

# WHICH INSTITUTIONAL INVESTORS MONITOR? EVIDENCE FROM ACQUISITION ACTIVITY\*

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First draft: May 2003

This draft: Oct 2004

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## ABSTRACT

This paper shows that the presence of large public pension fund shareholders reduces firms' acquisition activity, after controlling for ownership endogeneity, firm-level governance provisions, and other firm characteristics. Public pension funds particularly reduce the acquisition frequency by cash-rich and low- $q$  firms, and the likelihood of “buying-growth” acquisitions. When firms with large public pension fund presence *do* acquire other firms, they perform relatively better in the long-run. The opposite is the case for mutual fund shareholders — their presence encourages acquisitions by firms with potentially higher agency costs, and is associated with worse M&A performance.

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\*Department of Economics, Brown University. Email: lily-qiu@brown.edu. I especially thank Judy Chevalier (dissertation chair), who had to suffer through many drafts and has provided invaluable guidance. I also have benefited from the comments of Michael Boozer, Arturo Bris, Gerard Hoberg, Owen Lamont, Florencio Lopez-de Silanes, Avri Ravid, Roberta Romano, Matthew Spiegel, Ivo Welch and seminar participants at the Yale School of Management, University of Illinois at Urbana-Champaign, Brown University, Purdue University, and University of Michigan. I thank Andrew Metrick for the governance index data used in this study and Carolyn Brancato at The Conference Board for access to their research report. This version is based on the first chapter of my Ph.D. dissertation, and a substantial revision from an earlier paper “Public Pension Fund Activism and M&A Activity”. All errors are my own.

## Introduction

Institutional investors hold more than half of all U.S. publicly traded equity (55.8% in 2001<sup>1</sup>). The fastest growing institutional investors — public pension funds and mutual funds — saw their assets growing at compound annual growth rates of 14% and 20%, respectively, in the 1990s.<sup>2</sup> Many theories have suggested that shareholders with large investment stakes — often institutional investors — are the most likely monitors of publicly traded companies. However, there has been very little evidence empirically documenting the effectiveness of institutional investor monitoring.

My paper explores the role of institutional shareholders in influencing corporate M&A activity. Frequent anecdotal evidence in the press suggests that large public pension funds (PPF) are particularly likely to take an activist shareholder role.<sup>3</sup> As of 2001, U.S. public pension funds held 8.0% of the total U.S. equity market.<sup>4</sup> These funds have become very active in submitting shareholder proxy proposals on corporate governance topics.<sup>5</sup> However, the opposite is often suggested for investment companies (primarily mutual funds). Most mutual funds wish to preserve their flexibility to divest themselves quickly of shares — they “monitor” more with their feet, i.e., by selling their shares instead of by committing themselves to long-term monitoring. M&A activity is the focus of this study because it may be the best opportunity for an empiricist to measure agency conflicts manifesting themselves — especially when we see acquiring activity that visibly reduces bidder shareholder value. Both the academic literature and the popular press have suggested that managers who are relatively unconstrained enjoy building empires instead of acting in the best interest of the shareholders.<sup>6</sup>

My paper finds that the presence of large public pension fund ownership indeed discourages managers from acquiring other firms. The effect is strong — *ceteris paribus*, a 1% increase in PPF ownership associates with a 1.2% reduction in M&A likelihood. It is even stronger when the acquirer is cash-rich and low- $q$ , or is just “buying-growth.” Moreover, when firms with large PPF shareholders *do* undertake acquisitions, their long-run performances are better. The presence of a 5% PPF block holder is associated with a 3.26% increase in post-M&A stock performance, as measured by twelve-month benchmarked CAR *including* the announcement month.

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<sup>1</sup>Institutional Investment Report, The Conference Board, Volume 5, Number 1, March 2003.

<sup>2</sup>Davis and Steil (2001)

<sup>3</sup>Whether their activism is effective has been much debated. Section V provides a review of the relevant literature.

<sup>4</sup>The Conference Board.

<sup>5</sup>From 1987 to 1994, their members sponsored 284 proxy proposals, about 61% of the total proxy proposals sponsored by institutional investors, as recorded by the Investor Responsibility Research Center (Gillan and Starks (2000)). According 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.

<sup>6</sup>Section V also reviews the M&A literature.

The presence of investment company shareholders (mutual funds) generally has the opposite effect. A 1% increase in mutual fund ownership associates with a 0.6% increase in M&A likelihood among cash-rich and low  $q$  firms, which are more likely to suffer agency conflicts in their M&A decisions. In the long run, acquirers with mutual fund ownership perform worse in the stock market. A 1% increase in mutual fund ownership associates with a reduction of 0.07% in twelve-month benchmarked CAR including the announcement month. Other institutional shareholders (banks, insurance companies, and private pension funds) have very little influence one way or the other.

An important issue in this study is endogeneity. Do PPFs just sort themselves towards less acquisitive firms while investment companies sort themselves towards more acquisitive firms? I find evidence that this is *not* the driving factor. By exploiting information on prior average acquisition expenditures (as a percentage of total assets) by all firms within the portfolios of funds, I can classify funds into those that sort themselves primarily towards acquirers and those that sort themselves primarily towards non-acquirers. I can then classify firms in my sample according to the preferences of funds which have invested in them. In this simple classification, we can examine whether institutions have any influence within each class of firms. The following table reports the percentage of M&A observations within each subgroup. (IC stands for investment company.)

	bottom 25% of firms whose PPF investors most dislike M&A	top 25% of firms whose PPF investors most like M&A
firms in the lowest PPF ownership quartile	19%	37%
firms in the highest PPF ownership quartile	8%	23%
Ranksum P-value	0.00	0.00
	bottom 25% of firms whose IC investors most dislike M&A	top 25% of firms whose IC investors most like M&A
firms in the lowest IC ownership quartile	14%	35%
firms in the highest IC ownership quartile	10%	42%
Ranksum P-value	0.14	0.04

The differences left-to-right show that I have heterogeneity in our firm classification measure — when sorted by PPF preference, the quartile of firms with PPF investors who most like M&A acquirers has a higher incidence of M&A than the quartile of firms with PPF investors who most dislike M&A. The similar pattern holds for firms with investment company investors. More importantly, such a classification can control for the self-sorting of funds, thus making the up-down differences more interesting. Controlling for fund preference, firms that have disproportionately higher ownership by PPFs have much lower M&A activity — 8% rather than 19% and 23% rather than 37%. (Both differences are significant at the 1% level.) In contrast, firms with more mutual fund ownership, when held by mutual funds avoiding acquirers, are statistically similar to those with low mutual fund ownership. However, if held by mutual funds that prefer M&A acquirers, firms conduct statistically more acquisitions when their mutual fund investors hold a larger ownership

stake. Of course, this table is only suggestive — this paper will employ rigorous tests to tackle this issue of endogeneity by using the instrumental variables method and the system of simultaneous equations, and by controlling for firm-level effects, year effects, and other relevant variables. Along the way, it will also document a number of other interesting correlations.

The remainder of this paper is organized as follows. Section I states the main testable hypotheses. Section II describes data and specification. Section III and IV discuss institutional ownership impact on M&A likelihood and M&A performance. Section V reviews existing literature on institutional monitoring and M&A. Section VI concludes the paper.

## 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 pro-management, fearing a loss of 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 owned, 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)). Gillan and Starks (2000) argue that selling constraints imposed by indexing strategies provide an important motivation for shareholder activism.<sup>7</sup>

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 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.” Woidtke (2002) finds that firm relative values are 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.

*If* M&A activity can be motivated by managerial private incentives and reduce shareholder value for the acquirer, then the presence of effective monitors should reduce this bad type of M&A activity, and hence, reduce the overall frequency of M&A, *ceteris paribus*. There are two possible mechanisms. First, if the presence of the monitor signals credible promise of punishing value-

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<sup>7</sup>Indexation may also provide incentives for activism aimed at improving overall market performance. Richard Koppes, former chief counsel of CalPERS, remarked, “It makes sense for us to try to raise the ocean in order to lift our boat,” in a speech at Stanford University, March 21, 1996.

reducing actions, the management will not carry out those M&A deals motivated by managerial incentives. Secondly, if the monitor has the capacity to judge the quality of individual transactions and effectively intervene, it can directly reduce the frequency of negative bidder NPV M&A. Thus the principal interest of this paper is to differentiate between the following two hypotheses.

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

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

Non-public-pension institutions may not want to be active monitors. Pound (1988) and Brickley, Lease, and Smith (1988) document that institutions such as banks and insurance companies are 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 are more supportive of management.<sup>8</sup> On the other hand, there is also anecdotal evidence that these institutions, especially mutual funds, may have on occasion been viable monitors. For example, in 1992, Vanguard was involved in the succession and retirement of Chrysler's then-Chairman 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 in monitoring corporate governance. 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 financial information is obtained from COMPUSTAT and stock performance data is from CRSP. The sample is limited to securities identified by CRSP as ordinary common shares (with share codes 10, 11 or 12),<sup>9</sup> and excludes utilities, finance and insurance companies, and government agencies (2-digit SIC code 49,

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<sup>8</sup>However, she concludes that existing business ties did not appear to explain the voting differences.

<sup>9</sup>This excludes American Depository Receipts, closed-end-funds, primes and scores, and Real Estate Investment Trusts.

from 60 to 69, and above 89). Finally, I drop firms with December market capitalization less than one-hundredth the level of the S&P 500 index.<sup>10</sup>

Mergers and acquisitions 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 132 when deals in which acquirers acquired majorities of the targets are included. 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 (from July 1993 to June 2001). 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	487 (2,050.30)	1	1,286 (252.99)	1,859
Acquirer acquired between 50% and 100% of the target	26 (1,247.43)	1	55 (282.98)	50

Due to multiple announcements during the 12-month period, the final M&A sample consists of 1,963 firm-year observations. Out of this total, 851 observations are for disclosed value M&A only, 738 observations are for undisclosed value M&A only, and 374 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 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),<sup>11</sup> independent investment advisors,<sup>12</sup> 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 system, Colorado public employees retirement association, Florida state board of administration, Kentucky teachers retire-

<sup>10</sup>The robustness check using all firms with COMPUSTAT and CRSP data available (without insider ownership and compensation variables) shows the same results, which are available upon request.

<sup>11</sup>For example, AIM management, Janus, and Liberty Mutual.

<sup>12</sup>For example, Bear Stearns, Fidelity, Goldman Sachs, and Morgan Stanley.

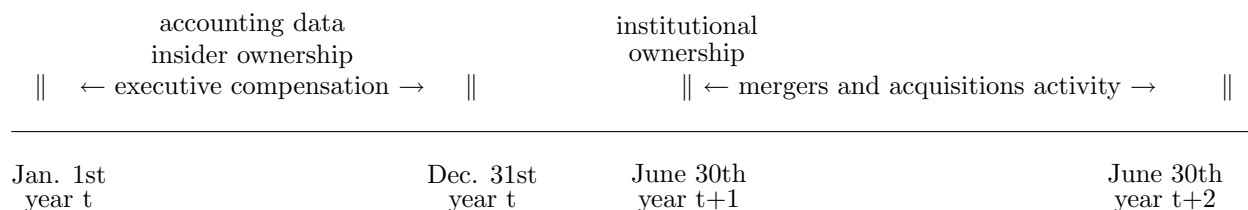
ment system, Michigan state treasury, Montana board of investment, New Mexico educational retirement board, New York state common retirement fund, New York state teachers retirement system, Ohio public employees retirement system, Ohio school employees retirement system, Ohio state teachers retirement system, Virginia retirement system, and State of Wisconsin investment board.<sup>13</sup> Not all state and local pension funds holdings are available because either they are too small and do not file 13f forms, or their assets are reported by outside money managers.

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

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

A firm-level shareholder rights variable (the governance index) is obtained from Gompers, Ishii, and Metrick (2003), which quantifies firm-level provisions of 24 governance rules (mostly takeover related). 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 diagram



shows 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 firms end their fiscal years 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

<sup>13</sup>Results do not change materially if I exclude holdings by California Public Employees Retirement System (CalPERS). Although CalPERS is the most visible activist fund, my results are not driven by this fund only.

is considered. If the firm announces at least one merger and/or 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 at the time of this study. 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 1,348 firms and a total of 6,537 firm-year observations. Table II shows that this sample is biased towards larger firms. In 1992 dollars, the median market capitalization is \$1,008.99 million and the median total assets are \$905.57 million. Ranked by year-end market capitalization each year, 5,745 observations (88%) are above the median market capitalization of NYSE and AMEX firms.<sup>14</sup>

Among my 6,537 firm-year observations, there are in total 1,963 (30%) M&A observations. Firms in M&A firm-year observations are larger, have lower insider ownership, higher governance index, higher cash flow ratios, higher  $q$  ratios, lower capital expenditures ratios, and better prior performances than those in non-M&A firm-year observations. There are no strong correlations among key variables of this study.<sup>15</sup>

Comparison stats reported in Table XII, correlations in Table XIII for referee.

