0.28	0.27	0.00	1.96

The average turnover ratio is smaller for public pension funds, while there are a lot of variations among other types of institutions.

The annual turnover ratio of each type of institutions for the individual firms is calculated as the weighted average over the institutions within a type. In regressions not reported, this turnover measure has no significant relation with firm’s M&A likelihood.²⁹ The following table provides a summary on this measure.

²⁹Results are available upon request.

Weighted Average annual turnover ratio for individual firms

	Mean	Median	Std Dev	Min	Max
Public pension	0.16	0.15	0.06	0.00	0.57
Private pension	0.21	0.20	0.10	0.00	1.00
Banks	0.18	0.18	0.04	0.00	0.92
Insurance company	0.21	0.22	0.08	0.00	1.03
Investment company	0.28	0.27	0.07	0.00	0.90
Independent advisor	0.29	0.29	0.08	0.00	0.76

B Size of disclosed value M&A

Table XI presents the marginal effects from truncated regressions analyzing factors affecting the relative size of M&A deals, conditional on deals being successful. This study is restricted to the subset of disclosed-value M&A observations. Any firm-year observation with announcements of undisclosed-value deals is dropped.

At 5% significance level, a 1% increase in the aggregate PPF ownership reduces the deal size by 14 million; a 1% increase of the top individual PPF ownership reduces the deal size by 26 million; and a one unit increase in PPF ownership concentration reduces the deal size by 33 million, all conditional on deal sizes greater than zero.

Banks and independent advisors both appear to have negative effect on deal size, while investment companies appear to have positive effect on deal size.

The governance index is negatively associated with deal size. This result is different from the finding in Gompers, Ishii, and Metrick (2003). Within my sample, the correlation between prior sales growth and governance index is -0.20 for firms announced disclosed value deals, -0.11 between prior buy-and-hold abnormal return and governance index, and -0.11 between cash flow ratio and governance index. It seems that within this subsample of firms announced disclosed value deals, firms with worse shareholder rights tend to perform worse. It is possible that in comparison those firms are less able to engaged in bigger deals due to their worse prior

performance.

While leverage ratio has no impact on deal size, insider ownership and options are negatively associated with deal size. Deals are of smaller size if a bigger percentage is financed by cash. Firm size and Q ratio are positively associated with deal size. Money spent on capital expenditures are again substitutes for money spent on M&A. Higher industrial concentration reduces deal size. This may be because larger M&A deals are difficult to be approved by the U.S. government in a more concentrated industry.

Moeller, Schlingemann, and Stulz (2003) find systematic bidder shareholder wealth loss associated with acquisition, except for small firms. Firm size is correlated with deal size. As reported in Table XI, a one unit decrease in the log of total assets of the firm is associated with a reduction of 93 million to 109 million dollars in deal size. It is possible that smaller deals are ex ante better. PPF may improve bidder shareholder value by restricting the deal size. It is also possible that the presence of PPF ownership (and banks, independent advisor ownership) reduces the likelihood of overbidding. Further research is needed to draw a conclusion.

V Subsample results

Mergers and acquisition can create value for the acquirers. It is important to know if PPF has the ability to differentiate between good and bad M&A ex ante and discourage the bad type only. This section looks at PPF impact among low Q firms, on “glamour” and “value” firms, and on “buying-growth” M&A.

A Low Q firms

Jensen’s free cash flow theory predicts that low Q firms with more free cash tend to waste more of it. Cash-rich and low Q firms suffer higher agency costs. Lang, Stulz, and Walkling (1991) indeed find that bidder returns were significantly lower for low Q bidders with high cash flows than low Q bidders with low cash flows. If PPF monitoring is effective, I would expect PPF

ownership to have a more pronounced effect in the cash-rich group among low Q firms.

Table XII presents the results on PPF impact among low Q firms. The specification is again random effects logistic regressions (equation (1)) and their instrumented versions. Low Q firms and cash richness of the firms are classified independently. Each year, firms with Q ratios less than the sample median are classified to be low Q firms.³⁰ Cash richness is defined as the ratio of non-current-debt cash and cash equivalent over non-cash total assets. Each year, firms with above industry (by 4-digit SIC code) median cash holdings are classified to be cash-rich firms.

Thus half of the original observations are classified as low Q observations. This subsample is further split into cash-rich and low-cash groups. Table XII reports both random effects logistic regression results and instrumented random effects logistic regression results on these two groups. PPFs appear to focus their monitoring efforts on the cash-rich low Q group. From the instrumented regression, the presence of a PPF block holder in this group reduces M&A likelihood by 52.25%. On the other hand, PPF ownership has neither economically nor statistically significant effect on M&A likelihood among low-cash low Q firms.

The coefficients on firm-level governance index are significantly positive for cash-rich and low Q group, and not significant at all for low-cash and low Q group. The magnitudes of the coefficients are also significantly larger in the cash-rich group. The fact that weaker shareholder rights is significantly associated with more M&A activity in cash-rich group and that the effect is larger than average is supportive of the theory that this group of firms have higher agency costs.

Insider ownership is significantly associated with reductions in M&A among cash-rich group only. This evidence is consistent with the argument that higher insider ownership helps to align managerial incentives with those of shareholders. Options are significantly and positively associated with M&A for cash-rich group only. The hypothesis that option grants encourage better performance and hence prevent value-reducing M&A receives little support from this finding.

³⁰Annual median Q ratios vary from 1.31 to 1.60.

The occurrences of M&A among cash-rich low Q and low-cash low Q groups are about the same, with 25.16% for the former and 26.14% for the latter. The fact that reduction in M&A likelihood associated with PPF ownership is significant only in cash-rich group, and that the magnitude of the reduction is greater than the average of the whole sample, demonstrates PPFs' ability to differentiate between ex ante good and bad M&A, and discourage the bad type.

B “Glamour” and “value” firms

Roll (1986) points out that managers may be overconfident in their assessment of M&A profitability and hence over-pursue such activity. Managers of firms with outstanding past performances may be more likely to be infected by this “hubris”. Rau and Vermaelen (1998) find “glamour” acquiring firms underperform in the long-run.

Table XIII examines PPF impact on “glamore” and “value” firms. Each year, firms with book-to-market ratios greater than the 70 percentile value of COMPUSTAT and CRSP universe³¹ are classified to be “value” firms. Firms with book-to-market ratios less than the 30 percentile value of COMPUSTAT and CRSP universe are classified to be “glamour” firms. Since my sample is biased towards bigger firms, not surprisingly the number of “glamour” firms is almost double that of “value” firms. Value firms are less active acquirers — 19.31% of this group’s firm-year observations are M&A observations, comparing to 36.31% of “glamour” firm observations being M&A observations.

The specifications reported in Table XIII are again random effects logistic regression model and its instrumented version. “Glamour” group and “value” group are analyzed separately. Public pension funds exhibit a stronger monitoring effect on “glamour” firms, which likely suffer more managerial overconfidence problem. Although the coefficients for PPF ownership variables are not statistically significant for either group in the non-instrumented regressions, their economic significance are very different between the two groups. The economic significance of PPF ownership is much greater among “glamour” firms. The coefficients from instrumented

³¹All the securities with both COMPUSTAT accounting data and CRSP stock data available.

regressions are both statistically and economically significant. A one unit increase in PPF ownership concentration is associated with a 12.53% decrease in M&A likelihood for “glamour” firms, at a significance level of 1%; and a 2.79% (not statistically significant) decrease in M&A likelihood for “value” firms.

C “Buying growth” M&A

Morck, Shleifer, and Vishny (1990) find that “buying growth” acquisitions reduce the returns to the bidders. Managers are likely to overpay fast-growing targets due to their desire to create opportunities for insiders and to assure the long-run survival of the firm.

Table XIV looks at PPF impact on the likelihood of “buying growth” M&A. Due to limited accounting data availability for the targets, I have only 310 observations with target sales growth rate available. Target growth rate is defined to be the 3-year sales growth rate prior to takeover. The median growth rate of this sample is used as the benchmark. Deals with target sales growth above the median are considered to be “buying growth”. I use logistic regression specification for analysis because I no longer have a panel. PPF also reduces the likelihood of “buying growth” M&A. A 1% increase in top PPFH reduces the probability of buying a fast-growing target by 5.98%.³²

VI Performance of M&A

A Market reactions

In this section, I examine whether the market reacts differently to M&A events given different institutional ownership. Table XV and Table XVI report the short-run and long-run findings respectively. Whether fixed effects or random effects regressions are employed for the specification depends on the outcomes of Hausman specification tests. Travlos (1987) finds that the form of payment is significantly correlated with announcement returns. I include the method

³²The coefficient on public pension block dummy is not significant. This may be caused by limited observations — there are only 10 (2.58%) observations with PPF block holders.

of payment variable measuring the percentage of the deal financed by cash in the regressions for announcement abnormal returns. The sample size is thus restricted to disclosed value deals only. Within this smaller sample, random effects regressions are employed. For long-term return regressions, this method of payment variable is not significantly related with any abnormal return measures. I choose to report the regression results from the bigger sample without the inclusion of this variable. For this bigger sample, fixed effects regressions are found to be appropriate. Test statistics from Hausman tests are included in the tables.

Table XV reports the results on announcement returns. Private pension fund ownership and investment company ownership are significantly negatively associated with abnormal returns. The use of cash is significantly and positively related with announcement abnormal returns. However, the market does not appear to perceive that higher PPF ownership or higher insider ownership can improve shareholder value.

Table XVI reports the results on post-announcement abnormal returns over 12 months. PPF ownership is positively associated with long-run abnormal returns measured by benchmarked CAR and buy-and-hold abnormal returns. A one unit increase in PPF ownership concentration is correlated with 3.04% increase in benchmarked CAR (at the 5% significance level), and with 4.19% increase in buy-and-hold abnormal returns (at the 5% significance level).

Concentrated bank ownership and independent advisor ownership are both positively and significantly correlated with long-run abnormal returns. Their effects are less economically significant. For example, BHAR increases by 2.70% for 1% increase in the highest individual PPF ownership, by 1.23 % for individual bank ownership, and by 1.04% for individual advisor ownership.

In contrast, aggregate investment company ownership and the level of CEO cash compensation is negatively correlated with all measures of long-run abnormal returns at the 1% significance level. Insider ownership and options are negatively and significantly correlated with 3-factor CAR.

B Operating performance

Table XVII reports the summary statistics of sample M&A firms' pre- and post-M&A operating performance measures and their abnormal operating performances. For the M&A firms within my sample, on average they performed better than industry median both pre- and post-M&A, when measured by operating cash flow returns and cash flow margin on sales. Their performances measured by these two benchmarks improve after the M&A. Post-M&A industry-adjusted cash flow returns on average increase by 1.53% comparing to their pre-M&A levels; and post-M&A industry-adjusted cash flow margins on average increase by 5.38% comparing to pre-M&A levels. Both improvements are statistically different from zero at the 1% significance level.

