Selection or Influence? Institutional Investors and Corporate Acquisitions*

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ABSTRACT

This paper shows that the presence of large public pension fund shareholders particularly reduces *ex ante* bad acquisitions. When firms with large public pension fund presence *do* acquire other firms, they perform relatively better in the long-run. Other institutional investors have either the opposite effect or no effect. Identifying the sources of exogenous variation in institutional ownership is crucial to establish the direction of causality between institutional ownership and observed corporate merger and acquisition decisions. This paper introduces two new approaches. First, I decompose the institutional ownership into one component which is correlated with future M&A shocks, and the noise component which is not. I instrument for the various ownerships using this noise term. Second, I instrument for institutional ownership using exogenous shocks to their portfolio sizes interacted with their propensities to invest in each corporation.

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Introduction

Institutional investors hold more than half of all U.S. publicly traded equity.[1] 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.[2] Many theories[3] 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.

The main hurdle in establishing institutional investor influence lies in the difficulty of identifying the exogenous variation in their shareholdings. Given the belief[4] that they are often smarter and better informed than individual investors, institutional ownership, firm performance, and firm decisions are often jointly determined. It is quite difficult to find an appropriate instrument to establish the direction of causation. Variables such as dividend yield, liquidity, return volatility, transaction costs, and major index inclusion etc., either are weak instruments, or are correlated with the shocks to firm decisions.

To surmount this difficulty, I introduce two new IV approaches to study institutional investor influence in corporate M&A activity. These strategies rely on very different sources of variation and identification assumptions, but they reach similar conclusions of the study. First, I identify an institutional investor's preference for firm acquisitiveness using its portfolio composition, and decompose its ownership into one component that is related to this preference, and the noise component that is orthorgonal to it. The assumption I make is that institutional preference is stable over a horizon of one year. Given this assumption, if institutions are able to forecast future shocks

[1] 55.8% in 2001, Institutional Investment Report, The Conference Board, Volume 5, Number 1, March 2003.

[2] Davis and Steil (2001)

[3] Jensen and Meckling (1976), Shleifer and Vishny (1986), Admati, Pfleiderer, and Zechner (1994), and many others have argued that well-informed institutional investors with a substantial equity stake can exert influence and reduce the agency problem between managers and shareholders with positive ramifications on firm value.

[4] Coval and Moskowitz (2001), Parrino, Sias, and Starks (2003), and many others have offered emipirical evidence.

in firm acquisition activity, the preference-related component represents the part of the institutional ownership which corresponds to the future shocks. By construction, the noise component is not correlated with the shocks, and is utilized as an instrumental variable for the institutional ownership. Second, I borrow the concept of "Bartik instrument" from labor research (Bartik (1991), Blanchard and Katz (1992)), by interacting exogenous shocks to an institutional investor's portfolio with its propensity to invest in a given firm. The assumption is that institutions' portfolio sizes vary exogenously half a year (on average) prior to M&A announcements. Institutional ownership is instrumented with this Bartik instrument to address the ownership endogeneity. The validity of both identification assumptions are further discussed in the later part of this paper.

Most of the prior studies on institutional investor 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. The data used in event studies which examine announcement stock returns will inevitably include many shareholder proposals that are never implemented.[5] Consequently, it is not surprising that stock price reactions to these events are modest and difficult to detect. Second, proposals will be withdrawn and thus not disclosed if management voluntarily adopts them. The inclusion of the proposal in the proxy materials may reflect the management's negative response to shareholder concerns, and may thus be associated with negative stock market reactions (Prevost and Rao (2000)).

In this paper, I conduct a new test of the impact of institutional investors on the governance of

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

firms by examining a major corporate event — M&A activity. In particular, I provide the first test of whether the presence of an institutional investor reduces M&A activities that lower firm values.