## A Specification and Endogeneity

I use both a panel data linear probability model and a panel data logistic model in this study. These models allow for firm-level unobserved heterogeneity in mergers and acquisitions decisions, and utilize both the time-series and the cross-sectional dimensions of the data. Unobserved industry-level heterogeneity is incorporated in this firm-level fixed effects.<sup>16</sup> The Hausman's test indicates that a fixed effects linear probability model is appropriate instead of a random effects linear probability model. A fixed effects logistic model is conditional on at least one positive or negative outcome in the group, so this specification can not include two types of firms: those with no M&A activity throughout the period and those with M&A activity in every year of the sample. These two types of firms *are* included in a random effects logistic model. Due to different sample sizes, the Hausman's test cannot tell us which logit specification is more appropriate. Thus I report the regression results from both panel data logit models.

Endogeneity is a very important concern in this study. Given the observation that public pension fund ownership is negatively correlated with future M&A activity, it is essential to distinguish

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<sup>14</sup>The results remain if only the top 50% firms are included. Thus, my conclusions are not driven by the smaller firms in the sample.

<sup>15</sup>Results available upon requests.

<sup>16</sup>During the sample period 1992-1999, the 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.



between the influence effect — that PPF ownership reduces M&A activity — and the selection effect — that public pension funds prefer to invest in firms which have certain unobservable characteristics leading to less M&A activity. I adopt an instrumental variables approach to address this concern.<sup>17</sup> I use the information contained in the institutional investors’ overall portfolios to construct an instrument which is orthogonal to factors influencing firms’ acquisition decisions. (The basic idea was illustrated in the introduction.) Using average acquisition expenditures over the previous five years,<sup>19</sup> I first calculate a measure of firm-level “acquisitiveness.” The weighted-average<sup>20</sup> of this measure within an institutional investor’s portfolio reflects the fund’s preference for “acquisitiveness” or the fund’s preference for factors which also influence firm “acquisitiveness.” Within the same type of institutions which invest in a given company, the weighted average<sup>21</sup> of this “preference” measure reflects the average preference by that type of institutions in this firm. Thus the noise term in a regression of institutional ownership regressed on this average “preference” measure is orthogonal to ownership factors associated with firms’ acquisitiveness. This noise term is then an instrument for institutional ownership.

For example, the panel data tobit regression of aggregate public pension fund ownership regressed on the funds’ average “preference” measure and year dummies gives a significant coefficient of the “preference” measure. The noise term from this regression is used as the instrument for aggregate public pension fund ownership level. Its correlation with the aggregate PPF ownership is 0.55,<sup>22</sup> so it is a quite different variable.

I also adopt a model of simultaneous equations, assuming that firm M&A activity has an effect on public pension fund ownership in addition to the concurrent effect of PPF ownership on firm M&A activity. The three-stage estimations reach the same conclusion as those from the instrumental variables estimations.

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<sup>17</sup>The difficulty is to find an ideal instrument for institutional ownership. Demsetz and Lehn (1985) find that the instability of firm profit is a determinant of firm ownership. Although only banks are governed by the common law “prudent-man rule”, empirical evidence has shown that many non-bank institutions also take prudence into consideration in their investment decisions. As a result, institutional ownership is positively related to dividend yield and liquidity such as turnover ratio, and negatively related to stock volatility. (See Guercio (1996) and Gompers and Metrick (2001).) Institutions may also prefer stocks with lower transaction costs given the often large positions held by them. Woidtke (2002) uses transactions costs<sup>18</sup> as an instrument. Following their results, I tested firm beta from the market model, the standard error of firm beta, dividend yield over the previous year, volatility of monthly returns over the previous two years, turnover ratio and transactions costs as instruments in the panel data setting. Unfortunately, these instruments are determined to be weak instruments from the first-stage F tests. Staiger and Stock (1997) suggest as a rule of thumb that in the case of one endogenous variable, instruments should be deemed weak if the first-stage F stat is less than ten. Not surprisingly, no endogeneity problem can be detected using these variables as instruments.

<sup>19</sup>Measured as a fraction of total assets.

<sup>20</sup>Weights equal the fraction of the value of the shareholding of one stock over the total portfolio value.

<sup>21</sup>Weights equal the percent of ownership in a company by one fund.

<sup>22</sup>In comparison, the correlation between current aggregate PPF ownership and the previous aggregate PPF ownership is 0.75.

## 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 to discourage the value-reducing ones. Bidder announcement stock abnormal returns, bidder long-term stock abnormal returns, and bidder post-M&A operating performance provide a ground to judge whether an M&A deal is good or bad. Appendix A provides the details on the methodologies measuring those performances.

My study of long-term M&A bidder stock abnormal returns is not intended to test market efficiency. It differs from the studies by Barber and Lyon (1997), Mitchell and Stafford (2000) and others since I include the announcement month in the calculation of long-term abnormal returns. These measures are used in my analysis to gauge whether institutional ownership has any effect on the acquirer’s combined performance at the announcement and post-M&A.<sup>23</sup> In this paper I use three methodologies — cumulative abnormal returns, Fama-French 3-factor abnormal returns, and buy-and-hold abnormal returns — to measure long-term 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 that occur after the deal completion dates. Barber and Lyon (1996) evaluate different methodologies 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 methodologies used both in Barber and Lyon (1996) and in Healy, Palepu, and Ruback (1992).

## III Institutional Ownership and Likelihood of M&A

It is easier for managers to undertake “bad” M&A 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 without effective institutional monitoring are more likely to engage in M&A activity than firms with effective institutional monitoring. In this section I examine whether institutional ownership reduces M&A frequency in the full sample and particularly for the bad ones in the subsamples.

### A Full Sample Results

**Institutional Ownership Variables** In results not reported, I find that the overall institutional ownership (sum of all types) is positively and significantly associated with future M&A activity.<sup>24</sup> When the overall institutional ownership is decomposed into six types as detailed earlier, only

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<sup>23</sup>Results are similar if I look at post-M&A performances only, and are available upon requests.

<sup>24</sup>Results are available by request.

public pension fund ownership is significantly and negatively associated with firms' future M&A activity, and investment company ownership and insurance company ownership are significantly and positively associated with M&A activity. Naturally, the endogeneity issue has to be examined before any conclusion can be drawn, because these three types of ownership are endogenous in the full sample. The two-stage instrumental variables (IV) method is used in the subsequent analysis. In the first stage, the ownership variable is regressed on its instrument and all other exogenous variables used in the second stage regression. The fitted ownership variable from the first stage is then used in the second stage to predict the likelihood of M&A.

Table III reports the first-stage fixed effects regression results. I use two independent dummy variables to measure firms' prior M&A performances. The first dummy equals one if a firm announced a deal in the prior year which received positive announcement abnormal return, and 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. Prior M&A activity has no impact on PPF ownership, while it increases investment company ownership. In the case of prior M&A received negative announcement abnormal return, there is an increase in insurance company ownership.

There is no clear evidence that institutions prefer firms with better governance structure measured by either the insider ownership or the governance index. The only exception is for the concentrated investment company ownership, which is significantly and negatively associated with weaker shareholder rights provisions.

Better prior stock performance leads to less public pension fund ownership and more investment company ownership. It is possible that PPFs sell firms with better performance to realize the capital gains, while investment companies are momentum investors.

The second stage IV regression results are reported in Table IV. The ownership variables are instrumented whenever required.<sup>25</sup> PPF ownership measures are negative and significant across all specifications. From the linear model, a 1% increase in the aggregate PPF ownership is correlated with a 1.2% decrease in M&A likelihood, and a one unit increase in the PPF Herfindahl concentration measure (normalized) is correlated with a 1.7% decrease in M&A likelihood, both at the significance level of 5%.

In Table V, we can check the robustness of IV regression results using a simultaneous equations analysis. This assumes that public pension fund ownership and firm M&A activity can have reciprocal influence on each other. Table V confirms both that the negative impact of PPF ownership on M&A activity is strong and significant, and that M&A activity may have a positive effect on PPF ownership, after controlling for year dummies and industry dummies (by 3-digit SIC code).

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<sup>25</sup>The Hausman test for endogeneity is performed to determine which variables are endogenous. T-stats of the residuals are reported in the table. Wooldridge (2001) provides a detailed discussion on pages 118-120.

In contrast, aggregate insurance company ownership remains significantly and positively associated with M&A activity. In Table IV, a 1% increase in this measure is correlated with a 0.9% increase in M&A likelihood (at the significance level of 1%). Interestingly, the insurance company concentration measure is significantly and negatively related to M&A activity in the random effects logit model. However, I cannot draw a convincing conclusion as this relation is not robust to other specifications.

In the IV regressions, the investment company ownership is no longer significantly and positively related to M&A activity. Only the aggregate investment company ownership variable is significant in one specification — the random effects logit model. The positive and significant correlation between investment company ownership and the likelihood of M&A found in the standard regressions can be explained by two stories. First, managers of mutual funds may herd towards companies with better prior performance as reported in Table III, and these companies are subsequently more likely to engage in M&A as reported in Table IV. The second story is that investment companies suffer conflict-of-interest problems. When investment company ownership is higher, firm managers have more freedom to pursue their self-interests, including managerial-incentive-driven and value-reducing M&A. Results from IV regressions support the first story, i.e., investment companies invest more in firms with better prior performance and those firms are more likely to be acquirers, therefore we observe a positive correlation between investment company ownership and M&A activity.

The significant negative relation between PPF ownership and future M&A appears to remain in the long-run. In results not reported, I examine whether institutional ownership at the end of June, 1993 can predict M&A frequency in the eight years from July, 1993 to June, 2000, using negative binomial regressions.<sup>26</sup> 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 aggregate insurance company ownership and future M&A remains in the long-run. Similar to results in Table IV, there is no relationship between investment company ownership and future M&A in the long-run.

**Controls** Table IV also reports results on relevant controls. 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 corporate acquisitions. Using their index measure, my specifications control for firm-level shareholder rights provisions. This index is constructed by examining firm-level governance rules, most of which are anti-takeover provisions, and is especially relevant in the context of this study.<sup>27</sup> Finding in Gompers et al. (2003) is confirmed by random

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<sup>26</sup>Results are available upon requests. Negative binomial regression is employed because the goodness-of-fit test indicates overdispersion of the Poisson model.

<sup>27</sup>Mitchell and Lehn (1990) find that firms that make value-reducing acquisitions become takeover targets. Thus

Table included for  
referee as Table  
XIV.

effects logit models in my sample. However, the fixed effects specifications show the opposite relation — firms with stronger shareholder rights make more acquisitions. This contradiction is puzzling and I am not able to come up with an explanation. I suspect that it has to do with the difference in cross-sectional and time-series comparisons. Further research is required to solve this puzzle.

In Jensen and Meckling (1976), larger managerial equity ownership aligns managerial incentives with those of outside shareholders. Consistent with their theory, I find that insider ownership is significantly and negatively correlated with M&A likelihood. However, its economic significance is not strong. A difference of one standard deviation (8.72%) is associated only with roughly a 3% difference in M&A likelihood. CEO compensation does not appear to be significantly associated with M&A activity. Options granted to the CEO have a marginal economic effect: a 1% increase in options granted as a fraction of total compensation is correlated with a 0.1% increase in M&A likelihood, at the 1% significance level. If M&A is more risky, we may interpret this result as reflecting the fact that options may encourage risk-taking behavior. However, M&A can also be motivated to reduce risk (diversification for example). Thus the role of options in the context of M&A activity is unclear. Of course, those managerial incentive variables could be endogenous. Although they are not the focus of this study, further studies should address this caveat.

**Firm Characteristics** Firm characteristics have definitive effects on a firm’s M&A decisions. The specifications in Table IV also include several firm characteristic variables as necessary controls.