However, they performed worse than industry median both before and after M&A when we look at their asset turnover rates. And their asset turnover rates appear to deteriorate after the M&A completion. The decline is not statistically significant except for the subgroup of M&As with publicly traded targets.

Consistent with findings in Healy, Palepu, and Ruback (1992), on average post-acquisition operating performances improve for my sample of M&A deals. This improvement comes mostly from increased cash flow margins on sales.

PPF ownership is not significantly correlated with either post-M&A abnormal cash flow returns or abnormal cash flow margins. On average the M&A sample has worse asset turnover rates than the industry median and there is some indication of further decline post-acquisition. Interestingly PPF ownership has a significant and positive correlation with improvement in asset turnover rate.

Table XVIII reports the regression results on post-M&A operating performance measured by abnormal asset turnover rates. PPF ownership is positively associated with improvements in asset turnover rates. The presence of a PPF 5% block holder is correlated with an increase of 18 cents per dollar in the change of industry-adjusted asset turnover rate, at the significance level of 1%. Table XVI reports that PPF ownership is positively associated with long-run

stock abnormal returns in the year after M&A. Thus this positive association between PPF ownership and abnormal asset turnover is less likely driven by a relative low market valuation of firm assets.

VII Conclusions

My study has shown that PPF ownership is associated with significantly lower merger and acquisition activity and smaller deal sizes, after controlling for firm-level governance provisions and firm characteristics. The reduction in M&A activity is greater in cases with higher potential agency conflict, i.e., for firms with low Q ratios but high free cash flows, for “glamour” firms, and for firms seeking to buy fast-growing targets. PPF ownership is also positively correlated with post-M&A long-run abnormal returns. In addition, firms’ prior M&A activity has no effect on PPF ownership. Overall, I believe that there is enough evidence to support Hypothesis 1a, that public pension funds are effective monitors of corporate M&A activities.

Concentrated bank and independent advisor ownership is not significantly correlated with M&A likelihood in the future 12 months. Concentrated bank ownership is negatively correlated with M&A frequency in future four years. Both bank ownership and advisor ownership are negatively correlated with deal sizes (conditional on successful deals), and positively correlated with post-M&A long-run abnormal returns. There seems to be some monitoring effect by banks and independent advisors.

Ownership by investment companies is significantly and positively associated with M&A likelihood and deal sizes, and negatively associated with both announcement abnormal returns and post-announcement long-run abnormal returns. Investment companies appear to be the least likely monitors among all types of institutions. The observed correlations can be explained by managers of investment companies herding towards overvalued stocks (firms likely to acquire to take advantage of market mis-valuation, Shleifer and Vishny (2003)) which underperform subsequently. The observation is also consistent with the theory that investment companies suffer conflict-of-interest, and their presence encourages value-reducing activity by

firm management. Further study is required to differentiate between these two stories.

Higher insider ownership is negatively and significantly correlated with M&A likelihood and deal sizes. However, insider ownership is negatively correlated with one of the post-M&A long-run abnormal return measures. The level of CEO cash compensation is not significantly correlated with M&A likelihood on the margin, and is negatively and significantly correlated with post-M&A long-run abnormal returns. CEO stock option are significantly and positively correlated with M&A likelihood, and negatively and significantly correlated with post-M&A 3-factor CAR. I find no support within my sample for the argument that more option grants encourage better performance, thus encourage good M&A. Yermack (1995) finds little evidence that agency or financial contracting theories explain the patterns of CEO stock option awards. CEO option grants having no effect on encouraging good M&A is consistent with his findings.

These variables on managerial incentives are primarily control variables in this study. It is interesting to further pursue the significance of managerial incentives in affecting managers' M&A decisions. Possible endogeneity problem need to be addressed in the further study.

Appendix A: Measuring Performance M&A bidder stock performance is measured by both the announcement abnormal returns and the long-run abnormal returns. For announcement abnormal returns, I follow standard event study methodology to calculate CARs for the three-day period (-1,1) around the announcement date supplied by SDC. The abnormal returns are estimated using a modified market model:

$$AR_i = r_i - r_m$$

where r_i is the return on firm i and r_m is the value-weighted market index return.

Measuring long-term abnormal performance is difficult. Barber and Lyon (1997) advocate the use of buy-and-hold abnormal returns over cumulative abnormal returns. They document that cumulative abnormal returns are most affected by new listing bias and are generally positively biased, while buy-and-hold abnormal returns are generally negatively biased. Kothari and Warner (1997) caution that long-horizon abnormal returns are severely misspecified. Fama (1998) argues that formal inferences about long-term returns should be based on averages or sums of short-term abnormal returns. Mitchell and Stafford (2000) show that the conventional methodology of calculating multiyear buy-and-hold abnormal returns and conducting inferences via a bootstrapping procedure is flawed because the abnormal returns for event firms are not independent. They find no abnormal performance in their sample of mergers, seasoned equity offerings, and share repurchases, after accounting for the positive cross-correlations of event firm abnormal returns. Brav (2000) uses a Bayesian approach in estimating long-term abnormal returns and finds the three-factor model to be inconsistent with the long-term performance of IPOs.

Since no one measure appears to be perfect, I examine all three measures of long-term abnormal returns: cumulative abnormal returns using benchmark method, buy-and-hold abnormal returns, and cumulative abnormal returns using Fama-French 3-factor model.

Each month, NYSE/AMEX common stocks are sorted into 10 size portfolios according to their market capitalizations. Within each size portfolio, stocks are further sorted into 5 groups according to their book-to-market value. The breaking points for these 50 portfolios are used to place all common stocks having CRSP and COMPUSTAT coverage and prior book-to-market values into 50 benchmark portfolios.

Cumulative abnormal return (CAR, benchmarked) is calculated over 12 months. R_{bt} , the average returns for these benchmark portfolios are calculated for each month. Note that benchmark portfolios are rebalanced every month.

$$CAR_i = \sum_{t=1}^{12} (R_{it} - R_{bt})$$

where R_{it} is the simple monthly return on the common stock of firm i .

In contrast, buy-and-hold abnormal return (BHAR) is calculated by holding the initial benchmark portfolio constant.

$$BHAR_i = \prod_{t=1}^{12} (1 + R_{it}) - \prod_{t=1}^{12} (1 + R_{b1t})$$

where R_{b1t} is the average monthly return at time t on benchmark portfolio $b1$, which is the portfolio matched with the common stock of firm i at time 1 .

Fama-French 3-factor abnormal return is the α_i from the time-series regression of the model:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_iSMB_t + h_iHML_t + \epsilon_{it}$$

where R_{ft} is the return on three-month Treasury bills, R_{mt} is the return on a value-weighted market index, SMB_t is the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks, HML_t is the difference between the return on a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks.

Firm-level operating performance is compared to industry median before M&A and after M&A. The changes in industry-adjusted performances are the measure of abnormal performances.

Operating cash flow return:

$$CF = \frac{\text{operatingincome}[13] + \text{depreciation}[14] + \text{goodwill}[204]}{\text{totalasset}[6] - \text{bookvalueofequity}[60] + \text{marketvalueofequitybeginningofyear}}$$

Cash flow margin on sales:

$$CFM = \frac{\text{operatingincome}[13] + \text{depreciation}[14] + \text{goodwill}[204]}{\text{sales}[12]}$$

Asset turnover rate:

$$AT = \frac{\text{sales}[12]}{\text{totalasset}[6] - \text{bookvalueofequity}[60] + \text{marketvalueofequitybeginningofyear}}$$

These operating performance measures are not affected by depreciation and goodwill. Thus it is comparable cross-sectionally for firms used purchase accounting and firms used pooling-of-interests accounting methods. These measures are also not affected by the methods of financing used in mergers because interest expense is not deducted.

These measures are then adjusted by subtracting industry medians. Industry-adjusted operating cash flow return(IACF), industry-adjusted cash flow margin on sales(IACFM), and industry-adjusted asset turnover rate(IAAT) are calculated for the 3 years before M&A completion year and the 3 years after M&A completion year.

The majority of my M&A sample acquired private targets. For the small number of M&A with publicly traded targets, pre-M&A operating performance is calculated as the weighted average between the bidder and the target. The weights are the bidder and the target's market capitalizations at the beginning of the year prior to the M&A completion year.

The median value of operating performance from the 3 years pre-M&A ($IACF_{pre,i}$, $IACFM_{pre,i}$, $IAAT_{pre,i}$) and the median value of operating performance from the 3 years post-M&A ($IACF_{post,i}$, $IACFM_{post,i}$, $IAAT_{post,i}$) are used to calculate abnormal operating performance.

I use two methods of calculation. The first one follows Barber and Lyon (1996). It is the difference between post-M&A industry-adjusted performance and pre-M&A industry-adjusted performance:

$$\begin{aligned}
AIACF_i &= IACF_{post,i} - IACF_{pre,i} \\
AIACFM_i &= IACFM_{post,i} - IACFM_{pre,i} \\
AIAAT_i &= IAAT_{post,i} - IAAT_{pre,i}
\end{aligned}$$

The second method follows Healy, Palepu, and Ruback (1992). Taking into consideration that pre-M&A operating performance may predict the post-M&A operating performance,

$$\begin{aligned}
IACF_{post,i} &= a1 + b1 * IACF_{pre,i} + \epsilon_{i1} \\
IACFM_{post,i} &= a2 + b2 * IACFM_{pre,i} + \epsilon_{i2} \\
IAAT_{post,i} &= a3 + b3 * IAAT_{pre,i} + \epsilon_{i3}
\end{aligned}$$

These regressions are run on the whole sample of M&A observations to get estimates of the coefficients. For individual acquiror, its abnormal operating performance is thus calculated as

$$\begin{aligned}
AIACF_i &= IACF_{post,i} - (a1 + b1 * IACF_{pre,i}) \\
AIACFM_i &= IACFM_{post,i} - (a2 + b2 * IACFM_{pre,i}) \\
AIAAT_i &= IAAT_{post,i} - (a3 + b3 * IAAT_{pre,i})
\end{aligned}$$

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Table I: Data Sources and Definitions