M&A activity provides a natural test of the efficacy of institutional investor activism. It occurs frequently and can have a substantial effect on firm values. Theories suggest that mergers can occur for good reasons, such as capturing synergy gains, or for bad reasons, such as agency costs. Many papers, both theoretical and empirical, have argued that M&A can be motivated by managerial incentives and reduce shareholder wealth, such as Amihud and Lev (1981), Roll (1986), Agrawal and Mandelker (1987), Shleifer and Vishny (1989), Morck, Shleifer, and Vishny (1990), Avery, Chevalier, and Schaefer (1998), etc. Evidence on bidder performance, both at the announcement and in the long-run, suggests that not all acquisitions are beneficial for bidder shareholders (Jensen and Ruback (1983), Andrade, Mitchell, and Stafford (2001), Agrawal, Jaffe, and Mandelker (1992), Loughran and Vijh (1997), Mitchell and Stafford (2000), etc.). A recent study by Moeller, Schlingemann, and Stulz (2003) show that bidders on average lose $25.2 million upon announcement, from 1980 to 2001.

Some bidders are more likely to perform worse than others. Lang, Stulz, and Walkling (1991) find that bidder returns are significantly lower for low q bidders with high cash flows, which suffer higher agency costs by Jensen's free cash flow theory, than low q bidders with low cash flows. Morck, Shleifer, and Vishny (1990) suggest that managerial objectives drive value-reducing acquisitions, for example, "buying-growth" acquisition. If institutional investors effectively monitor, then their presence should reduce the likelihood of "bad" M&A driven by managerial incentives, but not "good" M&A.

I find that major public pension funds (PPFs) are playing exactly this role. PPFs have a substantial effect on M&A activity. Their influence is concentrated in the value-reducing acquisitions, namely, when the acquirer is cash-rich and low-q, or is just "buying-growth". Ceteris paribus, a

1% increase in the largest PPF ownership associates with a 2%-10% reduction in subsequent M&A likelihood for cash rich and low q firms. Because less than one in three of firm-years in the sample are M&A observations, this absolute reduction translates into a 7%-30% relative reduction in M&A frequency. PPFs also do not reduce M&A activity when it is more likely to be good. Acquisitions by cash-poor and low-q firms on average have positive announcement abnormal returns and positive long-term abnormal returns in my sample. PPFs have no effect among these firms. Overall, when firms with large PPF shareholders *do* undertake acquisitions, their long-run performance (including the announcement month) is better.

The presence of other types of institutions either has no effect or has the opposite effect. The results on investment companies (mostly mutual funds) are particularly interesting. Mutual fund ownership is positively associated with future M&A activity in the whole sample. This association is the strongest among firms with few growth opportunities and a lot of free cash, and among the bidders which "buy growth", i.e., those more likely to suffer agency costs. In the long-term, acquirers with more mutual fund ownership also perform worse in the stock market. The evidence suggests that for firms suffering the most agency conflicts, more mutual fund ownership may insulate the management from more scrutiny and actually encourage more bad M&A.

The evidence of this paper suggests that major public pension funds are the only effective monitors among all institutions. PPFs held 8% of the total U.S. equity market by 2001 (The Conference Board), compared with over 50% owned by all institutions. They are know to be activists of corporate governance. Gillan and Starks (2000) document that PPFs are the most active in governance activities ranging from highly public proxy targeting to closed-door negotiations. In the hotly contested acquisition of Compaq by Hewlett-Packard in 2002, six major public pension funds[6] publicly announced that they would vote against the deal.

[6]They are: the California Public Employee Retirement System (CalPERS), the California State Teachers' Retirement System, New York's common Retirement Fund, New York State Teachers Retirement Fund, the Public

There are two possible mechanisms for PPFs to have an effect. First, if the presence of the monitor signals credible promise of punishing value-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. Although the first mechanism cannot be observed directly, there are anecdotal evidences such as the HP-Compaq incident supporting the existence of the second mechanism. CalPERS states its position on M&A as:[7] "we examine M&A activity closely ... we look at each situation to determine what course of actions is best for the long-term returns of our Fund." This statement also suggests that the second mechanism does exist.

The remainder of this paper is organized as follows. Section I provides a literature review on institutional shareholder activism. Section II describes the specification and the identification strategy. Section III describes data. Section IV and V discuss institutional ownership impact on M&A likelihood and M&A performance. Section VI concludes the paper.