Similar to the Gompers, Ishii, and Metrick (2003)’s governance measure, firm size exhibits two opposite effects in different specifications. In the fixed effects specifications, it is significantly and negatively related to M&A activity; in the random effects specifications, it is significantly and positively related to M&A activity. One possible explanation is that in the cross-section, bigger firms are more likely to acquire other firms. On the other hand, individual firms in the time-series data are more likely to engage in M&A activity when they are relatively small and expanding.

Tobin’s  $q$  ratio has been widely used 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 IV 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.

Jensen (1986) points out that debt commits management to pay out a steady stream of cash in the future and thereby reduces the free cash flow available for discretionary spending. The requirements of debt service also motivate managers to perform well. Myers and Majluf (1984)’s pecking order theory predicts that investment projects will be financed by internal cash whenever it is available. Investment projects financed by external debt or stock issuance require higher rates of

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a higher level of anti-takeover protection may insulate the management from possible takeovers following a bad acquisition. Consequently, this protection may encourage more frequent M&A activity.

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 a higher leverage ratio should correlate with less M&A activity. Berger, Ofek, and Yermack (1997) find that managerial entrenchment is higher for less leveraged firms. The agency conflict associated with managerial entrenchment is positively correlated with agency-driven M&A. It is possible that a higher leverage ratio is associated with less managerial entrenchment and thus less M&A activity.

In this study, the leverage ratio is calculated as the sum of current debt and long-term debt divided by total non-cash assets. Firm leverage does exhibit a negative and significant 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 does not differentiate between bank debt and public debt. It is possible that a measure using only bank debt would yield stronger results.

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 a 0.50% decrease in M&A likelihood on average, significant at the 1% level.

Finally, M&A activity is also motivated by a firm's prior performance.<sup>28</sup> A 1% increase in the prior benchmarked CAR (over the 12-month period prior to the institutional ownership recording date) is associated with a 0.05% increase in M&A likelihood on average, significant at the 1% level. An increase of one standard deviation in prior CAR is associated with a 2% increase in M&A likelihood. It is possible that firms either extrapolate their prior performances when making investment decisions or take advantage of their relatively high valuations.

## B Subsample Results

Mergers and acquisitions *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 thus discourage bad deals.

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 are significantly lower for low  $q$  bidders with high cash flows than low  $q$  bidders with low cash flows. Morck, Shleifer, and Vishny (1990) find that "buying growth" acquisitions reduce the returns to bidders. Managers are likely to overpay fast-growing targets because they want to create opportunities for insiders and to assure the long-run survival of the

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<sup>28</sup>I use four measures for prior performance: one-year sales growth rate, cumulative abnormal returns using the benchmark method, cumulative abnormal returns using the Fama-French 3-factor model, and buy-and-hold abnormal returns. I report 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.

firm.

Table VI reports the sub-sample M&A performances. High  $q$  firms have lower announcement abnormal returns than low  $q$  firms. Low  $q$  firms have significantly positive equal-weighted announcement abnormal returns, but small negative value-weighted announcement abnormal returns. Among the low  $q$  firms, cash rich ones have lower announcement abnormal returns than low cash ones. The value-weighted announcement abnormal return is negative for cash-rich and low  $q$  firms, and positive for low-cash and low  $q$  firms. “Buying-growth” M&A receives significantly negative announcement abnormal returns, while “non-buying-growth” M&A announcement abnormal returns are insignificant.

If PPF monitoring is effective, I would expect PPF ownership to: 1) have a more pronounced effect in the high  $q$  group than the low  $q$  group; 2) have a more pronounced effect in the cash-rich group than the low-cash group among the low  $q$  firms; 3) reduce the likelihood of “buying-growth” M&A among successful M&A deals.

**High  $q$  vs Low  $q$**  There is mild support for the first point. In results not reported,<sup>29</sup> PPF ownership is consistently endogenous among the high  $q$  firms, but not so among low  $q$  firms. Among high  $q$  firms, some of the negative correlation between PPF ownership and firm M&A activity may be driven by PPF’s preference for lower  $q$  firms. (See table III.) After controlling for endogeneity, PPF ownership has a much stronger economics effect among high  $q$  firms: a 1% increase in aggregate PPF ownership reduces M&A likelihood by roughly 1.2% for high  $q$  firms, but only 0.2% for low  $q$  firms. However, the PPF ownership variables are not statistically significant except for the random effects logistic model (at the 1% level).

**Cash-rich Low- $q$  vs Low-cash Low- $q$**  Stronger support for the PPF influence effect comes from the second and the third arguments. Table VII presents the results on PPF impact among low  $q$  firms (point two). Low  $q$  firms and cash rich firms are classified independently. Each year, firms with  $q$  ratios less than the sample median are classified as low  $q$  firms.<sup>30</sup> Cash richness is defined as the ratio of non-current-debt cash and cash equivalents to non-cash total assets. Each year, firms with above industry (by 4-digit SIC code) median cash holdings are classified as 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 VII shows that firms’ prior stock performance has no impact on M&A activity among the cash-rich and low- $q$  firms, and has a positive impact on M&A activity among the low cash counterpart. This suggests that acquirers in the cash-rich group do not base their M&A decisions on their prior performances. The coefficients on the firm-level governance index are significantly positive in the random effects specification, and insignificant in the fixed effects specifications for the

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<sup>29</sup> Available upon request.

<sup>30</sup> Annual median  $q$  ratios vary from 1.31 to 1.60.

cash-rich and low  $q$  firms. It appears that weaker shareholder rights provision leads to more M&A activity in the cross-section but has no effect in the time-series for a particular firm. In contrast, this governance index has a significant and negative impact in the fixed effects specifications and no significant impact in the random effects specifications for the low cash group. My interpretation is that for low-cash low- $q$  firms, the impact of weaker shareholder rights provision is stronger in the time-series than in the cross-section — a firm is less likely to acquire when its governance measure deteriorates. The overall evidence does support the argument that agency cost is higher among cash-rich and low- $q$  firms.

No institutional ownership variable is endogenous in the subsample of cash-rich and low- $q$  firms, but PPF ownership is endogenous for some specifications in the subsample of low-cash and low- $q$  firms. After controlling for endogeneity, Table VII reports that PPFs focus their monitoring efforts on the cash-rich low- $q$  group. An increase of 1% in aggregate PPF ownership reduces M&A likelihood by about 1.3% in this group, at a significance level of 5% or 10%. This same increase reduces M&A likelihood by only 0.9% among low-cash low- $q$  firms, which is significant only in the random effects logit specification. The presence of investment company ownership is associated with more M&A activity within the cash-rich low- $q$  group.

The incidence of M&A among cash-rich low- $q$  and low-cash low- $q$  groups is about the same, with 25.16% for the former and 26.14% for the latter. The fact that the reduction in M&A likelihood associated with PPF ownership is greater and more significant in the cash-rich group suggests PPFs’ ability to reduce ex ante bad M&A. I also examined whether PPF ownership is correlated with M&A stock performance within the cash-rich low  $q$  group, but was unable to find a significant association.

**Buying-growth M&A** Table VIII 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 the 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 the 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 PPF ownership reduces the probability of buying a fast-growing target by 5.98%.<sup>31</sup>

## C Investment horizon

In a contemporaneous and independent paper, Gaspar, Massa, and Matos (2004) assert that institutional investors’ investment horizon impacts firms’ M&A activity. They oddly do report a

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<sup>31</sup>The coefficient on the 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.



positive and significant relation between activist ownership and the likelihood of being a bidder. The reason is most likely that they define activist investors by membership in the Council of Institutional Investors (CII), the majority of which are private pension funds and small public pension funds which outsource the management of their assets. Song and Szewczyk (2003) find little evidence that the CII has been effective in its activist activity. This is why their variable was unlikely to capture the activism impact by major public pension funds.

It is interesting to examine the relation between institutions' investment horizon and M&A likelihood, and compare the results to Gaspar, Massa, and Matos (2004). For each type of institution, I calculate the average annual turnover ratio by averaging an individual institution's annual "churn rate" on the sample stocks over the period 1992-1999. The "churn rate" of institution  $i$  at time  $t$  is defined as

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

where  $P_{k,t}$  is the price of stock  $k$  at time  $t$ , and  $N_{k,i,t}$  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 an individual institution is the average of this quarterly "churn rate" over four quarters. Then I calculate the representative turnover ratio for each type of institution as the average of the individual annual turnover ratios over the sample period. The following table provides a summary. The average turnover ratio is lower for public pension funds, while there are huge variations among other types of institutions.

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

The annual turnover ratio for each type of institutions for an individual firm is calculated as the weighted average within a type. This turnover measure has *no* significant relation with a firm's M&A likelihood. The following table reports the coefficients and standard errors for those turnover measures in regressions predicting M&A likelihood.<sup>32</sup> Either the overall turnover ratio is included in the regressions, or turnover ratios for six types of institutions are included.

<sup>32</sup>Other variables included in the regressions are the same as those in Table IV. In these regressions, I also include dummy variables for zero holdings of each type of institution. If a firm has no institutional holdings for a particular type, then the turnover ratio for this type of institution for this particular firm is zero, and the dummy for this type of institution equals one. Otherwise, the dummy equals zero.

	Dependent variable — 1=M&A; 0=no M&A					
	Fixed Effects Linear Prob.		Fixed Effects Logit		Random Effects Logit	
	aggregate	concentration	aggregate	concentration	aggregate	concentration
All institutions'	-0.282**	-0.310**	-2.009**	-2.232**	-0.536	-0.744
turnover ratio	(0.139)	(0.139)	(0.958)	(0.951)	(0.686)	(0.666)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Six types						
turnover ratio for	0.052	0.056	0.004	-0.015	0.474	0.685
PPF	(0.137)	(0.137)	(0.966)	(0.961)	(0.724)	(0.729)
turnover ratio for	-0.132	-0.121	-0.872	-0.809	-0.533	-0.404
investment co.	(0.095)	(0.095)	(0.638)	(0.640)	(0.523)	(0.523)
turnover ratio for	-0.179**	-0.192**	-1.038	-1.140**	0.223	-0.071
insurance co.	(0.090)	(0.090)	(0.579)	(0.578)	(0.471)	(0.470)
turnover ratio for	0.048	0.035	0.393	0.261	0.005	-0.182
private pension	(0.069)	(0.069)	(0.457)	(0.457)	(0.368)	(0.368)
turnover ratio for	0.043	0.037	-0.152	-0.151	0.683	0.748
banks	(0.178)	(0.178)	(1.250)	(1.251)	(0.943)	(0.941)
turnover ratio for	-0.023	-0.020	-0.118	-0.112	-0.415	-0.398
indep. advisors	(0.115)	(0.116)	(0.779)	(0.780)	(0.583)	(0.581)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes

Contrary to findings in Gaspar et al. (2004), shorter investor horizon (higher turnover ratio) has a negative effect on the bidder M&A likelihood in some specifications. In pooled regressions without controlling for firm-level fixed effects, the overall turnover ratio is no longer significant and the turnover ratio for PPF is significantly positive, while the PPF ownership variable remains significantly negative. This suggests that their results are most likely driven by the fact that they did not control for firm-level fixed effects or endogeneity.

## IV Institutional Ownership and Performance of M&A

### A Market reactions

In this section, I examine whether the market reacts differently to M&A events given different institutional ownerships. Table IX and Table X 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 abnormal returns. I include the method 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. For long-term abnormal 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.

Table IX reports the results on announcement abnormal returns during the 3-day window  $(-1, 1)$ . Private pension fund ownership and aggregate investment company ownership are significantly and 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 can improve shareholder value in M&A. There can be several explanations to this observation. First, the measure of announcement abnormal returns may be noisy. For example, Mitchell, Pulvino, and Stafford (2004) find that nearly half of the negative acquirer announcement stock return reflects price pressure caused by merger arbitrage. Second, there are other factors that affect the profitability of a deal, such as managerial ability. Given these factors, the market may not be responsive to PPF ownership variable.

Table X reports the results on long-term abnormal returns over twelve months, *including* the announcement month. PPF ownership is positively associated with long-run abnormal returns measured by all three methodologies. A one unit increase in PPF ownership concentration is correlated with a 0.55% increase in benchmarked CAR (at the 5% significance level), with a 4.52% increase in 3-factor CAR (at the 5% significance level), and with a 3.31% increase in buy-and-hold abnormal return (at the 10% significance level). It appears that M&A firms with higher PPF ownership perform relatively better in the long-run. In contrast, aggregate investment company ownership and the level of CEO cash compensation are negatively correlated with long-run abnormal returns.