Merger and acquisition dummy	SDC	1=there is at least one m&a announcement during the 12-month period: July t+1 – June t+2; 0=no m&a announcement during the same 12-month period
Governance index	Gompers, Ishii,&Metrick	measures shareholder rights, smaller number indicates better governance provisions, <i>Corporate Governance and Equity Prices</i> , The Quarterly Journal of Economics, Feb. 2003
Insider ownership	Execucomp	aggregate insider ownership of top 5 executives, in percent, during year t
Aggregate institutional holdings	Thomson Financial	aggregate institutional ownership by each category, in percent, at the end of June, year t+1
Top individual institutional holdings	Thomson Financial	highest individual institutional ownership within each category, in percent, at the end of June, year t+1
5% institutional block holder dummy	Thomson Financial	1=at least one individual institution with at least 5% ownership; 0=no individual institution with at least 5% ownership, within each category, at the end of June, year t+1
Institutional ownership concentration	Thomson Financial	Herfindahl-index measure of concentration (sum of the squares of individual ownership) / aggregate ownership, by each category
Variation in insider ownership	Thomson Financial	standard deviation of aggregate managerial stock ownership, from 1992 to 1999
Variation in institutional ownership	Thomson Financial	standard deviation of individual institution ownership of one company, from 1992 to 1999 (or whenever the data is available), average within the institution's portfolio, then average within each category
CEO salary and bonus	EXECUCOMP	annual salary and bonus, in millions of dollars
Options(% of total compensation)	EXECUCOMP	option granted as the percentage of CEO total compensation. Total compensation is comprised of the following: salary, bonus, other annual compensation, total value of restricted stock granted, total value of Stock options granted, long-term incentive payouts, and all others.
CPI, base year 1992	U.S. Department of Labor	Consumer Price Index - all urban consumers, U.S. all items series, index=1 for year 1992
Total assets	COMPUSTAT	total book assets[6] / CPI, base year 1992
Size	COMPUSTAT	$\ln(\text{total assets}[6] / \text{CPI, base year 1992})$
Market capitalization	CRSP	market capitalization at the end of calendar year / CPI, base year 1992
Beta		firm beta based on the market model 5 years prior to July year t+1, if less than 2 years of stock return data available, use the earliest 2-year data as proxy.
SE of Beta		standard error on firm beta from the market model regressions
Book-to-market ratio	COMPUSTAT	(book value of equity[60] + deferred tax[35]) / market capitalization
Q ratio	COMPUSTAT	(market capitalization + long-term debt[9] + current debt[34] + preferred stock value[130]) / total assets[6]
Cash richness	COMPUSTAT	(cash and cash equivalents[1] - current debt[34]) / (total assets[6] - cash and cash equivalents[1])
Cash flow ratio	COMPUSTAT	(ebitda[13] - interest[15] - tax[16-Δ35] - common dividends[21] - preferred dividends[19]) / (total assets[6] - cash and cash equivalents[1])
Capital expenditures ratio	COMPUSTAT	capital expenditures[128] / (total assets[6] - cash and cash equivalents[1]), averaged over three years (t, t+1 and t+2)
Leverage ratio	COMPUSTAT	(current debt[34] + long-term debt[9]) / (total assets[6] - cash and cash equivalents[1])
Sales growth	COMPUSTAT	1-year sales growth rate
Industrial concentration	COMPUSTAT	Herfindahl-index calculated using sales data[12], based on 4-digit SIC code

Table II: Descriptive Statistics

The sample (6,693 observations) are all Execucomp firms (1992 – 1999) issuing ordinary common shares, with Governance index available, and excluding utilities, finance and insurance companies and government agencies. Further restrictions are the availability of accounting data and stock return data, and year end market capitalization exceeding one-hundredth of the S&P 500 index.

Ownership Data					
Variable	Mean	Median	Std Dev	Min	Max
Insider ownership (%)	4.38	0.86	8.72	0.00	82.47
Aggregate public pension fund holdings (%)	3.07	2.44	2.49	0.00	19.78
Aggregate private pension fund holdings (%)	1.03	0.48	2.10	0.00	66.55
Aggregate bank holdings (%)	10.19	9.15	6.40	0.00	53.76
Aggregate insurance company holdings (%)	5.05	4.15	3.86	0.00	47.38
Aggregate investment company holdings (%)	12.56	10.79	9.19	0.00	9.64
Aggregate independent advisor holdings (%)	24.85	24.27	10.85	0.00	78.78
Top individual public pension fund holdings (%)	1.42	0.80	1.82	0.00	18.38
Top individual private pension fund holdings (%)	0.67	0.20	1.93	0.00	66.38
Top individual bank holdings (%)	3.36	2.17	3.88	0.00	47.58
Top individual insurance company holdings (%)	2.54	1.63	2.91	0.00	47.05
Top individual investment company holdings (%)	5.53	4.59	4.05	0.00	50.17
Top individual independent advisor holdings (%)	5.71	4.79	3.91	0.00	57.10
5% public pension fund block holder dummy	0.05	0.00	0.21	0.00	1.00
5% private pension fund block holder dummy	0.02	0.00	0.14	0.00	1.00
5% bank block holder dummy	0.16	0.00	0.37	0.00	1.00
5% insurance company block holder dummy	0.12	0.00	0.32	0.00	1.00
5% investment company block holder dummy	0.47	0.00	0.50	0.00	1.00
5% independent advisor block holder dummy	0.47	0.00	0.50	0.00	1.00
Public pension ownership concentration	1.05	0.55	1.54	0.00	17.12
Private pension ownership concentration	0.55	0.14	1.84	0.00	66.21
Bank ownership concentration	2.01	1.16	2.94	0.00	43.77
Insurance company ownership concentration	1.81	1.07	2.47	0.00	46.72
Investment company ownership concentration	3.76	3.02	2.94	0.00	42.50
Independent advisor ownership concentration	2.93	2.32	2.50	0.00	46.52
Firm and Industry Characteristics					
Governance index	9.26	9.00	2.78	2	16
Total assets (millions, CPI-adjusted)	2,999.14	922.35	7,026.08	10.09	142,663.00
Market capitalization (millions, CPI-adjusted)	4,590.66	1,029.87	15,976.99	13.17	507,331.00
Q-ratio	1.88	1.33	2.08	0.27	46.11
Cash flow ratio (%)	10.00	9.92	17.03	-500.69	100.19
Capital expenditures ratio (%)	7.90	6.44	5.76	0.00	58.40
Leverage ratio (%)	25.79	24.34	24.44	0.00	966.61
Sales growth (%)	13.50	8.51	27.08	-40.80	225.50
Beta	1.10	1.04	0.53	-0.07	3.24
SE of Beta	0.40	0.34	0.20	0.11	2.21
CEO cash compensation (millions, CPI-adjusted)	0.96	0.74	0.86	0.00	15.71
Options (%)	29.99	25.99	27.78	0.00	100
Ln(industrial concentration)	8.00	8.12	0.87	5.29	9.21
Stock Return Data (%)					
CAR benchmarked, July t – June t+1	0.99	-0.78	41.48	-224.20	774.26
CAR 3-factor, July t – June t+1	2.64	1.21	41.53	-76.71	105.31
Buy-and-hold return, July t – June t+1	1.60	-5.85	53.40	-125.66	958.21
Announcement abnormal return	6.19	6.93	173.54	-1718.91	975.53
CAR benchmarked, 1 year after announcement	1.18	1.31	39.86	-208.70	178.61
CAR 3-factor, 1 year after announcement	3.71	1.69	44.32	-86.51	109.99
Buy-and-hold return, 1 year after announcement	0.41	-4.80	48.46	-141.10	402.05

Table III: Comparison between M&A Firm-years and Non-M&A Firm-years

This table reports the mean values of variables for M&A firm-year observations and non-M&A firm-year observations. P-values from the T-test on the means are reported in parentheses. There are 2,025 M&A firm-years, and 4,668 non-M&A firm-years.

	mean values		T-test
	M&A	non-M&A	
Aggregate public pension ownership (%)	2.98	3.10	(0.051)
Aggregate private pension ownership (%)	1.16	0.97	(0.001)
Aggregate bank ownership (%)	11.04	9.82	(0.000)
Aggregate insurance co. ownership (%)	5.57	4.82	(0.000)
Aggregate investment co. ownership (%)	14.01	11.93	(0.000)
Aggregate indep. advisor ownership (%)	25.29	24.65	(0.028)
5% public pension block holder	0.03	0.06	(0.000)
5% private pension block holder	0.02	0.02	(0.259)
5% bank block holder	0.16	0.16	(0.356)
5% insurance co. block holder	0.12	0.11	(0.303)
5% investment co. block holder	0.51	0.47	(0.001)
5% indep. advisor block holder	0.43	0.48	(0.001)
Governance index	9.49	9.16	(0.000)
Insider ownership (%)	3.44	4.79	(0.000)
Total assets	3,698.11	2,695.93	(0.000)
Market capitalization	6,903.50	3,587.34	(0.000)
Cash flow ratio (%)	11.31	9.42	(0.000)
Q ratio	2.16	1.76	(0.000)
Leverage ratio (%)	24.72	26.26	(0.020)
Capital expenditures ratio (%)	7.27	8.17	(0.000)
Sales growth(%)	16.02	12.40	(0.000)
CAR, benchmarked (June, year t - July, year t+1)	5.77	-1.09	(0.000)
CAR, 3-factor (June, year t - July, year t+1)	7.17	0.67	(0.000)
BHAR (June, year t - July, year t+1)	8.08	-1.21	(0.000)
# of obs	2,025	4,668	

Table IV: Correlations Among Key Variables

Aggregate institutional ownership within each category

	Public pension	Private pension	Banks	Insurance Co.	Investment Co.	Indep. advisors	Gover. index	M&A	Prior M&A	Ln(Mkt Cap)
Public pension	1.00									
Private pension	0.06	1.00								
Banks	0.14	0.13	1.00							
Insurance Co.	0.04	0.03	0.11	1.00						
Investment Co.	-0.11	-0.04	-0.05	0.15	1.00					
Indep. advisors	0.08	-0.02	0.02	0.14	0.14	1.00				
Governance index	0.08	0.07	0.19	0.07	-0.02	0.06	1.00			
M&A	-0.02	0.04	0.09	0.09	0.10	0.03	0.06	1.00		
Prior M&A	-0.04	0.02	0.06	0.06	0.09	0.03	0.04	0.31	1.00	
Ln(Market Cap)	-0.02	0.16	0.35	0.16	0.24	-0.14	0.11	0.19	0.17	1.00

5% block holder within each category

	Public pension	Private pension	Banks	Insurance Co.	Investment Co.	Indep. advisors	Gover. index	M&A	Prior M&A	Ln(Mkt Cap)
Public pension	1.0000									
Private pension	0.01	1.00								
Banks	-0.05	0.02	1.00							
Insurance Co.	-0.01	-0.02	0.00	1.00						
Investment Co.	-0.04	-0.04	-0.05	0.02	1.00					
Indep. advisors	0.05	0.01	-0.00	0.03	0.09	1.00				
Governance index	-0.03	0.01	0.06	-0.01	-0.00	-0.00	1.00			
M&A	-0.06	-0.01	-0.01	0.01	0.04	-0.04	0.06	1.00		
Prior M&A	-0.04	-0.02	-0.02	-0.00	0.02	-0.03	0.04	0.31	1.00	
Ln(Market Cap)	-0.19	0.02	-0.02	-0.02	0.00	-0.34	0.11	0.19	0.17	1.00