I Literature Review

Empirical work has not produced much evidence on the role of institutional investors. Most studies on institutional investor activism (Gillan and Starks (2000), Del Guercio and Hawkins (1999), Karpoff, Malatesta, and Walkling (1996), Wahal (1996), etc.) focused on institutions' activity in submitting proxy proposals. They found inconclusive results. Other studies (Hartzell and Starks (2002), Hotchkiss and Strickland (2003), Parrino, Sias, and Starks (2003), Song and Szewczyk (2003), etc.) examine institutions' non-proxy activity, such as their impact on compensation policy,

Employee's Retirement Association of Colorado, and the Public Employees Retirement System of Ohio.

[7] Quote from email exchanges with Ted White, Director of Corporate Governance at CalPERS, in 2004.

CEO turnover, and market response to corporate event. However, few have discussed in detail how to control for ownership endogeneity.

There is also a large literature regarding the heterogeneity among different types of institutions. Black (1990) argues that PPFs are in the forefront of institutional shareholder activism due to their size and independence. Several other characteristics of PPFs also encourage and facilitate their roles as monitors of corporate governance. First, although most institutional investors at least partially outsource the management 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 stocks they owned, compared to only 66.4% for the average institutional investor (Brancato (1993)). Retention of voting power provides the means of activism. Second, indexing strategies are common among PPFs. Davis and Steil (2001) document that indexation accounts for 54% of public pension funds' domestic equity and only 24% of that of corporate funds. Gillan and Starks (2000) argue that selling constraints imposed by indexing strategies can provide an important motivation for shareholder activism aimed at improving overall market performance.[8]

On the other hand, PPFs may suffer their own agency costs and thus may not be effective monitors. 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.[9]

In contrast to PPFs, other institutional investors may not want to be active monitors. Roe (1994) argues that legal restrictions often prevent banks, insurance companies, and mutual funds

[8]In a speech at Stanford University, March 21, 1996, 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."

[9]However, the instrument used in her paper is found to be a weak instrument in my study.

etc., from owning large blocks of shares, and reduce their incentives to monitor. Black (1990) argues that these institutions suffer conflicts of interest and remain pro-manager. For example, mutual funds who manage 401(k)s or defined contribution pension plans for corporations may feel the pressure to vote pro-manager, and may be reluctant to develop anti-management reputations for fear of losing current or prospective clients; Indeed, 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) finds that banks and insurance companies are more supportive of management in the proxy solicitation and restructuring at Honeywell in 1989.

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.

II Specification and Identification Strategy

The structural equation is:

$$y_{it} = \beta_0 + \beta_1 InstOwnership_{it} + \phi X_{it} + \gamma Year_t + u_i + \epsilon_{it}, \quad (1)$$

where y_{it}, the dependent variable, is a dummy variable measuring firms' M&A activity. It equals one when there is at least one M&A announcement during the 12-month period. t is a time subscript. An i denotes each firm. u_i is the firm-level effect. The ownership variables $InstOwnership_{it}$ (Public Pension Funds, Investment Companies, Others) are the variables of interest in this study. The X_{it} is a vector of control variables including managerial ownership, managerial compensation, the governance index, prior M&A activity, leverage ratio, cash flow ratio, q ratio, firm size, capital

expenditures ratio, firm prior performance, and industrial concentration. Table I explains in detail what these variables are. The $Year_t$s are year dummies.

Since the structural equation controls for past acquisition activity, the ownership variables may be endogenous if institutions are able to predict future shocks to M&A activity, and adjust their ownership accordingly.

The first instrument utilizes information contained in firms' prior acquisition expenditures and in institutional investors' asset allocations. I start by identifying each firm's "acquisitiveness" using its average acquisition expenditure (Compustat items data129/data6) in last five years. Next I find a "preference score" ($FundPreference_{jt}$), fund preference for acquisition, for an institutional investor (at time t), by looking at its asset allocation.

$$FundPreference_{jt} = \sum_{i=1}^{n} w_{j,it} AverageAcquisition_{it}, \tag{2}$$

$w_{j,it}$ denotes the portfolio weight of firm i's stock in fund j's portfolio at time period t.

For each firm, the "preference score" ($FundPreference_{it}$) of each type of its institutional investors is the score of the largest investor within that type.[10] Using this institution "preference", I can orthogonalize each year the institutional ownership of firm i into the acquisition preference related and the non-acquisition related components by running a fixed effect regression,[11]

$$InstOwnership_{it} = \alpha + \beta FundPreference_{it} + u_i + e_{it}. \tag{3}$$

The identifying assumption is that fund preference is stable over a period of one year (own-

[10] If I use the weighted "FundPreference" of all institutions within each category as the measure for aggregate ownership, the estimations are similar.