## B Operating performance

The operating performance of the M&A firms within my sample, as measured by both operating cash flow returns and cash flow margin on sales, is on average better than their industry median both pre- and post-M&A.<sup>33</sup> Consistent with findings in Healy, Palepu, and Ruback (1992), their performances as measured by these two benchmarks improve after their acquisitions. Post-M&A industry-adjusted cash flow returns on average increase by 1.53% as compared to their pre-M&A levels; post-M&A industry-adjusted cash flow margins on average increase by 5.38% as compared to pre-M&A levels. Both improvements are statistically different from zero at the 1% significance level. However when we look at their asset turnover rates, they performed worse on average than the industry median both before and after M&A. Also, their asset turnover rates appear to deteriorate after the acquisitions' completion. The decline is not statistically significant except for the subgroup of M&As with publicly traded targets.

PPF ownership is not significantly correlated with either post-M&A abnormal cash flow returns or abnormal cash flow margins. Interestingly, PPF ownership has a significant and positive correlation with post-M&A improvement in asset turnover rate.

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<sup>33</sup>Results available upon request.

Table XI reports the regression results on post-M&A operating performance as 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%. Keeping in mind that Table X reports a positive relation between PPF ownership and twelve-month stock abnormal returns, this positive association between PPF ownership and abnormal asset turnover rate is less likely to be driven by a relatively low market valuation of firm assets.

## V Literature review

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 (Black (1992), Pound (1992), and Holmstrom and Kaplan (2001)).<sup>34</sup> 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 have either insignificant effects or small negative effects on stock returns. On the other hand, Wahal (1996) finds that nonproxy proposal targeting receives significant and positive abnormal announcement returns. Smith (1996) estimates that CalPERS (California Public Employees Retirement System) gained \$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 targeting governance issues. While this is the most visible governance activity by institutional investors, there are several reasons to suspect that event responses to proxy proposals do not fully represent 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.<sup>35</sup> The data used in event studies which examine announcement stock returns will inevitably include many shareholder proposals that are never implemented.<sup>36</sup> Consequently, it is not too 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)).

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<sup>34</sup>Various antitakeover measures adopted by management have rendered the disciplinary takeover market ineffective during the 90s. For example, Bebchuk, Coates IV, and Subramanian (2002) find that "not a single hostile bid won a ballot box victory against an 'effective' staggered board."

<sup>35</sup>For 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)).

<sup>36</sup>Wahal (1996) documents that 40 percent of proxy proposals on governance structures changes initiated by public pension funds were adopted by target firms.

There are also other studies examining institutional investor activism other than proxy proposal targeting activity. Hartzell and Starks (2002) find that higher institutional ownership concentration is related to higher pay-for-performance sensitivity of executive compensation, as well as lower levels of compensation. Hotchkiss and Strickland (2003) find evidence supporting the idea that the composition of institutional shareholders affects the market response to corporate events. Parrino, Sias, and Starks (2003) find that changes in institutional ownership are negatively related to the likelihood of forced CEO turnover. Song and Szewczyk (2003) study the impact of Focus List by the Council of Institutional Investors and find very little evidence of the efficacy of shareholder activism. Despite the common theoretical assumption that external shareholders can monitor, few existing studies have documented strong evidence that any external shareholder systematically influences firms' real decisions.

This paper attempts to study the efficacy of institutional activism through their impact on corporate mergers and acquisitions activity. Evidence on bidder performance both at the announcement and in the long-run does not suggest that all acquisitions are beneficial for bidder shareholders. Studies on corporate M&A activity provide inconclusive results on bidder announcement returns. Jensen and Ruback (1983) find positive and significant bidder abnormal returns in 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 (Agrawal, Jaffe, and Mandelker (1992), Loughran and Vjih (1997), etc.) find evidence of poor bidder long-term performance. However, 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 performance and reach different conclusions about whether mergers improve operating profitability.

There are many theories for why mergers occur: to capture synergy gains, to create market power, to discipline incompetent managers of the targets, and to respond to industry-level shocks (technology shocks or deregulation). M&A can also occur due to agency costs. Negative announcement and post-announcement bidder performance documented by existing literature may support the argument that some M&A activity is driven by managerial private incentives rather than shareholder value maximization. Morck, Shleifer, and Vishny (1990) suggest that managerial objectives drive 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 serves as a strong incentive for managers to seek out acquisitions. Avery, Chevalier, and Schaefer (1998) find that CEOs who completed acquisitions are 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 overconfidence. Roll (1986) points out that “bidding firms infected by hubris simply pay too much for their targets.”

Previous research also suggests several scenarios in which bad M&A is more likely to occur. In Jensen (1986), agency costs are the 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  $q$  firms<sup>37</sup> that received cash windfalls, managers wasted the resources in order to ensure their long-run survival. Thus, the literature suggests that the managers of low  $q$  firms with piles of free cash are more likely to waste the cash flow on bad investments. Morck, Shleifer, and Vishny (1990) identify “buying-growth” M&A as value-reducing and driven by managerial incentives.

My analysis thus proceeded in two stages. First, I examine the relationship between institutional ownership and M&A activity in the whole sample. Second, I examine the relationship between institutional ownership and value-reducing/value-creating M&A activity in subsamples, and the relationship between institutional ownership and bidder M&A performance.

## VI Conclusions

After controlling for ownership endogeneity, firm-level governance provisions, and firm characteristics, my study has shown that PPF ownership reduces the likelihood of buying other firms. 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, and for firms seeking to buy fast-growing targets. PPF ownership is also positively correlated with long-run M&A abnormal returns. Overall, I believe that there is enough evidence to support Hypothesis 1a, which states that public pension funds are effective monitors of corporate M&A activity.

Ownership by investment companies is positively correlated with M&A likelihood among firms with higher agency costs. After controlling for endogeneity, there is no significant correlation between investment company ownership and M&A likelihood in the whole sample. The aggregate investment company ownership is negatively associated with both announcement abnormal returns and long-run M&A abnormal returns. Given these findings, investment companies appear to be the least likely monitors among all types of institutions. The fact that aggregate investment company ownership is negatively correlated with M&A stock performance in the long-run is not explained by the “herding” story, and may instead be more consistent with the story that their presence encourages value-reducing activity by firm management. However, Shleifer and Vishny (2003)

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<sup>37</sup>Low  $q$  firms are more likely to be firms with few positive NPV investment opportunities.

demonstrate in their model that a rational manager may undertake an acquisition when the stock is overvalued by an irrational market. In this scenario, M&A is not value-reducing for bidder shareholders at all, despite the post-event drop in stock price as the true valuation is revealed.

The aggregate private pension funds, banks, and independent advisor ownerships are not significantly correlated with M&A likelihood in the future twelve months. However, their concentrated ownerships are somewhat positively correlated with long-term M&A abnormal returns. There may be a monitoring effect by individual private pension funds, banks or independent advisors, and possible free-riding incentives among these institutions.

Higher insider ownership is negatively and significantly correlated with M&A likelihood, but not significantly correlated with M&A performance. The level of CEO cash compensation is not significantly correlated with M&A likelihood, and is negatively and significantly correlated with M&A performance. Core, Holthausen, and Larcker (1999) find that CEO compensation level is higher when governance structures are less effective. Therefore, greater CEO compensation could be correlated with greater agency problems and higher agency costs in M&A activity. CEO stock options are significantly and positively correlated with M&A likelihood, but not significantly correlated with M&A performance. I find no support within my sample for the argument that more option grants encourage better performance, and thus encourage good M&A. Yermack (1995) finds little evidence that agency or financial contracting theories explain the patterns of CEO stock option awards. The finding that CEO option grants have 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 would be interesting to further pursue the effect of managerial incentives on managers' M&A decisions. It is very possible that factors such as agency costs, which affect firms' M&A activity, also affect firm-level managerial incentives. This endogeneity problem should be addressed in further studies.

## Appendix A: Measuring Performance

M&A bidder stock performance is measured by both the announcement abnormal return and the long-run abnormal return. For announcement abnormal returns, I follow standard event study methodology to calculate CARs for the three-day window (-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. If there are multiple announcements during the 12-month period, I take the average abnormal announcement return of all announcements during the period.

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 abnormal returns should be based on averages or sums of short-term abnormal returns. Mitchell and Stafford (2000) show that the conventional methodology of calculating multi-year buy-and-hold abnormal returns and

conducting inferences via a bootstrapping procedure is flawed because the abnormal returns for event firms are not independent. After accounting for the positive cross-correlations of event firm abnormal returns, they find no abnormal performance in their sample of mergers, seasoned equity offerings, and share repurchases. 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 the benchmark method, buy-and-hold abnormal returns, and cumulative abnormal returns using Fama-French 3-factor model.

Each month, NYSE/AMEX ordinary common stocks with prior book-to-market values are sorted into 10 size portfolios according to their market capitalizations at the beginning of the month. Within each size portfolio, these stocks are further sorted into 5 groups according to their book-to-market values. The breaking points for these 50 portfolios are used to place all ordinary common stocks with CRSP and COMPUSTAT coverages and prior book-to-market values (to mitigate the new listing bias) into 50 benchmark portfolios.

Cumulative abnormal returns (CAR, benchmarked) are calculated over 12 months for individual event firms, including the announcement month. When there are multiple announcements during a year, CAR is calculated starting from the announcement month of the first announcement.

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

where  $R_{it}$  is the simple monthly return on the common stock of firm  $i$ .  $R_{bt}$  is the equal-weighted average monthly return of its benchmark portfolio.

Buy-and-hold abnormal returns (BHAR) are calculated over 12 months, including the announcement month,

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

Fama-French 3-factor monthly abnormal return is the  $\alpha_i$  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 the 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, and  $HML_t$  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. Cumulative abnormal returns (CAR, 3-factor) are then calculated as  $12 * \alpha_i$  for individual event firms.

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

I follow Healy, Palepu, and Ruback (1992) to calculate three measures of operating performance,

- Operating cash flow return,

$$CF = \frac{\text{Operating Income}[13] + \text{Depreciation}[14] + \text{Goodwill}[204]}{\text{Total Asset}[6] - \text{Book Value Of Equity}[60] + \text{Market Value Of Equity Beginning Of Year}}$$

- Cash flow margin on sales,

$$CFM = \frac{\text{Operating Income}[13] + \text{Depreciation}[14] + \text{Goodwill}[204]}{\text{Sales}[12]}$$

- Asset turnover rate,

$$AT = \frac{\text{Sales}[12]}{\text{Total Asset}[6] - \text{Book Value Of Equity}[60] + \text{Market Value Of Equity Beginning Of Year}}$$

These operating performance measures are not affected by depreciation and goodwill. Thus, they allow cross-section comparison of firms which used purchase accounting method and firms which used pooling-of-interests accounting method. These measures are also not affected by the methods of financing used in mergers because the 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 the M&A completion year and the 3 years after the M&A completion year.