Table V: Comparison between Frequent and Non-frequent M&A Firms

This table reports the mean values of variables of interest for sample firms with different M&A frequency. P-values from t-tests comparing the means between the 0 M&A group and the all M&A group are reported.

	no M&A year	1-2 M&A years	3-4 M&A years	5-6 M&A years	7 M&A years	all M&A years	T-test
Aggregate public pension ownership (%)	3.16	2.99	2.94	3.30	3.11	3.18	(0.965)
Aggregate private pension ownership (%)	0.82	1.07	1.07	1.19	1.74	2.34	(0.000)
Aggregate bank ownership (%)	8.75	9.70	11.64	12.35	14.90	16.08	(0.000)
Aggregate insurance co. ownership (%)	4.57	5.00	5.37	5.86	5.53	5.90	(0.037)
Aggregate investment ownership (%)	11.62	12.90	12.82	13.53	12.16	13.14	(0.295)
Aggregate indep. advisor ownership (%)	24.30	24.93	25.74	24.78	23.84	25.10	(0.654)
5% public pension block holder	0.08	0.05	0.02	0.03	0.00	0.00	(0.031)
5% private pension block holder	0.02	0.03	0.01	0.01	0.05	0.00	(0.570)
5% bank block holder	0.15	0.16	0.18	0.14	0.29	0.15	(0.524)
5% insurance co. block holder	0.11	0.13	0.10	0.11	0.05	0.00	(0.915)
5% investment co. block holder	0.46	0.50	0.48	0.47	0.29	0.48	(0.009)
5% indep. advisor block holder	0.50	0.48	0.42	0.39	0.31	0.23	(0.373)
Insider ownership (%)	6.02	4.27	3.69	2.20	1.02	0.97	(0.004)
Governance index	8.61	9.16	9.78	10.38	10.57	7.73	(0.035)
Total assets (million)	2,429.63	2,076.92	3,925.55	5,060.68	9,213.02	6,719.37	(0.000)
Market capitalization (million)	2,861.35	3,139.11	6,863.32	8,071.56	17,978.04	13,711.42	(0.000)
Cash flow ratio (%)	9.02	9.75	11.25	10.97	12.37	13.05	(0.167)
Q ratio	1.80	1.93	1.84	1.84	2.77	2.17	(0.240)
Leverage ratio (%)	26.04	25.24	25.47	24.95	14.07	(0.024)	
Capital expenditures ratio (%)	8.41	8.28	6.90	7.29	5.27	5.31	(0.002)
Sales growth (%)	12.24	14.64	11.92	14.89	15.53	16.16	(0.373)
CAR, benchmarked (June, year t - July, year t+1)	-1.31	2.25	0.04	3.35	4.33	7.60	(0.248)
CAR, 3-factor (June, year t - July, year t+1)	0.47	3.47	1.43	5.77	11.32	7.52	(0.329)
BHAR (June, year t - July, year t+1)	-2.16	4.02	-0.17	4.87	6.78	7.25	(0.278)
# of firms	534	530	178	101	15	5	
# of firm-year observations	2,014	2,590	1,162	771	116	40	

Table VI: Determinants of Institutional Ownership

This table reports the coefficients and standard errors from fixed effects regressions on determinants for different types of institutional ownership.

	Dependent var - PPF ownership			Dependent var - Private Pension ownership			Dependent var - Banks		
	Aggre	Top Indi	5% block	Aggre	Top Indi	5% block	Aggre	Top Indi	5% block
Prior ownership	0.368*** (0.011)	0.341*** (0.012)	0.260*** (0.012)	0.483*** (0.012)	0.482*** (0.012)	0.439*** (0.013)	0.316*** (0.012)	0.330*** (0.013)	0.181*** (0.013)
Prior M&A +ve announcement CAR	0.081 (0.059)	0.054 (0.044)	0.004 (0.006)	-0.039 (0.050)	-0.047 (0.047)	-0.006 (0.004)	0.223* (0.132)	0.015 (0.089)	-0.000 (0.011)
Prior M&A -ve announcement CAR	0.009 (0.062)	-0.030 (0.046)	0.009 (0.006)	-0.051 (0.050)	-0.089* (0.050)	-0.005 (0.004)	0.126 (0.138)	-0.035 (0.094)	-0.019 (0.012)
beta	0.118* (0.063)	0.123*** (0.046)	0.005 (0.006)	0.091* (0.053)	0.093* (0.050)	-0.003 (0.004)	-0.136 (0.140)	-0.025 (0.095)	-0.001 (0.012)
Governance index	0.057* (0.032)	0.022 (0.023)	0.001 (0.003)	0.022 (0.027)	0.017 (0.025)	0.002 (0.002)	0.140** (0.071)	0.072 (0.048)	0.002 (0.006)
Insider ownership	-0.002 (0.006)	0.002 (0.005)	-0.000 (0.001)	0.002 (0.005)	0.001 (0.005)	0.000 (0.000)	0.031** (0.014)	0.033*** (0.009)	0.001 (0.001)
CEO salary and bonus	-0.005 (0.041)	-0.012 (0.030)	-0.002 (0.004)	0.064* (0.035)	0.039 (0.033)	0.002 (0.003)	0.149 (0.091)	-0.036 (0.062)	-0.005 (0.008)
Options (% of total compensation)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	-0.000 (0.000)	0.002 (0.002)	0.001 (0.001)	0.000 (0.000)
Cash flow ratio	-0.003 (0.002)	-0.004*** (0.002)	-0.001*** (0.000)	0.002 (0.002)	0.001 (0.002)	0.000 (0.000)	0.006 (0.005)	0.001 (0.003)	-0.000 (0.000)
Size	0.377*** (0.079)	0.111* (0.058)	0.011 (0.008)	0.054 (0.066)	0.048 (0.063)	-0.002 (0.005)	0.652*** (0.175)	0.008 (0.118)	-0.011 (0.015)
Q ratio	-0.012 (0.020)	-0.025* (0.014)	-0.001 (0.002)	-0.020 (0.017)	-0.021 (0.016)	-0.000 (0.001)	0.185*** (0.044)	0.003 (0.030)	0.001 (0.004)
Leverage ratio	-0.003* (0.002)	-0.001 (0.001)	-0.000 (0.000)	0.001 (0.001)	0.000 (0.001)	0.000* (0.000)	-0.007** (0.004)	-0.002 (0.002)	-0.000 (0.000)
Capital expenditures ratio	0.002 (0.007)	-0.002 (0.005)	0.001 (0.001)	0.003 (0.006)	-0.000 (0.006)	0.000 (0.000)	0.025 (0.016)	0.003 (0.011)	-0.001 (0.001)
Prior performance CAR, benchmarked	-0.004*** (0.001)	-0.004*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.003*** (0.001)	-0.001 (0.001)	-0.000** (0.000)
Ln(industrial concentration)	-0.098 (0.073)	-0.050 (0.054)	0.000 (0.007)	0.004 (0.062)	0.009 (0.059)	0.003 (0.005)	-0.218 (0.163)	-0.244** (0.110)	-0.006 (0.014)
Year Dummies		Yes	Yes	Yes	Yes	Yes		Yes	Yes
Observations		6,693	6,693	6,693	6,693	6,693		6,693	6,693
Number of firms		1,363	1,363	1,363	1,363	1,363		1,363	1,363
R-squared, within	0.319	0.231	0.104	0.254	0.241	0.174	0.221	0.144	0.043
R-squared, between	0.522	0.604	0.630	0.816	0.824	0.695	0.696	0.752	0.598
R-squared, overall	0.457	0.469	0.388	0.602	0.582	0.495	0.592	0.572	0.324

Table VI: Determinants of Institutional Ownership: cont'd

This table reports the coefficients and standard errors from fixed effects regressions on determinants for different types of institutional ownership.

	Dep var - Insurance Co. Ownership			Dep var - Investment Co. Ownership			Dep var - Indep. Advisor Ownership		
	Aggre	Top Indi	5% block	Aggre	Top Indi	5% block	Aggre	Top Indi	5% block
Prior ownership	0.258*** (0.013)	0.264*** (0.013)	0.109*** (0.013)	0.334*** (0.012)	0.229*** (0.013)	0.132*** (0.014)	0.285*** (0.012)	0.326*** (0.013)	0.130*** (0.014)
Prior M&A +ve announcement CAR	-0.020 (0.094)	-0.070 (0.068)	-0.006 (0.009)	0.263 (0.219)	-0.194 (0.221)	-0.007 (0.016)	0.407 (0.268)	0.044 (0.108)	0.010 (0.016)
Prior M&A -ve announcement CAR	0.174* (0.099)	0.061 (0.071)	0.018* (0.010)	0.159 (0.229)	-0.221* (0.127)	-0.039** (0.017)	0.474* (0.281)	-0.036 (0.113)	-0.013 (0.017)
beta	-0.177* (0.100)	-0.134* (0.072)	-0.019* (0.010)	0.013 (0.232)	0.012 (0.128)	-0.011 (0.017)	-0.275 (0.284)	0.022 (0.114)	0.006 (0.017)
Governance index	0.005 (0.050)	0.005 (0.036)	0.004 (0.005)	-0.248** (0.117)	-0.096 (0.065)	-0.008 (0.009)	0.130 (0.143)	-0.032 (0.058)	0.002 (0.009)
Insider ownership	-0.002 (0.010)	-0.003 (0.007)	-0.001 (0.001)	0.008 (0.023)	-0.006 (0.013)	-0.001 (0.002)	0.014 (0.028)	0.023** (0.011)	0.003** (0.002)
CEO salary and bonus	0.170*** (0.065)	0.093** (0.047)	0.009 (0.006)	0.184 (0.152)	-0.047 (0.084)	-0.010 (0.011)	-0.242 (0.186)	-0.084 (0.075)	-0.020* (0.011)
Options (% of total compensation)	0.003* (0.001)	0.001 (0.001)	0.000 (0.000)	0.008** (0.003)	0.002 (0.002)	0.000 (0.000)	-0.007* (0.004)	-0.003** (0.002)	-0.001** (0.000)
Cash flow ratio	0.006* (0.004)	0.003 (0.003)	0.000 (0.000)	0.011 (0.008)	0.004 (0.005)	0.001 (0.001)	0.003 (0.010)	-0.006 (0.004)	-0.001* (0.001)
Size	0.244** (0.125)	0.092 (0.090)	0.005 (0.012)	-0.345 (0.290)	-0.621*** (0.160)	-0.040* (0.022)	-3.625*** (0.357)	-0.977*** (0.143)	-0.145*** (0.022)
Q ratio	0.141*** (0.031)	0.048** (0.023)	-0.001 (0.003)	0.196*** (0.073)	-0.045 (0.040)	-0.004 (0.005)	-0.262*** (0.089)	-0.076** (0.036)	-0.019*** (0.005)
Leverage ratio	0.001 (0.003)	0.004** (0.002)	0.001*** (0.000)	-0.000 (0.006)	0.001 (0.003)	-0.000 (0.000)	0.010 (0.007)	0.007** (0.003)	0.000 (0.000)
Capital expenditures ratio	0.027** (0.011)	0.012 (0.008)	0.002* (0.001)	0.080*** (0.026)	0.028* (0.015)	0.004* (0.002)	0.034 (0.032)	-0.023* (0.013)	-0.004** (0.002)
Prior performance CAR, benchmarked	0.001 (0.001)	-0.001* (0.001)	-0.000 (0.000)	0.025*** (0.002)	0.007*** (0.001)	0.001*** (0.000)	0.028*** (0.002)	-0.005*** (0.001)	-0.000*** (0.000)
Ln(industrial concentration)	-0.178 (0.116)	-0.158* (0.084)	-0.003 (0.011)	-0.489* (0.270)	-0.101 (0.150)	-0.011 (0.020)	-0.557* (0.331)	-0.195 (0.133)	0.005 (0.020)
Year Dummies	Yes 6,693			Yes 6,693			Yes 6,693		
Observations	1,363			1,363			1,363		
Number of firms	0.093			0.060			0.068		
R-squared, within	0.128	0.091	0.021	0.343	0.104	0.060	0.197	0.134	0.045
R-squared, between	0.596	0.715	0.325	0.517	0.228	0.195	0.195	0.371	0.213
R-squared, overall	0.435	0.488	0.194	0.467	0.189	0.139	0.208	0.290	0.147

Table VII: Endogeneity test

This table reports the Wu-Hausman endogeneity test results for various ownership measures of different types of institutions. F-test stat in the first stage and the P-value from the overidentification tests are also reported. The first column reports the coefficients for ϵ_{1it} and the corresponding t-stat from equation (3). The first-stage and the second-stage regression model is slightly different from equation (2) and (3) as other types' ownership measures do not enter the model as independent variables. This change is adopted due to the concern that there may be more than one type of endogenous institutional ownership.

	Coefficients (ϵ_{1it})	t-stats (ϵ_{1it})	F from first stage demeaned OLS regression	P-value from overidentification test
Aggregate PPF	0.18***	(3.33)	445.92	0.831
Aggregate private pension	-0.06	(-1.09)	716.27	0.672
Aggregate bank	0.04	(1.41)	297.03	0.669
Aggregate insurance co.	0.03	(0.67)	170.97	0.696
Aggregate investment co.	0.01	(0.56)	290.51	0.697
Aggregate indep. advisor	0.03*	(1.71)	255.28	0.616
Top indiv. PPF	0.26***	(3.10)	359.01	0.872
Top indiv. private pension	-0.08	(-1.44)	694.19	0.661
Top indiv. bank	0.04	(0.91)	288.60	0.684
Top indiv. insurance co.	0.04	(0.67)	177.45	0.722
Top indiv. investment co.	-0.01	(-0.31)	128.70	0.702
Top indiv. indep. advisor	0.01	(0.17)	275.18	0.690
5% PPF block	2.44***	(2.97)	194.33	0.798
5% private pension block	-1.04	(-1.31)	460.40	0.704
5% bank block	0.12	(0.19)	75.79	0.691
5% insurance co. block	-0.91	(-0.79)	29.30	0.825
5% investment co. block	-0.27	(-0.45)	38.66	0.743
5% indep. advisor block	0.66	(1.08)	37.72	0.724
PPF concentration	0.32***	(3.06)	338.73	0.883
Private pension concentration	-0.09	(-1.47)	655.70	0.657
Bank concentration	0.05	(0.99)	291.53	0.668
Insurance co. concentration	0.06	(0.72)	199.57	0.724
Investment co. concentration	-0.02	(-0.32)	111.73	0.702
Indep. advisor concentration	0.00	(0.05)	322.36	0.698

Table VIII: Likelihood of M&A and Overall Institutional Ownership

This table reports the marginal effects and P-values from random effects logistic regressions. The institutional ownership variable in this table is for the overall level.

	Dependent variable — 1=m&a; 0=no m&a			
	1=m&a, # of obs: 2025 (30.26%)			
	Aggre	Top Indi	5% block	Concen
Institutional ownership	0.20*** (0.000)	0.25* (0.056)	4.10*** (0.010)	0.13 (0.624)
Shareholder Rights				
Governance Index	0.45 (0.102)	0.52* (0.057)	0.50* (0.066)	0.52* (0.057)
Managerial Incentives				
Insider ownership	-0.14 (0.129)	-0.23*** (0.014)	-0.22*** (0.018)	-0.23*** (0.012)
CEO salary and bonus	0.82 (0.356)	0.97 (0.275)	0.97 (0.274)	0.98 (0.270)
Options	0.07*** (0.003)	0.08*** (0.001)	0.08*** (0.001)	0.08*** (0.001)
Firm Characteristics				
Prior good M&A	20.34*** (0.000)	20.90*** (0.000)	20.72*** (0.000)	20.90*** (0.000)
Prior bad M&A	17.92*** (0.000)	18.46*** (0.000)	18.36*** (0.000)	18.50*** (0.000)
Leverage ratio	-0.07** (0.039)	-0.08** (0.033)	-0.08** (0.030)	-0.08** (0.037)
Cash flow ratio	0.06 (0.198)	0.09* (0.068)	0.09* (0.071)	0.10* (0.063)
Size	2.72*** (0.000)	3.04*** (0.000)	3.20*** (0.000)	2.96*** (0.000)
Q ratio	1.56*** (0.000)	1.57*** (0.000)	1.61*** (0.000)	1.53*** (0.000)
Capital expenditures ratio	-0.63*** (0.000)	-0.62*** (0.000)	-0.62*** (0.000)	-0.62*** (0.000)
Prior Performance				
CAR, benchmark	0.07*** (0.000)	0.08*** (0.000)	0.08*** (0.000)	0.08*** (0.000)
Industry Characteristics				
Ln(industrial concentration)	-0.19 (0.822)	-0.18 (0.835)	-0.22 (0.795)	-0.18 (0.836)
Year Dummies			Yes	
Observations			6,693	
Number of firms			1,363	

Table IX: Likelihood of M&A and Different Types of Institutional Ownership

This table reports the marginal effects and P-values from random effects logistic regressions. Marginal effects at means are obtained by assuming the random effect $u=0$ and are reported as percentages. For dummy variable, marginal effect reflects the change in probability when the value of the variable increases from 0 to 1. The intercepts are not reported in this table. If the log of market capitalization is used as the measurement of firm size, regression results are similar. The log of total assets is used as the measure for size because the Q ratio is strongly correlated with market capitalization.

	Dependent variable — 1=m&a; 0=no m&a 1=m&a, # of obs: 2025 (30.26%)			
	random effects logit		Instrumented random effects logit	
Institutional Ownership	aggre	Top indi.	aggre	Top indi.
PPFH	-0.51* (0.089)	-0.90** (0.033)	-2.53*** (0.001)	-4.26*** (0.000)
	0.52* (0.082)	0.52* (0.099)	0.52* (0.085)	0.51 (0.331)
Banks	0.27** (0.022)	-0.03 (0.890)	0.28** (0.018)	-0.24 (0.892)
Insurance Co.	0.63*** (0.000)	0.53** (0.020)	0.65*** (0.000)	0.51* (0.054)
Investment Co.	0.33*** (0.000)	0.56*** (0.001)	0.34*** (0.000)	0.58*** (0.009)
Indep. advisors	0.05 (0.419)	0.11 (0.525)	-0.11 (0.620)	0.04 (0.864)
Shareholder Rights				
Governance index	0.48* (0.081)	0.53* (0.051)	0.67** (0.018)	0.54* (0.032)
Managerial Incentives				
Insider ownership	-0.13 (0.153)	-0.20** (0.034)	-0.16* (0.095)	-0.22** (0.026)
CEO salary and bonus	0.75 (0.396)	0.89 (0.316)	0.67 (0.454)	0.88 (0.323)
Options (% of total compensation)	0.07*** (0.003)	0.08*** (0.001)	0.07*** (0.002)	0.08*** (0.001)
Firm Characteristics				
Prior good M&A	20.40*** (0.000)	20.74*** (0.000)	20.49*** (0.000)	20.77*** (0.000)
Prior bad M&A	17.80*** (0.000)	18.25*** (0.000)	17.78*** (0.000)	17.96*** (0.000)
Leverage ratio	-0.07** (0.045)	-0.08** (0.029)	-0.08** (0.034)	-0.09** (0.020)
Cash flow ratio	0.06 (0.247)	0.08 (0.139)	0.05 (0.322)	0.05 (0.326)
Size	2.15*** (0.002)	2.81*** (0.000)	2.63*** (0.026)	3.23*** (0.000)
Q ratio	1.37*** (0.000)	1.55*** (0.000)	1.24*** (0.001)	1.45*** (0.000)
Capital expenditures ratio	-0.67*** (0.000)	-0.66*** (0.000)	-0.67*** (0.000)	-0.67*** (0.000)
Prior Performance				
CAR, benchmarked	0.07*** (0.000)	0.07*** (0.000)	0.06*** (0.000)	0.07*** (0.000)
Industry Characteristics				
Ln(industrial concentration)	-0.23 (0.795)	-0.18 (0.834)	-0.57 (0.514)	-0.24 (0.784)
Year Dummies		Yes		Yes
Observations		6,693		6,693
Number of firms		1,363		1,363

* significant at 10 %, ** significant at 5%; *** significant at 1%

Table X: Predicting M&A Frequency in the Long-run

This table reports the coefficients and standard errors from negative binomial regressions on observations from year 1992. The dependent variables are the number of M&A years during the eight years of the sample (July 1993 - June 2001). Negative binomial regression is used because goodness-of-fit test indicates overdispersion of Poisson model. Other controls include the governance index, leverage ratio, insider ownership, CEO cash compensation, Q ratio, prior CAR, and industrial concentration. Their coefficients are not significant.