The majority of my M&A sample acquired private targets. For the small number of M&As 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. The abnormal operating performance of the individual acquirer is thus calculated as,

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

## References

- Agrawal, Anup, Jeffrey F. Jaffe, and Gershon N. Mandelker, 1992, The post-merger performance of acquiring firms: A re-examination of an anomaly, *The Journal of Finance* 47, 1605–1621.
- Agrawal, Anup, and Gershon N. Mandelker, 1987, Managerial incentives and corporate investment and financing decisions, *The Journal of Finance* 42, 823–837.
- Amihud, Yakov, and Baruch Lev, 1981, Risk reduction as a managerial motive for conglomerate mergers, *Bell Journal of Economics* 12, 605–617.
- Andrade, Gregor, Mark Mitchell, and Erik Stafford, 2001, New evidence and perspectives on mergers, *Journal of Economic Perspectives* 15, 103–120.
- Avery, Christopher, Judith A. Chevalier, and Scott Schaefer, 1998, Why do managers undertake acquisition? an analysis of internal and external rewards to acquisitiveness, *Journal of Law, Economics, and Organization* 14, 24–43.
- Barber, Brad M., and John D. Lyon, 1996, Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359–399.
- , 1997, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341–372.
- Bebchuk, Lucian Arye, John C. Coates IV, and Guhan Subramanian, 2002, The powerful antitakeover force of staggered boards: Theory, evidence, and policy, *Stanford Law Review* 54, 887–951.
- Berger, Philip G., Eli Ofek, and David L. Yermack, 1997, Managerial entrenchment and capital structure decisions, *The Journal of Finance* 52, 1411–1438.
- Black, Bernard S., 1990, Shareholder passivity reexamined, *Michigan Law Review* 89, 520–608.
- , 1992, Institutional investors and corporate governance: The case for institutional voice, *Journal of Applied Corporate Finance* 5, 19–32.
- Blanchard, Olivier Jean, Florencio Lopez-de Silanes, and Andrei Shleifer, 1994, What do firms do with cash windfalls?, *Journal of Financial Economics* 36, 337–360.
- Brancato, Carolyn Kay, 1993, Patterns of institutional investment and control in the usa, Institutional Investor Project, Center for Law & Economic Studies, Columbia University.
- Brav, Alon, 2000, Inference in long-horizon event studies: A bayesian approach with application to initial public offerings, *The Journal of Finance* 55, 1979–2016.
- Brickley, James A., Ronald C. Lease, and Clifford W. Smith, 1988, Ownership structure and voting on antitakeover amendments, *Journal of Financial Economics* 20, 267–291.
- Core, John E., Robert W. Holthausen, and David F. Larcker, 1999, Corporate governance, chief executive officer compensation, and firm performance, *Journal of Financial Economics* 51, 371–406.
- Davis, E. Philip, and Benn Steil, 2001, *Institutional Investors* (MIT Press: Cambridge, MA, and London, England).
- Del Guercio, Diane, and Jennifer Hawkins, 1999, The motivation and impact of pension fund activism, *Journal of Financial Economics* 52, 193–340.
- Demsetz, Harold, and Kenneth Lehn, 1985, The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, 1155–1177.
- Fama, Eugene F., 1998, Market efficiency, long-term returns, and behavioral finance, *Journal of Financial Economics* 49, 283–306.
- Gaspar, Jose-Miguel, Massimo Massa, and Pedro Matos, 2004, Shareholder investment horizons and the market for corporate control, forthcoming *Journal of Financial Economics*.
- Gillan, Stuart L., and Laura T. Starks, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, *Journal of Financial Economics* 57, 275–305.
- Gompers, Paul A., Joy L. Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107–155.

- Gompers, Paul A., and Andrew Metrick, 2001, Institutional investors and equity prices, *Quarterly Journal of Economics* 116, 229–259.
- Gordon, Lilly A., and John Pound, 1993, Information, ownership structure, and shareholder voting: Evidence from shareholder-sponsored corporate governance proposals, *The Journal of Finance* 48, 697–718.
- Guercio, Diane Del, 1996, The distorting effect of the prudent-man laws on institutional equity investments, *Journal of Financial Economics* 40, 31–62.
- Harford, Jarrad, 1999, Corporate cash reserves and acquisitions, *The Journal of Finance* 54, 1969–1998.
- Hartzell, Jay C., and Laura T. Starks, 2002, Institutional investors and executive compensation, AFA 2003 Washington, D.C. meetings.
- Healy, Paul M., Krishna G. Palepu, and Richard S. Ruback, 1992, Does corporate performance improve after mergers?, *Journal of Financial Economics* 31, 135–175.
- Holmstrom, Bengt, and Steven N. Kaplan, 2001, Corporate governance and merger activity in the united states: Making sense of the 1980s and 1990s, *Journal of Economic Perspectives* 15, 121–144.
- Hotchkiss, Edith S., and Deon Strickland, 2003, Does shareholder composition matter? evidence from the market reaction to corporate earnings announcements, *The Journal of Finance* 58, 1469–1498.
- Jensen, Michael C., 1986, Agency costs of free cash flows, corporate finance, and takeovers, *American Economic Review* 76, 323–329.
- , and William H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs, and ownership structure, *Journal of Financial Economics* 3, 305–360.
- Jensen, Michael C., and Richard S. Ruback, 1983, The market for corporate control: the scientific evidence, *Journal of Financial Economics* 11, 5–50.
- Karpoff, Jonathan M., Paul H. Malatesta, and Ralph A. Walkling, 1996, Corporate governance and shareholder initiatives: Empirical evidence, *Journal of Financial Economics* 42, 365–395.
- Keim, Donald B., and Ananth Madhavan, 1997, Transactions costs and investment style: an inter-exchange analysis of institutional equity trades, *Journal of Financial Economics* 46, 265–292.
- Kothari, S.P., and Jerold B. Warner, 1997, Measuring long-horizon security price performance, *Journal of Financial Economics* 43, 301–339.
- Lang, Larry H.P., Rene M. Stulz, and Ralph A. Walkling, 1991, A test of the free cash flow hypothesis: The case of bidder returns, *Journal of Financial Economics* 29, 315–335.
- Loughran, Tim, and Anand M. Vijh, 1997, Do long-term shareholders benefit from corporate acquisitions, *The Journal of Finance* 52, 1765–1790.
- Mitchell, Mark, Todd Pulvino, and Erik Stafford, 2004, Price pressure around mergers, *The Journal of Finance* 59, 31–63.
- Mitchell, Mark L., and Kenneth Lehn, 1990, Do bad bidders become good targets?, *Journal of Political Economy* 98, 372–398.
- Mitchell, Mark L., and Erik Stafford, 2000, Managerial decisions and long-term stock price performance, *Journal of Business* 73, 287–329.
- Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1990, Do managerial objectives drive bad acquisitions?, *The Journal of Finance* 45, 31–48.
- Murphy, Kevin, and Karen Van Nuys, 1994, Governance, behavior, and performance of state and corporate pension funds, working paper.
- Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187–221.
- Parrino, Robert, Richard W. Sias, and Laura T. Starks, 2003, Voting with their feet: Institutional ownership changes around forced ceo turnover, *Journal of Financial Economics* 68, 3–46.
- Pound, John, 1988, Proxy contests and the efficiency of shareholder oversight, *Journal of Financial Economics* 20, 237–265.

- , 1992, Raiders, targets, and politics: The history and future of american corporate control, *Journal of Applied Corporate Finance* 5, 6–18.
- Prevost, Andrew K., and Ramesh P. Rao, 2000, Of what value are shareholder proposals sponsored by public pension funds?, *Journal of Business* 73, 177–204.
- Ravenscraft, David J., and Frederic M. Scherer, 1987, Life after takeover, *The Journal of Industrial Economics* 36, 147–156.
- Roll, Richard, 1986, The hubris hypothesis of corporate takeovers, *Journal of Business* 59, 197–216.
- Romano, Roberta, 1993, Public pension fund activism in corporate governance reconsidered, *Columbia Law Review* 93, 795–853.
- Shleifer, Andrei, and Robert Vishny, 2003, Stock market driven acquisitions, forthcoming, *Journal of Financial Economics*.
- Shleifer, Andrei, and Robert W. Vishny, 1989, Managerial entrenchment: The case of manager-specific investments, *Journal of Financial Economics* 25, 123–139.
- Smith, Michael, 1996, Shareholder activism by institutional investors: Evidence from calpers, *The Journal of Finance* 51, 227–252.
- Song, Wei-Ling, and Samuel H Szewczyk, 2003, Does coordinated institutional investor activism reverse the fortunes of underperforming firms?, *Journal of Financial and Quantitative Analysis* 38, 317–336.
- Staiger, Douglas, and James H. Stock, 1997, Instrumental variables regression with weak instruments, *Econometrica* 65, 557–586.
- Travlos, Nickolaos G., 1987, Corporate takeover bids, methods of payment, and bidding firms' stock returns, *The Journal of Finance* 42, 943–63.
- Van Nuys, Karen, 1993, Corporate governance through the proxy process: Evidence from the 1989 honeywell proxy solicitation, *Journal of Financial Economics* 34, 101–132.
- Wahal, Sunil, 1996, Pension fund activism and firm performance, *Journal of Financial and Quantitative Analysis* 31, 1–23.
- Woidtke, Tracie, 2002, Agents watching agents? evidence from pension fund ownership and firm value, *Journal of Financial Economics* 63, 99–131.
- Wooldridge, Jeffrey M., 2001, *Econometric Analysis of Cross Section and Panel Data* (MIT Press: Cambridge, MA).
- Yermack, David, 1995, Do corporations award ceo stock options effectively?, *Journal of Financial Economics* 39, 237–269.

Table I: Data Sources and Definitions

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
Mergers and acquisitions 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, “Corporate Governance and Equity Prices,” <i>The Quarterly Journal of Economics</i> , Feb. 2003
Insider ownership	Execucomp	aggregate insider ownership of top 5 executives, in percent, during year t
CEO salary and bonus	EXECUCOMP	CEO annual salary and bonus, in millions of dollars
CEO options (% of 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
Cash flow ratio	COMPUSTAT	$(\text{ebitda}[13] - \text{interest}[15] - \text{tax}[16-\Delta 35] - \text{common dividends}[21] - \text{preferred dividends}[19]) / (\text{total assets}[6] - \text{cash and cash equivalents}[1])$
Capital expenditures ratio	COMPUSTAT	$(\text{capital expenditures}[128] / (\text{total assets}[6] - \text{cash and cash equivalents}[1]), \text{averaged over three years } (t, t+1 \text{ and } t+2))$
Leverage ratio	COMPUSTAT	$(\text{current debt}[34] + \text{long-term debt}[9]) / (\text{total assets}[6] - \text{cash and cash equivalents}[1])$
Q ratio	COMPUSTAT	$(\text{market capitalization} + \text{long-term debt}[9] + \text{current debt}[34] + \text{preferred stock value}[130]) / \text{total assets}[6]$
Cash richness	COMPUSTAT	$(\text{cash and cash equivalents}[1] - \text{current debt}[34]) / (\text{total assets}[6] - \text{cash and cash equivalents}[1])$
Industrial concentration	COMPUSTAT	Herfindahl-index calculated using sales data[12], based on 4-digit SIC code
Sales growth	COMPUSTAT	1-year sales growth rate
Target sales growth	COMPUSTAT	3-year sales growth rate of the target prior to M&A

Table II: Descriptive Statistics

The sample (6,537 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 level.

<b>Ownership Data</b>					
Variable	Mean	Median	Std Dev	Min	Max
Aggregate public pension fund holdings (%)	3.07	2.44	2.49	0.00	19.78
Aggregate investment company holdings (%)	12.56	10.79	9.19	0.00	59.64
Aggregate insurance company holdings (%)	5.05	4.15	3.86	0.00	47.38
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 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 investment company holdings (%)	5.53	4.59	4.05	0.00	50.17
Top individual insurance company holdings (%)	2.54	1.63	2.91	0.00	47.05
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 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% investment company block holder dummy	0.47	0.00	0.50	0.00	1.00
5% insurance company block holder dummy	0.12	0.00	0.32	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% 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
Investment company ownership concentration	3.76	3.02	2.94	0.00	42.50
Insurance company ownership concentration	1.81	1.07	2.47	0.00	46.72
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
Independent advisor ownership concentration	2.93	2.32	2.50	0.00	46.52
Insider ownership (%)	4.38	0.86	8.72	0.00	82.47
<b>Firm and Industry Characteristics</b>					
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
CEO cash compensation (millions, CPI-adjusted)	0.96	0.74	0.86	0.00	15.71
CEO options (% of total compensation)	29.99	25.99	27.78	0.00	100
Ln(industrial concentration)	8.00	8.12	0.87	5.29	9.21
<b>Stock Return Data (%)</b>					
Pre-M&A					
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
M&A performance (number of observations — 2,025)					
Announcement abnormal return	0.22	0.21	5.42	-51.57	30.59
Long-term CAR, benchmarked	0.06	-0.11	10.03	-59.20	60.02
Long-term CAR, 3-factor	4.37	2.36	49.60	-134.82	162.00
Long-term BHAR	1.47	-3.25	47.54	-138.45	378.52

Table III: First Stage Regressions

This table reports the coefficients and standard errors from the first stage fixed effects regressions. The table also reports P-values from Hausman tests, which show that the fixed effects specification is more appropriate than the random effects specification. The first stage F-tests rule out the weak instrument problem. Due to space limit, only results using the aggregate and concentration ownership measures are reported. The rest of the results are available upon request. Public pension fund ownership, investment company ownership, and insurance company ownership are instrumented whenever required. Private pension fund ownership, bank ownership, and independent advisor ownership are not instrumented.