	Dependent var — # of M&A years during the period of study			
Institutional Ownership	Aggregate	Top indiv.	5% block	Concentration
PPFH	-0.017 (0.015)	-0.042* (0.022)	-0.258 (0.161)	-0.051* (0.027)
Private Pension	0.023 (0.014)	0.023 (0.016)	0.176 (0.230)	0.021 (0.017)
Banks	0.012** (0.005)	0.001 (0.008)	-0.043 (0.095)	-0.002 (0.011)
Insurance Co.	0.024** (0.009)	0.016 (0.012)	0.162 (0.127)	0.013 (0.390)
Investment Co.	0.001 (0.008)	-0.004 (0.013)	-0.070 (0.092)	-0.004 (0.016)
Indep. Advisor	-0.001 (0.004)	0.010 (0.012)	0.043 (0.079)	0.010 (0.024)
CEO options	0.003** (0.002)	0.003* (0.002)	0.003** (0.002)	0.003* (0.002)
Prior good M&A	0.617*** (0.094)	0.633*** (0.095)	0.648*** (0.095)	0.634*** (0.095)
Prior bad M&A	0.500*** (0.103)	0.509*** (0.104)	0.519*** (0.103)	0.517*** (0.104)
Cash flow ratio	0.011* (0.006)	0.011** (0.006)	0.011 (0.006)	0.012** (0.006)
Size	0.092** (0.038)	0.113*** (0.037)	0.113*** (0.037)	0.110*** (0.038)
Capital expenditures ratio	-0.028*** (0.009)	-0.028*** (0.009)	-0.028*** (0.009)	-0.028*** (0.009)
Prior CAR, benchmarked	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)
Other controls			Yes	
# of Obs			566	
Pseudo R-squared	0.05	0.05	0.05	0.05
Overdispersion P-value	0.00	0.00	0.00	0.00

Table XI: Size of Disclosed Deals

This table reports the marginal effects and P-values from truncated regressions. Any firm that announced one or more undisclosed value deal is dropped. For firms that announced multiple disclosed value deals, the size is the sum of all such deals. There are a total of 874 M&A firm-year observations. Ownership levels are the actual values instead of instrumented values, because there is no evidence of the existence of endogeneity for this specification.

	Dependent variable — size of M&A (millions)			
Institutional Ownership	Aggregate level	Top individual	5% block holder	Concentration
PPFH	-14.03** (0.018)	-25.73** (0.024)	-100.44 (0.341)	-33.03** (0.030)
Private pension funds	-0.56 (0.895)	-5.25 (0.303)	102.96*** (0.005)	-2.06 (0.716)
Banks	-6.49*** (0.000)	-6.54*** (0.007)	-86.18*** (0.000)	-2.66 (0.437)
Insurance companies	-4.15 (0.122)	-3.93 (0.300)	25.74 (0.254)	-6.00 (0.241)
Investment companies	3.95*** (0.000)	4.07** (0.023)	52.47*** (0.000)	3.15 (0.307)
Independent advisors	-4.80*** (0.000)	-13.73*** (0.000)	-33.18* (0.051)	-19.27*** (0.001)
Shareholder Rights				
Governance Index	-4.28* (0.054)	-6.28*** (0.005)	-7.71*** (0.000)	-8.95*** (0.000)
Managerial Incentives				
Insider ownership	-7.57*** (0.000)	-5.87*** (0.001)	-5.30*** (0.002)	-5.98*** (0.001)
CEO salary and bonus (millions)	4.56 (0.359)	5.89 (0.249)	4.07 (0.394)	10.01* (0.069)
Options(% of total compensation)	-1.23*** (0.000)	-1.23*** (0.000)	-1.17*** (0.000)	-1.41*** (0.000)
Deal Characteristics				
Cash payment (% of total deal value)	-2.29*** (0.000)	-2.26*** (0.000)	-2.33*** (0.000)	-2.29*** (0.000)
Firm Characteristics				
Leverage ratio	0.56 (0.211)	0.68 (0.134)	0.63 (0.200)	0.47 (0.318)
Cash flow ratio	-0.31 (0.547)	-0.56 (0.268)	-0.71 (0.229)	-0.86* (0.098)
Size	97.66*** (0.000)	93.07*** (0.000)	108.97*** (0.000)	94.49*** (0.000)
Q-ratio	7.81*** (0.000)	7.86*** (0.000)	9.42*** (0.000)	8.40*** (0.000)
Capital expenditures ratio	-8.42*** (0.000)	-5.72*** (0.000)	-2.33* (0.095)	-2.69* (0.090)
Prior Performance				
CAR, benchmarked	0.01 (0.942)	0.00 (0.984)	-0.09 (0.664)	-0.13 (0.531)
Industry Characteristics				
Ln(industrial concentration)	-20.07** (0.025)	-28.75*** (0.001)	-23.44*** (0.005)	-34.79*** (0.000)
Year Dummies	yes	yes	yes	yes
Observations	874	874	874	874

* significant at 10 %; ** significant at 5%; *** significant at 1%

Table XII: Low Q Firms

This table reports the marginal effects and P-values from random effects logistic regressions on the subsample of low Q firms with different cash holding levels. Cash richness is defined as the ratio of non-current-debt cash and cash equivalent over non-cash total asset. Each year, firms with above industry (by 4-digit SIC code) median cash holdings are defined to be cash rich firms, otherwise cash-strapped. Each year, firms with Q ratio less than sample median are defined to be low Q firms. Results for regressions in which the institutional ownership is measured by the highest individual ownership within each category are not reported due to limited space. They are available upon request.

	random effects logit				instrumented random effects logit			
	Dependent variable — 1=m&a; 0=no m&a		Low Cash, low Q		Dependent variable — 1=m&a; 0=no m&a		Low Cash, low Q	
	Aggre	Concen	Aggre	Concen	Aggre	Concen	Aggre	Concen
Insti. Ownership	1=m&a (25.16%)		1=m&a (26.14%)		1=m&a (25.16%)		1=m&a (26.14%)	
PPF	-1.52*** (0.004)	-12.51*** (0.006)	-2.53*** (0.007)	0.11 (0.822)	1.93 (0.701)	0.22 (0.769)	-51.48*** (0.009)	-5.70*** (0.009)
Private pension	0.18 (0.659)	-10.55 (0.129)	0.11 (0.794)	-0.37 (0.653)	-4.13 (0.625)	-0.73 (0.468)	-9.80 (0.173)	-4.01 (0.781)
Banks	0.31 (0.134)	-2.34 (0.441)	-0.09 (0.832)	-0.40* (0.078)	-3.38 (0.241)	-0.81* (0.083)	-2.87 (0.345)	-3.67 (0.214)
Insurance Co.	0.41 (0.142)	0.61 (0.863)	0.23 (0.575)	0.93*** (0.002)	9.09** (0.015)	0.95** (0.042)	1.79 (0.622)	0.32 (0.446)
Investment Co.	0.43*** (0.009)	5.23** (0.029)	0.85** (0.022)	0.30** (0.045)	2.88 (0.192)	0.48 (0.198)	5.21** (0.030)	0.89** (0.017)
Indep. Advisors	0.11 (0.345)	-0.93 (0.697)	0.05 (0.912)	0.20* (0.074)	3.14 (0.176)	0.19 (0.637)	-1.91 (0.432)	-0.02 (0.960)
Shareholder Rights	1.29*** (0.008)		1.29*** (0.008)	0.55 (0.250)	0.56 (0.247)	0.61 (0.207)	1.43*** (0.004)	1.47*** (0.003)
Governance index	1.29*** (0.008)		1.29*** (0.008)	0.55 (0.250)	0.56 (0.247)	0.61 (0.207)	1.43*** (0.004)	1.47*** (0.003)
Managerial Incentives	-0.31* (0.076)		-0.39** (0.022)	-0.39** (0.023)	-0.16 (0.400)	-0.23 (0.205)	-0.27 (0.130)	-0.35** (0.043)
Insider Ownership	0.15 (0.426)	0.20 (0.269)	0.20 (0.281)	0.49 (0.037)	0.58 (0.014)	0.56 (0.016)	0.12 (0.522)	0.11 (0.562)
CEO salary and bonus	1.62 (0.246)	1.98 (0.136)	2.07 (0.122)	2.52** (0.044)	2.79** (0.022)	2.62** (0.032)	1.48 (0.283)	2.64** (0.048)
Options (%)	12.66** (0.012)	13.20** (0.008)	13.75*** (0.006)	15.22*** (0.002)	16.13*** (0.001)	15.65*** (0.002)	9.93* (0.059)	12.16** (0.018)
Firm Characteristics	-0.23*** (0.001)		-0.21** (0.001)	-0.21** (0.022)	-0.20** (0.027)	-0.20** (0.027)	-0.31*** (0.001)	-0.26*** (0.002)
Leverage ratio	0.15 (0.426)	0.20 (0.269)	0.20 (0.281)	0.49 (0.037)	0.58 (0.014)	0.56 (0.016)	0.12 (0.522)	0.11 (0.562)
Cash flow ratio	1.62 (0.246)	1.98 (0.136)	2.07 (0.122)	2.52** (0.044)	2.79** (0.022)	2.62** (0.032)	1.48 (0.283)	2.64** (0.048)
Size	12.66** (0.012)	13.20** (0.008)	13.75*** (0.006)	15.22*** (0.002)	16.13*** (0.001)	15.65*** (0.002)	9.93* (0.059)	12.16** (0.018)
Q ratio	-0.84*** (0.001)	-0.80*** (0.002)	-0.84*** (0.001)	-0.54** (0.040)	-0.49* (0.059)	-0.51* (0.053)	-0.83*** (0.002)	-0.81*** (0.002)
Capital expenditures ratio	0.05 (0.119)		0.06** (0.044)	0.07*** (0.006)	0.08*** (0.002)	0.08*** (0.003)	0.05* (0.170)	0.05 (0.126)
Prior Performance	-1.59 (0.380)		-0.92 (0.607)	-1.09 (0.522)	0.84 (0.621)	0.93 (0.587)	-1.89 (0.298)	-1.01 (0.574)
CAR, benchmarked	-1.59 (0.380)		-0.92 (0.607)	-1.09 (0.522)	0.84 (0.621)	0.93 (0.587)	-1.89 (0.298)	-1.01 (0.574)
Industry Characteristics	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Ln(industrial concentration)	1,554		1,554	1,554	1,554	1,554	1,554	1,554
Year Dummies	643		643	643	643	643	643	643
Observations	1,844		1,844	1,844	1,844	1,844	1,844	1,844
Number of firms	692		692	692	692	692	692	692

Table XIII: “Glamour” and “Value” Firms

This table reports the marginal effects and P-values from random effects logistic regressions on “glamour” firms and “value” firms. “Glamour” firms are those with book-to-market ratios in the lower 30% rank of COMPUSTAT and CRSP universe; “value” firms are those of the top 30%. Results for regressions in which the institutional ownership is measured by the highest individual ownership within each category are not reported due to limited space. They are available upon request.