	Dependent Variable					
	PPF ownership		Investment Co.		Insurance Co.	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Institutional Ownership</b>	Aggre	Concen	Aggre	Concen	Aggre	Concen
instrument for PPF	0.959*** (0.017)	0.937*** (0.013)	-0.603*** (0.059)	-0.189*** (0.019)	-0.203*** (0.025)	-0.131*** (0.020)
instrument for investment co.	-0.032*** (0.005)	-0.015*** (0.005)	0.978*** (0.016)	1.014*** (0.007)	-0.077*** (0.007)	-0.043*** (0.007)
instrument for insurance co.	-0.041*** (0.011)	-0.047*** (0.008)	-0.307*** (0.038)	-0.111*** (0.012)	0.964*** (0.016)	0.892*** (0.013)
private pension fund ownership	0.959*** (0.017)	0.937*** (0.013)	-0.603*** (0.059)	-0.189*** (0.019)	-0.203*** (0.025)	-0.131*** (0.020)
bank ownership	0.035*** (0.005)	0.002 (0.005)	0.066*** (0.018)	0.005 (0.008)	0.013 (0.007)	-0.040*** (0.008)
indep. advisor ownership	0.004 (0.003)	0.006 (0.005)	0.009 (0.009)	0.022*** (0.008)	0.019*** (0.004)	0.015 (0.008)
<b>Shareholder Rights</b>						
Governance index	0.042 (0.028)	0.027 (0.015)	-0.174 (0.097)	-0.046** (0.022)	0.018 (0.041)	0.015 (0.023)
<b>Managerial Incentives</b>						
Insider ownership	-0.003 (0.005)	-0.001 (0.003)	0.012 (0.019)	0.004 (0.004)	-0.005 (0.008)	-0.001 (0.004)
CEO cash compensation	-0.032 (0.036)	-0.019 (0.019)	0.272** (0.126)	0.062** (0.029)	0.077 (0.053)	0.036 (0.030)
CEO options (% of total compensation)	0.001 (0.001)	0.000 (0.000)	0.012*** (0.003)	0.003*** (0.001)	0.003** (0.001)	0.001** (0.001)
<b>Firm Characteristics</b>						
Prior M&A +ve announcement CAR	0.075 (0.052)	0.041 (0.028)	0.587*** (0.182)	0.138*** (0.042)	0.116 (0.077)	0.058 (0.043)
Prior M&A -ve announcement CAR	0.054 (0.054)	0.027 (0.029)	0.535** (0.189)	0.121** (0.043)	0.211** (0.080)	0.112* (0.045)
Size	0.335*** (0.070)	0.177*** (0.038)	1.120*** (0.246)	0.217*** (0.056)	0.515*** (0.104)	0.193*** (0.058)
Q ratio	-0.067*** (0.017)	-0.037*** (0.009)	0.333*** (0.061)	0.074*** (0.014)	0.109*** (0.026)	0.049*** (0.014)
Cash flow ratio	-0.006*** (0.002)	-0.003*** (0.001)	0.016** (0.007)	0.003** (0.002)	0.005 (0.003)	0.003 (0.002)
Leverage ratio	-0.004*** (0.001)	-0.002*** (0.001)	0.001 (0.005)	0.001 (0.001)	-0.002 (0.002)	-0.001 (0.001)
Capital expenditures ratio	0.005 (0.006)	0.001 (0.003)	0.060*** (0.022)	0.012** (0.005)	0.029*** (0.009)	0.012** (0.005)
<b>Prior Performance</b>						
CAR, benchmarked	-0.002*** (0.000)	-0.001*** (0.000)	0.012*** (0.002)	0.003*** (0.000)	0.000 (0.001)	0.000 (0.000)
<b>Industry Characteristics</b>						
Ln(industrial concentration)	-0.116 (0.064)	-0.067 (0.035)	-0.486** (0.225)	-0.115** (0.051)	0.049 (0.095)	0.010 (0.053)
Year Dummies		Yes		Yes		Yes
Observations		6,536		6,536		6,536
Number of firms		1,348		1,348		1,348
R-squared, overall	0.397	0.538	0.551	0.772	0.479	0.600
The Hausman Test P-value	0.000	0.000	0.000	0.000	0.000	0.000
1st stage F-test P-value	3728.08	5372.07	3728.08	5372.07	3728.08	5372.07

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

Table IV: Likelihood of M&amp;A and Different Types of Institutional Ownership

This table reports the coefficients and standard errors from instrumental variables regressions. Public pension fund ownership, investment company ownership, and insurance company ownership are instrumented whenever the t-stats from endogeneity tests indicate the necessity. 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 firm size because the Q ratio is strongly correlated with market capitalization. Due to space limit, this table reports regression results using two measures of institutional ownership. The rest of the results are available by request.

	Dependent variable — 1=M&A; 0=no M&A					
	linear probability		fixed effects logit		random effects logit	
<b>Institutional Ownership</b>	aggre	concen.	aggre	concen.	aggre	concen.
PPFH	-0.012**	-0.017**	-0.131***	-0.156**	-0.217***	-0.267***
	(0.006)	(0.008)	(0.046)	(0.063)	(0.035)	(0.046)
Investment Co.	-0.002	-0.002	-0.015	-0.010	-0.015**	-0.015
	(0.002)	(0.003)	(0.010)	(0.017)	(0.007)	(0.014)
Insurance Co.	0.009***	0.001	0.061***	0.019	0.040***	-0.079***
	(0.002)	(0.006)	(0.015)	(0.037)	(0.009)	(0.026)
Private pension	0.007	0.008	0.042	0.051	0.028	0.021
	(0.004)	(0.004)	(0.030)	(0.036)	(0.016)	(0.017)
Banks	0.001	-0.002	0.004	-0.013	0.023***	-0.013
	(0.002)	(0.003)	(0.011)	(0.021)	(0.006)	(0.013)
Indep. advisors	0.000	0.003	0.001	0.016	0.006	0.015
	(0.001)	(0.003)	(0.005)	(0.021)	(0.003)	(0.014)
<b>Shareholder Rights</b>						
Governance index	-0.021**	-0.020**	-0.118**	-0.114**	0.034**	0.034**
	(0.009)	(0.009)	(0.056)	(0.056)	(0.015)	(0.014)
<b>Managerial Incentives</b>						
Insider ownership	-0.003**	-0.003**	-0.028**	-0.026**	-0.010**	-0.013***
	(0.002)	(0.002)	(0.012)	(0.012)	(0.005)	(0.005)
CEO cash compensation	0.020	0.022	0.114	0.124	0.053	0.063
	(0.012)	(0.012)	(0.076)	(0.076)	(0.047)	(0.046)
CEO options (% of total compensation)	0.001**	0.001***	0.004**	0.004**	0.005***	0.005***
	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)	(0.001)
<b>Firm Characteristics</b>						
Prior M&A +ve announcement CAR	-0.063***	-0.063***	-0.311***	-0.307***	0.959***	0.969***
	(0.017)	(0.017)	(0.093)	(0.092)	(0.093)	(0.093)
Prior M&A -ve announcement CAR	-0.081***	-0.080***	-0.389***	-0.383***	0.834***	0.854***
	(0.018)	(0.018)	(0.096)	(0.096)	(0.097)	(0.097)
Size	-0.074***	-0.077***	-0.463***	-0.494***	0.222***	0.143***
	(0.023)	(0.023)	(0.146)	(0.143)	(0.040)	(0.035)
Q ratio	0.011**	0.012**	0.061	0.068	0.057***	0.055***
	(0.006)	(0.006)	(0.037)	(0.037)	(0.019)	(0.019)
Cash flow ratio	0.000	0.000	0.001	0.001	0.003	0.004
	(0.001)	(0.001)	(0.004)	(0.004)	(0.003)	(0.003)
Leverage ratio	-0.001	-0.001	-0.009**	-0.009**	-0.006***	-0.005**
	(0.000)	(0.000)	(0.004)	(0.004)	(0.002)	(0.002)
Capital expenditures ratio	-0.005**	-0.005**	-0.033**	-0.034**	-0.033***	-0.033***
	(0.002)	(0.002)	(0.014)	(0.014)	(0.007)	(0.007)
<b>Prior Performance</b>						
CAR, benchmarked	0.000***	0.000***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
<b>Industry Characteristics</b>						
Ln(industrial concentration)	-0.018	-0.017	-0.066	-0.068	-0.061	-0.029
	(0.021)	(0.021)	(0.131)	(0.131)	(0.046)	(0.045)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,537	6,537	4,334	4,334	6,537	6,537
Number of firms	1,348	1,348	734	734	1,348	1,348
P-value from the Hausman specification test	0.000	0.000	N/A	N/A	N/A	N/A
T-stat from the endogeneity test						
PPF	2.61	2.52	3.44	2.97	3.02	3.05
Investment Co.	3.49	3.82	3.13	3.55	1.91	3.08
Insurance Co.	1.53	2.05	1.51	1.97	1.58	2.77

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



Table V: Simultaneous Equations Analysis on PPF Impact

This table reports the coefficients and standard errors from three-stage simultaneous equations estimations. The system assumes that both the PPF ownership variable and the M&A activity dummy variable are endogenous.

	Dependent Variables			
	system (1)		system (2)	
	Aggregate PPF Ownership (1)	M&A Activity (1=Yes) (2)	PPF concentration (normalized) (3)	M&A Activity (1=Yes) (4)
M&A Activity Dummy	0.705*** (0.218)		0.392*** (0.116)	
Aggregate PPF		-0.026*** (0.004)		
PPF concentration				-0.031*** (0.005)
Instrument for aggregate PPF	1.000*** (0.018)			
Instrument for PPF concentration			1.023*** (0.013)	
Governance index	0.008 (0.009)	0.007*** (0.002)	0.004 (0.005)	0.006*** (0.002)
Size	-0.026 (0.023)	0.037*** (0.005)	-0.009 (0.012)	0.028*** (0.006)
Q ratio	-0.038*** (0.013)	0.008*** (0.003)	-0.020*** (0.007)	0.007** (0.003)
Cash flow ratio	-0.007*** (0.002)	0.000 (0.000)	-0.004*** (0.001)	0.000 (0.000)
Leverage ratio	-0.004*** (0.001)	-0.001** (0.000)	-0.002*** (0.001)	-0.000* (0.000)
Capital expenditures ratio	0.003 (0.005)	-0.003*** (0.001)	0.002 (0.003)	-0.003*** (0.001)
Prior performance (CAR)	-0.003*** (0.001)	0.000*** (0.000)	-0.002*** (0.000)	0.001*** (0.000)
Prior M&A +ve announcement CAR		0.255*** (0.015)		0.257*** (0.015)
Prior M&A -ve announcement CAR		0.228*** (0.016)		0.230*** (0.016)
Insider ownership		-0.001** (0.001)		-0.001* (0.001)
CEO cash compensation		0.004 (0.008)		0.005 (0.008)
CEO options (% of total compensation)		0.001*** (0.000)		0.001*** (0.000)
Constant	1.156*** (0.413)	-0.095 (0.094)	-0.061 (0.224)	-0.067 (0.094)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies (3-digit SIC)	Yes	Yes	Yes	Yes
Observations	6,537	6,537	6,537	6,537
R-squared	0.427	0.133	0.568	0.141

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

Table VI: Performance of Low  $Q$  and High  $Q$  Firms, and “Buying-growth” M&A

This table reports the means and medians for different performance measures among subgroups of observations. P-values from non-parametric median tests are reported in parentheses. Each year, firms with  $q$  ratios less than the sample median are defined to be low  $q$  firms. Cash richness is defined as the ratio of non-current-debt cash and cash equivalents to non-cash total assets. Each year, firms with above industry (by 4-digit SIC code) median cash richness are defined to be cash rich firms, otherwise they are low cash firms. In the subsample of M&A observation for which target pre-M&A three-year sales growth rates are available, deals with target sales growth rates above the median are defined to be “buying-growth,” otherwise “non-buying-growth.” IA stands for “industry adjusted”.

# of obs	cash rich, low $q$		low cash, low $q$		median test
	483		479		
	mean	median	mean	median	
Announcement abnormal return	0.29	0.18	0.68***	0.46	(0.273)
Announcement value-weighted AR	-0.04		0.05		
Long-term CAR, benchmarked	0.54	0.01	0.64	0.25	(0.561)
Long-term CAR, 3-factor	-0.28	-1.82	4.45**	2.90	(0.061)
Long-term BHAR	-0.34	-5.54	0.67	-2.76	(0.272)
Abnormal IA cash flow	3.41***	2.13	3.19***	1.55	(0.444)
Abnormal IA cash margin	5.73***	2.94	6.69***	2.65	(0.321)
Abnormal IA asset turnover	1.67	0.48	2.44*	0.49	(0.857)
# of obs	high $q$ firms		low $q$ firms		median test
	1,053		962		
	mean	median	mean	median	
Announcement abnormal return	-0.01	0.09	0.48***	0.35	(0.071)
Announcement value-weighted AR	-0.20		0.02		
Long-term CAR, benchmarked	-0.41	-0.58	0.59*	0.18	(0.124)
Long-term CAR, 3-factor	6.46***	4.21	2.07	0.34	(0.078)
Long-term BHAR	2.67*	-2.60	0.16	-3.78	(0.434)
Abnormal IA cash flow	1.94***	1.12	3.30***	1.70	(0.119)
Abnormal IA cash margin	10.31***	5.02	6.21***	2.71	(0.000)
Abnormal IA asset turnover	-2.59***	-0.68	2.06*	0.49	(0.187)
# of obs	“buying-growth” M&A		“non-buying-growth” M&A		median test
	156		154		
	mean	median	mean	median	
Announcement abnormal return	-0.90**	-0.27	-0.42	0.11	(0.496)
Announcement value-weighted AR	-0.73		-1.14		
Long-term CAR, benchmarked	-1.30	-1.62	0.55	-0.03	(0.112)
Long-term CAR, 3-factor	3.62	6.41	10.05**	5.37	(0.820)
Long-term BHAR	-4.04	-5.39	2.40	-6.37	(0.820)
Abnormal IA cash flow	3.18***	1.68	2.24***	1.39	(0.589)
Abnormal IA cash margin	12.88***	9.46	9.14***	4.26	(0.048)
Abnormal IA asset turnover	-3.40	-1.37	-6.79***	-4.17	(0.208)

\* significantly different from zero at 10%; \*\* significantly different from zero at 5%; \*\*\* significantly different from zero at 1%

Table VII: Low  $Q$  Firms

This table reports the coefficients and standard errors from panel data linear probability and logistic regressions on the subsample of low  $q$  firms with different cash holding levels. PPF ownership variables in specification 8,9,10, and 11 are instrumented. Each year, firms with  $q$  ratio less than the sample median are defined to be low  $q$  firms. Cash richness is defined as the ratio of non-current-debt cash and cash equivalents over non-cash total asset. Each year, firms with above industry (by 4-digit SIC code) median cash richness are defined to be cash rich firms, otherwise low cash firms. Due to space limit, only results using aggregate institutional ownership and ownership concentration variables are reported. The rest of the results are available upon request.

	Cash rich, low $q$						Low Cash, low $q$					
	Dependent variable — 1=M&A (25.16%); 0=no M&A		linear probability		random effects logit		Dependent variable — 1=M&A (26.14%); 0=no M&A		linear probability		random effects logit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<b>Insti. Ownership</b>												
PPF	-0.013* (0.007)	-0.022* (0.012)	-0.137* (0.071)	-0.236** (0.114)	-0.079** (0.031)	-0.130** (0.055)	0.009 (0.007)	-0.016 (0.017)	-0.055 (0.089)	-0.153 (0.142)	-0.178*** (0.058)	-0.178** (0.080)
Investment Co.	0.006*** (0.002)	0.012** (0.005)	0.056*** (0.020)	0.073** (0.039)	0.025** (0.010)	0.028 (0.024)	0.002 (0.002)	0.002 (0.005)	0.005 (0.016)	0.012 (0.037)	0.014 (0.009)	0.021 (0.022)
Insurance Co.	-0.000 (0.005)	0.002 (0.009)	0.012 (0.041)	0.007 (0.072)	0.024 (0.016)	0.015 (0.023)	0.008 (0.005)	0.012 (0.009)	0.066** (0.037)	0.131* (0.070)	0.056*** (0.017)	0.047* (0.026)
Private pension	-0.011 (0.011)	-0.013 (0.014)	-0.204 (0.128)	-0.163 (0.137)	0.020 (0.024)	0.017 (0.025)	0.007 (0.016)	0.011 (0.020)	0.101 (0.114)	0.109 (0.155)	0.009 (0.045)	-0.017 (0.056)
Banks	0.002 (0.004)	-0.002 (0.008)	0.019 (0.031)	-0.021 (0.059)	0.018 (0.012)	-0.004 (0.023)	-0.003 (0.004)	-0.002 (0.006)	-0.009 (0.029)	-0.011 (0.058)	-0.010 (0.013)	-0.039 (0.026)
Indep. Advisors	0.002 (0.002)	-0.001 (0.006)	0.031* (0.017)	-0.029 (0.061)	0.004 (0.007)	0.005 (0.028)	0.003* (0.002)	0.005 (0.007)	0.025* (0.013)	0.055 (0.048)	0.011* (0.006)	0.016 (0.023)
<b>Shareholder Rights</b>												
Governance index	-0.033 (0.022)	-0.034 (0.022)	-0.216 (0.155)	-0.225 (0.155)	0.072*** (0.027)	0.078*** (0.027)	-0.057*** (0.019)	-0.054*** (0.019)	-0.314** (0.135)	-0.286** (0.135)	0.032 (0.026)	0.032 (0.026)
<b>Managerial Incentives</b>												
Insider Ownership	-0.005 (0.004)	-0.005 (0.004)	-0.038 (0.029)	-0.039 (0.029)	-0.016 (0.010)	-0.020** (0.010)	-0.000 (0.004)	-0.000 (0.004)	-0.036 (0.037)	-0.034 (0.038)	-0.008 (0.010)	-0.012 (0.010)
CEO cash compensation	0.009 (0.028)	0.013 (0.028)	0.114 (0.254)	0.096 (0.242)	-0.010 (0.111)	0.045 (0.111)	0.049 (0.036)	0.055 (0.036)	0.132 (0.236)	0.126 (0.234)	0.057 (0.098)	0.068 (0.098)
CEO options (% of total compensation)	0.000 (0.001)	0.000 (0.001)	0.002 (0.005)	0.002 (0.005)	0.006** (0.003)	0.007** (0.003)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.004)	-0.001 (0.004)	0.001 (0.003)	0.002 (0.003)
<b>Firm Characteristics</b>												
Prior M&A +ve announcement CAR	-0.093** (0.038)	-0.092** (0.038)	-0.567** (0.256)	-0.600** (0.254)	1.100*** (0.183)	1.156*** (0.183)	-0.114*** (0.036)	-0.116*** (0.036)	-0.682*** (0.222)	-0.678*** (0.223)	1.179*** (0.171)	1.192*** (0.172)
Prior M&A -ve announcement CAR	-0.141*** (0.044)	-0.132*** (0.044)	-0.843*** (0.273)	-0.746*** (0.270)	0.977*** (0.203)	1.010*** (0.202)	-0.159*** (0.036)	-0.162*** (0.037)	-0.849*** (0.230)	-0.860*** (0.230)	0.955*** (0.179)	0.955*** (0.180)
Size	-0.174*** (0.058)	-0.171*** (0.058)	-1.392*** (0.466)	-1.383*** (0.456)	0.079 (0.078)	0.128* (0.075)	-0.074 (0.060)	-0.055 (0.060)	-0.227 (0.454)	-0.230 (0.442)	0.276*** (0.085)	0.170** (0.067)
Q ratio	-0.032 (0.080)	-0.013 (0.078)	-0.293 (0.643)	-0.116 (0.626)	0.657** (0.292)	0.668** (0.291)	0.121* (0.076)	0.138* (0.076)	1.117* (0.586)	1.143** (0.568)	0.637** (0.290)	0.628** (0.287)
Cash flow ratio	0.001 (0.002)	0.001 (0.002)	0.012 (0.017)	0.011 (0.017)	0.010 (0.011)	0.014 (0.011)	0.002 (0.003)	0.001 (0.003)	0.029 (0.029)	0.030 (0.029)	0.018 (0.014)	0.024* (0.014)
Leverage ratio	-0.002 (0.002)	-0.002 (0.002)	-0.012 (0.014)	-0.012 (0.014)	-0.012** (0.005)	-0.012** (0.005)	-0.005*** (0.002)	-0.005*** (0.002)	-0.030** (0.014)	-0.033** (0.014)	-0.012** (0.005)	-0.009* (0.005)
Capital expenditures ratio	-0.010** (0.005)	-0.009* (0.005)	-0.112** (0.049)	-0.101** (0.048)	-0.040*** (0.015)	-0.042*** (0.015)	0.002 (0.005)	0.003 (0.005)	0.038 (0.042)	0.048 (0.042)	-0.027* (0.015)	-0.028* (0.015)
<b>Prior Performance</b>												
CAR, benchmarked	0.000 (0.000)	0.000 (0.000)	0.002 (0.003)	0.003 (0.003)	0.003 (0.002)	0.003* (0.002)	0.001 (0.000)	0.000 (0.000)	0.006** (0.003)	0.007** (0.003)	0.003** (0.002)	0.004** (0.002)
<b>Industry Characteristics</b>												
Ln(industrial concentration)	-0.019 (0.056)	-0.025 (0.056)	-0.008 (0.410)	-0.054 (0.404)	-0.083 (0.102)	-0.063 (0.101)	-0.084 (0.052)	-0.084 (0.053)	-0.368 (0.365)	-0.456 (0.370)	-0.041 (0.097)	-0.017 (0.095)
Year Dummies			Yes	Yes	Yes	Yes						
Observations	1,554	1,554	642	642	1,554	1,554	1,810	1,810	859	859	1,810	1,810
Number of firms	643	643	173	173	643	643	679	679	201	201	679	679

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

Table VIII: “Buying-Growth” M&amp;A

This table reports the marginal effects in percentages 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
<b>Institutional Ownership</b>				
PPFH	-2.69 (0.111)	-5.98* (0.055)	-33.48 (0.155)	-9.40** (0.041)
Investment companies	0.49 (0.191)	1.02 (0.213)	9.72 (0.121)	1.26 (0.296)
Insurance companies	0.90 (0.290)	0.05 (0.954)	-6.33 (0.526)	-0.08 (0.968)
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)
Independent advisors	0.69** (0.045)	0.91 (0.414)	8.19 (0.219)	-0.26 (0.905)
<b>Shareholder Rights</b>				
Governance index	0.20 (0.858)	0.02 (0.994)	0.16 (0.897)	0.01 (0.998)
<b>Managerial Incentives</b>				
Insider Ownership	0.58 (0.326)	0.30 (0.602)	0.20 (0.710)	0.28 (0.621)
CEO cash compensation	3.45 (0.154)	2.47 (0.304)	2.94 (0.216)	1.73 (0.465)
CEO options (% of total compensation)	0.04 (0.744)	0.05 (0.657)	0.07 (0.500)	0.06 (0.615)
<b>Firm Characteristics</b>				
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 IX: Announcement Abnormal Returns

This table reports the coefficients and standard errors from random effects regressions on factors affecting announcement abnormal returns. P-values from the Hausman specification test are reported. An insignificant test result indicates that the random effects specification is appropriate.

	Dependent variable - announcement abnormal returns			
	Aggre	Top Indi	5% block	Concen
PPFH	-0.068 (0.115)	-0.100 (0.156)	-1.525 (1.275)	-0.075 (0.187)
Investment companies	-0.068** (0.028)	-0.118** (0.059)	-0.271 (0.467)	-0.110 (0.082)
Insurance companies	0.059 (0.061)	0.055 (0.079)	-0.089 (0.661)	0.072 (0.097)
Private pension funds	-0.275* (0.142)	-0.310** (0.155)	-1.124 (1.275)	-0.296* (0.167)
Banks	-0.040 (0.043)	-0.039 (0.075)	-0.544 (0.668)	-0.050 (0.105)
Independent advisors	0.014 (0.024)	-0.006 (0.058)	-0.043 (0.473)	-0.009 (0.085)
Governance index	-0.124 (0.094)	-0.124 (0.094)	-0.126 (0.094)	-0.122 (0.094)
Insider ownership	-0.044 (0.039)	-0.042 (0.039)	-0.038 (0.039)	-0.040 (0.039)
CEO cash compensation	-0.370 (0.324)	-0.553* (0.323)	-0.576* (0.325)	-0.564* (0.326)
CEO options (% of total compensation)	-0.006 (0.008)	-0.007 (0.008)	-0.007 (0.008)	-0.008 (0.008)
Cash (% of total deal value)	0.021*** (0.005)	0.021*** (0.005)	0.022*** (0.005)	0.021*** (0.005)
Year Dummies			Yes	
Observations			873	
Number of firms			572	
R-squared within	0.083	0.074	0.062	0.073
R-squared between	0.041	0.040	0.035	0.035
R-squared overall	0.046	0.045	0.041	0.042
The Hausman Test P-value	0.909	0.806	0.695	0.795

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

Table X: Long-term Abnormal Returns

This table reports the coefficients and standard errors from fixed effects and random effects regressions examining the relation between institutional ownerships and long-term M&A performances. P-values from the Hausman test are reported. An insignificant test result indicates that the random effects specification is appropriate.