	random effects logit				instrumented random effects logit				
	Dependent variable — 1=m&a; 0=no m&a glamour firms 1=m&a (36.33%)		Dependent variable — 1=m&a; 0=no m&a Value firms 1=m&a (19.37%)		Dependent variable — 1=m&a; 0=no m&a glamour firms 1=m&a (36.33%)		Dependent variable — 1=m&a; 0=no m&a Value firms 1=m&a (19.37%)		
Insti. Ownership	Aggre	5% block	Concen	Aggre	5% block	Concen	Aggre	5% block	Concen
PPF	-0.59 (0.424)	-7.90 (0.344)	-2.14 (0.134)	-0.17 (0.686)	-4.20 (0.269)	-0.18 (0.770)	-5.62** (0.017)	-109.88** (0.032)	-12.53*** (0.008)
Private pension	1.04 (0.232)	-5.82 (0.518)	1.14 (0.270)	-0.04 (0.956)	-1.78 (0.839)	-0.03 (0.975)	1.25 (0.143)	-7.26 (0.413)	1.47 (0.157)
Banks	0.41 (0.117)	1.25 (0.766)	-0.13 (0.844)	0.18 (0.481)	0.82 (0.788)	0.31 (0.536)	0.70** (0.016)	1.66 (0.695)	0.08 (0.904)
Insurance Co.	0.54 (0.182)	0.41 (0.927)	0.55 (0.376)	0.03 (0.934)	-2.50 (0.434)	-0.21 (0.674)	0.88** (0.048)	2.33 (0.616)	0.87 (0.169)
Investment Co.	0.21 (0.195)	0.43 (0.876)	0.39 (0.421)	0.08 (0.625)	0.49 (0.831)	0.37 (0.324)	0.31 (0.058)	-1.51 (0.605)	0.42 (0.387)
Indep. Advisors	0.22 (0.138)	3.67 (0.208)	1.13 (0.113)	0.17 (0.126)	4.19* (0.073)	0.45 (0.219)	-0.40 (0.505)	3.15 (0.281)	1.50*** (0.040)
Shareholder Rights									
Governance index	-0.03 (0.960)	0.02 (0.980)	0.04 (0.953)	-0.05 (0.193)	-0.59 (0.229)	-0.58 (0.241)	0.42 (0.529)	0.06 (0.925)	0.12 (0.854)
Managerial Incentives									
Insider Ownership	-0.05 (0.804)	-0.14 (0.488)	-0.14 (0.463)	-0.24 (0.204)	-0.31 (0.101)	-0.28 (0.135)	-0.13 (0.518)	-0.14 (0.488)	-0.19 (0.336)
CEO salary and bonus	-1.61 (0.332)	-1.37 (0.408)	-1.40 (0.398)	-1.50 (0.549)	-1.24 (0.613)	-1.61 (0.518)	-1.41 (0.395)	-1.39 (0.399)	-1.16 (0.481)
Options (%)	0.13*** (0.003)	0.14*** (0.002)	0.14*** (0.002)	0.05 (0.262)	0.05 (0.240)	0.05 (0.279)	0.15*** (0.001)	0.16*** (0.001)	0.16*** (0.001)
Firm Characteristics									
Leverage ratio	-0.04 (0.370)	-0.05 (0.320)	-0.06 (0.246)	-0.06 (0.476)	-0.09 (0.327)	-0.09 (0.347)	-0.05 (0.289)	-0.07 (0.189)	-0.08 (0.144)
Cash flow ratio	0.05 (0.459)	0.08 (0.259)	0.07 (0.317)	0.24 (0.199)	0.26 (0.160)	0.27 (0.144)	0.06 (0.417)	0.02 (0.791)	0.05 (0.488)
Q ratio	1.38** (0.011)	1.38** (0.010)	1.43*** (0.009)	16.93* (0.052)	19.71** (0.022)	18.81** (0.028)	1.08* (0.051)	1.45*** (0.007)	1.32*** (0.015)
Size	6.72*** (0.000)	7.49*** (0.000)	7.40*** (0.000)	1.80 (0.191)	2.24* (0.091)	2.41* (0.073)	4.83 (0.137)	7.54*** (0.000)	6.90*** (0.000)
Capital expenditures ratio	-1.50*** (0.000)	-1.52*** (0.000)	-1.52*** (0.000)	-0.09 (0.715)	-0.09 (0.717)	-0.06 (0.801)	-1.51*** (0.000)	-1.58*** (0.000)	-1.63*** (0.000)
Prior Performance									
CAR, benchmarked	0.09*** (0.002)	0.10*** (0.001)	0.10*** (0.001)	0.08*** (0.005)	0.09*** (0.002)	0.09*** (0.002)	0.09*** (0.008)	0.07** (0.021)	0.09*** (0.004)
Industry Characteristics									
Ln(industrial concentration)	-1.13 (0.531)	-1.14 (0.528)	-1.14 (0.529)	1.20 (0.473)	1.20 (0.471)	1.34 (0.420)	-0.06 (0.975)	-0.05 (0.979)	-0.58 (0.748)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,415	2,415	2,415	924	924	924	2,415	2,415	924
Number of firms	781	781	781	406	406	406	781	781	406

Table XIV: “Buying Growth” M&A

This table reports the marginal effects and P-values from logistic regressions on the subsample with target sales growth rates available. Target sales growth rate is the three-year growth rate prior to takeover. The median growth rate of the sample is used as the benchmark.

Dependent variable — 1=target sales growth rate above median; 0=target sales growth rate below median				
	Aggregate	Top individual	5% block	Concentration
Institutional Ownership				
PPFH	-2.69 (0.111)	-5.98* (0.055)	-33.48 (0.155)	-9.40** (0.041)
Private pension funds	-0.09 (0.959)	-0.97 (0.600)	-15.85 (0.449)	-1.57 (0.445)
Banks	0.52 (0.320)	0.41 (0.635)	-9.88 (0.259)	0.49 (0.697)
Insurance companies	0.90 (0.290)	0.05 (0.954)	-6.33 (0.526)	-0.08 (0.968)
Investment companies	0.49 (0.191)	1.02 (0.213)	9.72 (0.121)	1.26 (0.296)
Independent advisors	0.69** (0.045)	0.91 (0.414)	8.19 (0.219)	-0.26 (0.905)
Shareholder Rights				
Governance index	0.20 (0.858)	0.02 (0.994)	0.16 (0.897)	0.01 (0.998)
Managerial Incentives				
Insider Ownership	0.58 (0.326)	0.30 (0.602)	0.20 (0.710)	0.28 (0.621)
CEO salary and bonus (millions)	3.45 (0.154)	2.47 (0.304)	2.94 (0.216)	1.73 (0.465)
CEO Options	0.04 (0.744)	0.05 (0.657)	0.07 (0.500)	0.06 (0.615)
Firm Characteristics				
Q-ratio	2.27 (0.125)	1.92 (0.187)	2.40* (0.095)	1.50 (0.284)
Sales growth	0.14 (0.200)	0.16 (0.138)	0.15 (0.158)	0.17 (0.112)
Leverage ratio	-0.12 (0.536)	-0.16 (0.389)	-0.10 (0.571)	-0.15 (0.414)
Ln(industry concentration)	-6.96* (0.072)	-6.16 (0.101)	-5.60 (0.135)	-6.30* (0.093)
Observations	310	310	310	310
Pseudo R-square	0.07	0.07	0.07	0.07

* significant at 10%; ** significant at 5%; *** significant at 1%

Table XV: Announcement Returns

This table reports the coefficients and standard errors from random effects panel data regressions on factors affecting announcement abnormal returns.

	Dependent variable - announcement abnormal returns			
	Aggre	Top Indi	5% block	Concen
PPFH	-1.762 (3.775)	-3.080 (5.109)	-51.198 (41.787)	-2.367 (6.118)
Private pension funds	-8.813* (4.660)	-10.030** (5.084)	-106.387* (60.570)	-9.632* (5.455)
Banks	-1.185 (1.425)	-1.311 (2.463)	-19.553 (21.933)	-1.810 (3.491)
Insurance companies	2.064 (1.994)	1.909 (2.601)	-3.651 (21.675)	2.461 (3.170)
Investment companies	-2.040** (0.936)	-3.755* (1.941)	-8.075 (15.363)	-3.592 (2.707)
Independent advisors	0.367 (0.805)	-0.369 (1.908)	-5.442 (15.533)	-0.582 (2.779)
Governance index	-3.700 (3.078)	-3.687 (3.060)	-3.806 (3.050)	-3.595 (3.062)
Insider ownership	-1.348 (1.295)	-1.290 (1.282)	-1.162 (1.280)	-1.213 (1.285)
CEO salary and bonus	-11.007 (10.610)	-16.549 (10.581)	-17.756* (10.632)	-16.952 (10.667)
Options	-0.209 (0.272)	-0.253 (0.271)	-0.254 (0.272)	-0.272 (0.272)
Cash (% of total deal value)	0.649*** (0.172)	0.668*** (0.172)	0.695*** (0.172)	0.677*** (0.172)
Year Dummies			Yes	
Observations			871	
Number of firms			570	
R-squared within	0.083	0.074	0.064	0.072
R-squared between	0.039	0.039	0.038	0.035
R-squared overall	0.045	0.045	0.044	0.042
Hausman Test P-value	0.891	0.794	0.769	0.779

Table XVI: Post-Announcement Abnormal Returns

This table reports the coefficients and standard errors from fixed effects panel data regressions examining institutional ownership impact on long-term post-M&A performance.