	Dependent variable - abnormal returns 12 months including announcement month											
	CAR, benchmarked				CAR, 3-factor				BHAR			
	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen	Aggre	Top Indi	5% block	Concen
PPFH	0.122 (0.128)	0.385*** (0.183)	3.258*** (1.449)	0.546** (0.223)	0.794 (0.978)	2.749* (1.462)	13.715 (10.562)	4.520** (1.832)	0.402 (0.991)	1.896 (1.481)	23.066*** (10.674)	3.307* (1.860)
Investment companies	-0.070** (0.032)	-0.030 (0.063)	0.381 (0.493)	-0.013 (0.087)	-0.922*** (0.254)	0.096 (0.454)	3.296 (3.303)	0.497 (0.622)	-1.238*** (0.258)	-0.770* (0.460)	-0.225 (3.337)	-0.685 (0.631)
Insurance companies	-0.019 (0.072)	-0.019 (0.097)	0.655 (0.779)	-0.027 (0.120)	-0.277 (0.585)	0.307 (0.863)	4.976 (5.774)	0.338 (1.095)	-0.140 (0.595)	0.219 (0.874)	4.119 (5.834)	0.139 (1.111)
Private pension funds	0.114 (0.114)	0.176 (0.120)	1.583 (1.905)	0.213* (0.125)	-0.555 (1.002)	0.080 (1.057)	14.848 (14.291)	0.262 (1.087)	0.328 (1.015)	1.896 (1.071)	10.500 (14.442)	0.969 (1.104)
Banks	-0.066 (0.049)	0.062 (0.083)	0.011 (0.694)	0.120 (0.116)	-0.292 (0.430)	1.277* (0.709)	0.541 (4.920)	2.317** (1.018)	-0.725* (0.436)	0.114 (0.718)	-0.097 (4.972)	0.988 (1.033)
Independent advisors	-0.022 (0.027)	0.007 (0.067)	0.282 (0.499)	0.053 (0.105)	-0.830*** (0.223)	0.095 (0.525)	2.668 (3.371)	0.957 (0.921)	-0.367 (0.226)	0.866 (0.532)	9.664*** (3.413)	2.184** (0.935)
Governance index	-0.013 (0.111)	-0.011 (0.110)	0.017 (0.111)	-0.006 (0.110)	-1.975 (1.874)	-1.274 (1.883)	-0.864 (1.881)	-1.011 (1.875)	-1.192 (1.902)	-0.697 (1.911)	-0.122 (1.903)	-0.536 (1.905)
Insider ownership	-0.033 (0.042)	-0.019 (0.041)	-0.012 (0.041)	-0.021 (0.041)	-0.427 (0.478)	-0.719 (0.481)	-0.665 (0.481)	-0.744 (0.479)	-0.242 (0.485)	-0.488 (0.487)	-0.466 (0.486)	-0.497 (0.486)
CEO cash compensation	0.100 (0.300)	0.081 (0.298)	0.129 (0.299)	0.124 (0.299)	-5.567** (2.386)	-5.179** (2.391)	-4.773** (2.395)	-4.827** (2.382)	-9.247*** (2.419)	-9.366*** (2.422)	-8.653*** (2.421)	-9.190*** (2.418)
CEO options (% of total compensation)	0.003 (0.009)	0.002 (0.009)	0.001 (0.009)	0.002 (0.009)	-0.011 (0.058)	-0.010 (0.059)	0.003 (0.059)	-0.014 (0.059)	-0.035 (0.059)	-0.036 (0.060)	-0.025 (0.059)	-0.036 (0.060)
Year Dummies		Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Observations		1,963	825	1,963		1,963	825	1,963		1,963	825	1,963
Number of firms												
R-squared within	0.011	0.012	0.016	0.014	0.043	0.028	0.026	0.033	0.043	0.029	0.032	0.031
R-squared between	0.015	0.011	0.004	0.011	0.005	0.003	0.004	0.001	0.001	0.000	0.000	0.000
R-squared overall	0.013	0.011	0.010	0.012	0.012	0.007	0.012	0.004	0.007	0.004	0.005	0.003
Hausman Test P-value	0.963	0.670	0.236	0.667	0.002	0.019	0.034	0.002	0.000	0.001	0.000	0.000

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

Table XI: Asset Turnover and Institutional Ownership

This table reports the coefficients and standard errors from panel data regressions. P-values from the Hausman specification test are reported. An insignificant test result indicates that the random effects specification is appropriate. The dependent variable is the abnormal post-M&A operating performance measured by industry-adjusted asset turnover rate. IAAT stands for “industry-adjusted asset turnover rate.”

	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)
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)
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)
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)
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 cash compensation	-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 (% of total compensation)	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
The 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%

Table XII: For Referee — 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 ranksum tests on the means are reported in parentheses. There are 1,963 M&A firm-years, and 4,574 non-M&A firm-years.

	mean values		P-value
	M&A	non-M&A	
Aggregate public pension ownership (%)	2.98	3.10	(0.030)
Aggregate investment co. ownership (%)	14.01	11.93	(0.000)
Aggregate insurance co. ownership (%)	5.57	4.82	(0.000)
Aggregate private pension ownership (%)	1.16	0.97	(0.000)
Aggregate bank ownership (%)	11.04	9.82	(0.000)
Aggregate indep. advisor ownership (%)	25.29	24.65	(0.023)
Public pension ownership concentration	0.90	1.13	(0.000)
Investment co. ownership concentration	3.87	3.71	(0.004)
Insurance co. ownership concentration	1.86	1.80	(0.000)
Private pension ownership concentration	0.59	0.52	(0.006)
Bank ownership concentration	1.89	2.05	(0.047)
Indep. advisor ownership concentration	2.76	3.02	(0.000)
Governance index	9.49	9.16	(0.000)
Insider ownership (%)	3.44	4.79	(0.000)
Total assets (millions, CPI-adjusted)	3,698.11	2,695.93	(0.000)
Market capitalization (millions, CPI-adjusted)	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	(0.063)
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	1,963	4,574	



Table XIII: For Referee — Correlations Among Key Variables

Aggregate institutional ownership within each category											
	Public pension	Invt. Co.	Insu. Co.	Private pension	Banks	Indep. advisors	Gover. index	Future M&A	Prior good M&A	Prior bad M&A	Ln(Mkt Cap)
Public pension	1.00										
Investment Co.	-0.11	1.00									
Insurance Co.	0.04	0.15	1.00								
Private pension	0.06	-0.04	0.03	1.00							
Banks	0.14	-0.05	0.11	0.13	1.00						
Indep. advisors	0.08	0.14	0.14	-0.02	0.02	1.00					
Governance index	0.08	-0.02	0.07	0.07	0.19	0.06	1.00				
Future M&A	0.09	0.09	-0.02	0.04	0.10	0.03	0.06	1.00			
Prior good M&A	0.04	0.03	-0.03	-0.01	0.06	0.03	0.02	0.22	1.00		
Prior bad M&A	0.04	0.05	-0.02	0.04	0.06	0.01	0.04	0.17	-0.18	1.00	
Ln(Market Cap)	-0.02	0.24	0.16	0.16	0.35	-0.14	0.11	0.19	0.10	0.11	1.00

Institutional ownership concentration within each category											
	Public pension	Invt. Co.	Insu. Co.	Private pension	Banks	Indep. advisors	Gover. index	Future M&A	Prior good M&A	Prior bad M&A	Ln(Mkt Cap)
Public pension	1.00										
Investment Co.	-0.02	1.00									
Insurance Co.	-0.01	0.06	1.00								
Private pension	-0.01	-0.05	-0.02	1.00							
Banks	-0.00	-0.06	-0.02	-0.01	1.00						
Indep. advisors	0.08	0.06	0.05	-0.05	-0.02	1.00					
Governance index	-0.01	-0.02	-0.02	0.03	0.04	-0.03	1.00				
Future M&A	-0.07	0.02	0.01	0.02	-0.03	-0.06	0.06	1.00			
Prior good M&A	-0.05	-0.01	-0.01	-0.02	-0.03	-0.03	0.02	0.22	1.00		
Prior bad M&A	-0.05	-0.01	-0.00	0.01	-0.02	-0.03	0.04	0.18	-0.18	1.00	
Ln(Market Cap)	-0.27	-0.06	-0.06	0.05	-0.06	-0.37	0.12	0.20	0.11	0.11	1.00

Table XIV: For Referee — Predicting M&A Frequency in the Long-run

This table reports the percent changes in Incident Rate Ratios (IRR) and P-values from negative binomial regressions. The dependent variable is the number of M&A years during the eight years of the sample (July 1993 - June 2001). The independent variables are for observations in year 1992. Negative binomial regression is used because the goodness-of-fit test indicates overdispersion of the Poisson model. IRR ( $e^{\text{coefficient}}$ ) represents the factor change in the expected count for unit increase in the independent variable. Percent change in IRR = (IRR-1) \* 100. 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			
<b>Institutional Ownership</b>	Aggregate	Top indiv.	5% block	Concentration
PPFH	-1.68 (0.255)	-4.08* (0.059)	-22.71 (0.110)	-4.92* (0.060)
Investment Co.	0.09 (0.908)	-0.37 (0.769)	-6.78 (0.446)	-0.37 (0.819)
Insurance Co.	2.46** (0.010)	1.58 (0.210)	17.6 (0.203)	1.28 (0.390)
Private Pension	2.32 (0.101)	2.28 (0.147)	19.21 (0.445)	2.11 (0.228)
Banks	1.16** (0.031)	0.11 (0.891)	-4.16 (0.653)	-0.23 (0.834)
Indep. Advisor	-0.10 (0.794)	0.99 (0.398)	4.37 (0.590)	1.05 (0.658)
CEO options (% of total compensation)	0.33** (0.044)	0.31* (0.061)	0.33** (0.047)	0.31* (0.055)
Prior M&A +ve announcement CAR	85.33*** (0.000)	88.35*** (0.000)	91.23*** (0.000)	88.57*** (0.000)
Prior M&A -ve announcement CAR	64.84*** (0.000)	66.4*** (0.000)	67.96*** (0.000)	67.71*** (0.000)
Cash flow ratio	1.07* (0.064)	1.14** (0.043)	1.1* (0.051)	1.16** (0.039)
Size	9.68** (0.014)	11.95*** (0.002)	11.92*** (0.002)	11.63*** (0.004)
Capital expenditures ratio	-2.73*** (0.002)	-2.72*** (0.002)	-2.79*** (0.002)	-2.73*** (0.002)
Prior CAR, benchmarked	0.31** (0.022)	0.29** (0.031)	0.31** (0.017)	0.28** (0.032)
Other controls			Yes	
# of Observations			566	
Pseudo R-squared	0.05	0.05	0.05	0.05
Overdispersion P-value	0.00	0.00	0.00	0.00

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

Table XV: For Referee — Post-M&amp;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 the 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, with standard errors reported in parentheses. The median value of firm-level industry-adjusted operating performance from the three years after M&A are regressed on the median value from the three years prior to M&A. The difference between post-M&A performance and the predicted performance measures the abnormal performance.

<b>Panel A</b>									
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

<b>Panel B</b>									
Abnormal industry-adjusted post-M&A operating performance - method 1									
	all M&A firm-years						public targets only		
		mean	median	# of obs			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						$R^2$	N
$IACF_{post,i}$	=	2.586***	+	0.767***	$IACF_{pre,i}$		0.41	1,741	
		(0.219)		(0.022)					
$IACFM_{post,i}$	=	8.357***	+	0.714***	$IACFM_{pre,i}$		0.24	1,743	
		(0.775)		(0.031)					
$IAAT_{post,i}$	=	-0.358	+	0.850***	$IAAT_{pre,i}$		0.71	1,743	
		(0.719)		(0.013)					
public targets only									
$IACF_{post,i}$	=	2.146***	+	0.949***	$IACF_{pre,i}$		0.52	322	
		(0.460)		(0.051)					
$IACFM_{post,i}$	=	22.834***	+	0.007	$IACFM_{pre,i}$		0.00	321	
		(3.304)		(0.037)					
$IAAT_{post,i}$	=	-2.468*	+	0.857***	$IAAT_{pre,i}$		0.74	323	
		(1.422)		(0.029)					

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