	benchmark CAR						Dependent variable - abnormal returns 12 months after announcement											
	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen		
PPFH	0.526 (0.817)	1.936 (1.220)	14.654* (8.832)	3.040** (1.533)	0.124 (0.879)	1.290 (1.308)	2.671 (9.440)	2.343 (1.640)	0.618 (1.008)	2.700* (1.505)	15.742 (10.909)	4.190** (1.892)	0.154 (1.027)	0.536 (1.080)	13.859 (14.607)	0.670 (1.112)		
Private pension funds	0.501 (0.832)	0.835 (0.875)	15.141 (11.825)	0.983 (0.901)	0.050 (0.896)	0.289 (0.943)	3.691 (12.755)	0.407 (0.971)	0.154 (1.027)	0.536 (1.080)	13.859 (14.607)	0.670 (1.112)	-0.520 (0.442)	1.225* (0.725)	2.618 (5.028)	1.831* (1.042)		
Banks	-0.301 (0.358)	1.161** (0.587)	1.638 (4.071)	1.833** (0.844)	-0.099 (0.386)	1.012 (0.633)	-0.993 (4.391)	2.090** (0.909)	-0.520 (0.442)	1.225* (0.725)	2.618 (5.028)	1.831* (1.042)	-0.772 (0.603)	-0.900 (0.884)	-2.158 (5.936)	-1.385 (1.122)		
Insurance companies	-0.613 (0.488)	-0.323 (0.715)	-1.819 (4.777)	-0.522 (0.907)	-0.009 (0.525)	-0.292 (0.770)	2.159 (5.153)	-0.368 (0.978)	-0.772 (0.603)	-0.900 (0.884)	-2.158 (5.936)	-1.385 (1.122)	-1.199*** (0.262)	-0.738 (0.465)	-1.241 (3.380)	-0.660 (0.636)		
Investment companies	-0.960*** (0.213)	-0.441 (0.377)	1.307 (2.735)	-0.397 (0.515)	-0.797*** (0.229)	-0.344 (0.406)	-1.398 (2.949)	-0.058 (0.555)	-1.199*** (0.262)	-0.738 (0.465)	-1.241 (3.380)	-0.660 (0.636)	-0.215 (0.232)	1.041** (0.537)	8.968*** (3.461)	2.514*** (0.944)		
Independent advisors	-0.058 (0.188)	1.014** (0.435)	8.075*** (2.802)	2.293*** (0.764)	-0.507** (0.203)	0.331 (0.469)	2.590 (3.016)	1.244 (0.824)	-0.215 (0.232)	1.041** (0.537)	8.968*** (3.461)	2.514*** (0.944)	-2.154 (1.923)	-1.645 (1.927)	-1.007 (1.925)	-1.466 (1.920)		
Governance index	-1.237 (1.559)	-0.635 (1.561)	-0.136 (1.558)	-0.514 (1.555)	-1.486 (1.678)	-1.045 (1.682)	-0.743 (1.681)	-0.810 (1.676)	-2.154 (1.923)	-1.645 (1.927)	-1.007 (1.925)	-1.466 (1.920)	-0.159 (0.491)	-0.395 (0.491)	-0.373 (0.492)	-0.400 (0.490)		
Insider ownership	-0.245 (0.398)	-0.433 (0.398)	-0.393 (0.398)	-0.436 (0.397)	-0.832* (0.428)	-1.032** (0.429)	-0.994** (0.429)	-1.059** (0.428)	-0.159 (0.491)	-0.395 (0.491)	-0.373 (0.492)	-0.400 (0.490)	-7.733*** (2.446)	-7.881*** (2.442)	-7.507*** (2.449)	-7.697*** (2.436)		
CEO salary and bonus	-8.137*** (1.982)	-8.286*** (1.979)	-7.864*** (1.983)	-8.143*** (1.973)	-6.655*** (2.135)	-6.251*** (2.133)	-6.194*** (2.138)	-6.025*** (2.126)	-7.733*** (2.446)	-7.881*** (2.442)	-7.507*** (2.449)	-7.697*** (2.436)	-0.067 (0.060)	-0.072 (0.060)	-0.059 (0.060)	-0.072 (0.060)		
Options	-0.047 (0.049)	-0.052 (0.049)	-0.040 (0.049)	-0.053 (0.049)	-0.116** (0.052)	-0.113** (0.053)	-0.105** (0.053)	-0.115** (0.052)	-0.067 (0.060)	-0.072 (0.060)	-0.059 (0.060)	-0.072 (0.060)	0.038 (0.000)	0.029 (0.002)	0.026 (0.000)	0.032 (0.003)		
Year Dummies	Yes 2,009 823						Yes 2,013 826						Yes 2,008 823					
Observations	2,009						2,013						2,008					
Number of firms	823						826						823					
R-squared within	0.047						0.039						0.034					
R-squared between	0.000						0.000						0.001					
R-squared overall	0.004						0.002						0.001					
Hausman Test P-value	0.000						0.001						0.000					

* significant at 10%; ** significant at 5%; *** significant at 1%

Table XVII: Post-M&A Operating Performance

Panel A reports the median operating cash flow return on market value of assets, median cashflow margin, and median asset turnover rate for the M&A firms in years surrounding M&A completion year.

Panel B reports the summary statistics on abnormal operating performances. The first method looks at the changes of industry-adjusted measures(operating cash flow return, cash flow margin on sales, and asset turnover rate). The second method is regression-based. The median values of firm-level industry-adjusted operating performance measures from the 3 years post-M&A are regressed on the median value from the 3 years pre-M&A. Standard errors are reported in parentheses.

Panel A									
Year relative to M&A	Operating cash flow returns			Cash flow margin on sales			Asset turnover ratio		
	Firm median	Industry-adj median	# of obs	Firm median	Industry-adj median	# of obs	Firm median	Industry-adj median	# of obs
all M&A firm-years									
-3	14.66%	2.72%	1,963	23.21%	6.71%	1,970	68.76(c/\$)	-3.86(c/\$)	1,965
-2	14.61	2.83	1,991	23.81	7.24	1,995	65.08	-3.79	1,992
-1	14.83	3.13	2,002	24.76	8.02	2,005	62.92	-4.72	2,002
1	15.72	3.84	1,746	26.57	9.39	1,746	61.22	-4.66	1,749
2	16.07	3.99	1,404	26.14	9.24	1,404	60.94	-4.94	1,408
3	15.85	3.86	1,028	25.67	9.21	1,028	61.56	-5.76	1,031
public targets only									
-3	13.86%	2.47%	295	25.06%	7.65%	296	58.36(c/\$)	-8.12(c/\$)	297
-2	13.76	1.99	335	26.79	8.97	335	55.64	-5.13	338
-1	13.84	2.37	311	26.85	8.37	311	50.07	-7.74	315
1	13.71	2.73	276	29.32	13.95	279	46.47	-8.98	279
2	12.55	3.44	216	27.69	11.33	219	49.92	-9.72	219
3	12.75	3.91	145	27.91	10.65	147	51.75	-7.89	148
Panel B									
Abnormal industry-adjusted post-M&A operating performance - method 1									
all M&A firm-years									
			mean	median	# of obs				public targets only
							mean	median	# of obs
$IACF_{post,i} - IACF_{pre,i}$			1.53***	0.64	1,741		1.94***	0.88	322
$IACFM_{post,i} - IACFM_{pre,i}$			5.38***	2.01	1,743		16.41***	3.59	321
$IAAT_{post,i} - IAAT_{pre,i}$			-1.00	0.06	1,743		-2.30	0.74	323
Abnormal industry-adjusted post-M&A operating performance - method 2									
all M&A firm-years									
$IACF_{post,i}$	=	2.586***	+	0.767***	$IACF_{pre,i}$	$R^2=0.41$	N=1,741		
		(0.219)		(0.022)					
$IACFM_{post,i}$	=	8.357***	+	0.714***	$IACFM_{pre,i}$	$R^2=0.24$	N=1,743		
		(0.775)		(0.031)					
$IAAT_{post,i}$	=	-0.358	+	0.850***	$IAAT_{pre,i}$	$R^2=0.71$	N=1,743		
		(0.719)		(0.013)					
public targets only									
$IACF_{post,i}$	=	2.146***	+	0.949***	$IACF_{pre,i}$	$R^2=0.52$	N=322		
		(0.460)		(0.051)					
$IACFM_{post,i}$	=	22.834***	+	0.007	$IACFM_{pre,i}$	$R^2=0.00$	N=321		
		(3.304)		(0.037)					
$IAAT_{post,i}$	=	-2.468*	+	0.857***	$IAAT_{pre,i}$	$R^2=0.74$	N=323		
		(1.422)		(0.029)					

* significant at 10%; ** significant at 5%; *** significant at 1%

Table XVIII: Asset Turnover and Institutional Ownership

This table reports the coefficients and standard errors from random effects regressions on post-M&A industry-adjusted abnormal asset turnover. The dependent variable is the abnormal performance measured by industry-adjusted asset turnover rate. Fixed-effect or random-effect regressions are used according to Hausman-test results.

	Dependent variable - abnormal asset turnover							
	$IAAT_{post,i} - (-0.358 + 0.850IAAT_{pre,i})$				$IAAT_{post,i} - IAAT_{pre,i}$			
	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen
PPFH	1.627*** (0.503)	2.851*** (0.532)	14.376** (5.609)	3.534*** (0.655)	1.756*** (0.547)	2.809*** (0.560)	18.310*** (4.503)	3.471*** (0.688)
Private pension	-0.075 (0.463)	-0.241 (0.347)	1.873 (6.952)	-0.162 (0.358)	-0.039 (0.503)	-0.168 (0.363)	0.855 (5.680)	-0.104 (0.375)
Banks	-0.273 (0.211)	-0.236 (0.245)	-0.657 (2.394)	-0.337 (0.345)	-0.254 (0.229)	-0.305 (0.257)	-0.804 (2.055)	-0.468 (0.361)
Insurance Co.	-0.712** (0.292)	-0.562* (0.292)	-0.926 (2.761)	-0.618 (0.364)	-0.807** (0.317)	-0.579* (0.305)	-0.001 (2.306)	-0.651* (0.380)
Investment Co.	0.090 (0.130)	0.239 (0.181)	3.821** (1.616)	0.520** (0.249)	0.090 (0.141)	0.172 (0.192)	2.306 (1.452)	0.384 (0.264)
Independent advisors	-0.400*** (0.115)	-0.205 (0.194)	-3.101* (1.635)	-0.045 (0.313)	-0.443*** (0.125)	-0.330 (0.205)	-2.275 (1.463)	-0.197 (0.329)
Governance index	1.168 (0.945)	-0.006 (0.368)	1.236 (0.949)	0.021 (0.367)	1.352 (1.027)	-0.168 (0.376)	-0.158 (0.377)	-0.145 (0.375)
Insider ownership	0.203 (0.236)	0.031 (0.131)	0.131 (0.237)	0.034 (0.131)	0.205 (0.256)	0.055 (0.135)	0.072 (0.136)	0.059 (0.135)
CEO salary and bonus	-0.459 (1.175)	-2.019** (0.908)	-0.153 (1.185)	-1.852** (0.910)	-0.379 (1.277)	-2.070** (0.956)	-2.103** (0.963)	-1.909** (0.958)
CEO Options	0.034 (0.029)	0.017 (0.025)	0.039 (0.030)	0.016 (0.025)	0.038 (0.032)	0.029 (0.026)	0.029 (0.027)	0.029 (0.026)
Constant	-1.928 (11.276)	3.124 (5.051)	-14.202 (10.358)	1.049 (4.896)	-3.718 (12.249)	4.987 (5.240)	3.257 (4.966)	2.848 (5.079)
Year Dummies	Yes							
Observations	1,743							
Number of firms	734							
R-squared within	0.051	0.030	0.033	0.029	0.052	0.030	0.026	0.028
R-squared between	0.007	0.058	0.007	0.063	0.006	0.055	0.048	0.058
R-squared overall	0.012	0.042	0.008	0.045	0.010	0.038	0.032	0.038
Hausman-test P-value	0.005	0.104	0.072	0.131	0.012	0.187	0.157	0.223

* significant at 10%; ** significant at 5%; *** significant at 1%