[11] The earlier draft utilized a tobit regression with firm-level effect, since ownership is censored at zero. Results were similar.

ership at end of June, year t, and M&A activity observed from July, year t to June, year t+1). Mutual funds often advertise themselves as following a certain style of investment since incipiency. Furthermore, institutions often hire their money managers for multiple years. It is reasonable to assume that individual money managers have relatively stable preferences. If institutional investors are able to predict future M&A shocks, and adjust their holdings prior to the M&A event, then $FundPreference_{it}$ should capture this M&A related component of ownership. By construction, e_{it} is orthorgonal to institutions' M&A preference. This non-acquisition related component (e_{it}) is used as an instrument to identify the institutional effect in the M&A context. I call this variable "NA ownership". "NA" stands for non-acquisition.

The sample starts in year 1992, the first year executive compensation data is available. Fortunately, accounting information is available for a much longer period. I am able to construct the "preference score" measure for each firm-year. For firms with zero institutional ownership, this measure is set to zero.

The second instrument variable is a so-called "Bartik instrument". The underlying assumption of the approach is that a given institution's portfolio size is exogenous. There are two factors affecting the fund size. One is the net inflow of funds. If individual investors prefer acquisitive firms, can predict future M&A shocks, and can identify a particular mutual fund as having the same preference and the same predictive power, then the fund flow can be endogenous. However, there are few reasons to believe that this scenario is likely to be true. For example, no existing mutual fund advertises itself as M&A-driven. The net inflows of pension funds are determined by generally fixed contributions of their members and their liabilities, which are most likely exogenous. The second factor affecting fund sizes is the performance of their portfolio, which in turn is determined by the current stock price. M&A announcements are often considered surprises. There may be rumors and trading activity in the couple of days leading to an announcement. However, the market

is not able to predict M&A activity in an average time horizon of six months. Consequently, the current stock price most likely has not incorporated the future shocks to the M&A likelihood.

The Bartik instrument interacts the exogenous shocks to institutional investors' portfolio sizes with the firm-level propensity of investment, which is obtained as the fixed effects from the following regression by each institutional investor j:

$$InstOwnership_{it} = \beta_0 + \beta_1 FundSize_{it} + \omega_i + e_{it} \tag{4}$$

ω_i can be considered as j's propensity to invest in firm i. It is not correlated with future M&A shocks, which is captured by e_{it}. ω_i is firm specific, and does not vary across time. The institutional investor j's portfolio size varies across time, but not across firm. The Bartik instrument interacts the two, and varies across both firm and time. Similar to the first instrument variable, I use the value from the largest institutional investor within each category to instrument for both the aggregate ownership and the largest individual ownership of each category of institutional investors.

To check that both instruments are valid, I exam the F-statistics from the first-stage IV regressions. The F-stats are much greater than ten. Neither suffers weak instrument problem (Staiger and Stock (1997)).

Other variables used as controls may also be endogenous. When I exclude all controls from the regressions, results are even stronger. The potential endogeneity of the control variables does not bias the estimates on the ownership variables, which are the focus of this study. Since a detailed discussion of the control variables is beyond the scope of this paper, this issue is left for future explorations.

III Data

The initial sample is the overlap between CRSP and COMPUSTAT databases, with executive compensation data available from the Execucomp database, and governance index data available from IRRC. Corporate financial information is obtained from COMPUSTAT and stock performance data is from CRSP. Execucomp lists each firm in the S&P 1500 (S&P 500, S&P Midcap 400, and S&P SmallCap 600). The sample is limited to securities identified by CRSP as ordinary common shares (with share codes 10, 11 or 12). This excludes American Depository Receipts, closed-end-funds, primes and scores, and Real Estate Investment Trusts. Utilities, finance and insurance companies, and government agencies (2-digit SIC code 49, from 60 to 69, and above 89) are also excluded. Finally, firms with December market capitalization less than one-hundredth the level of the S&P 500 index are dropped out of the sample. For example, in 1995, the S&P500 closed at 615.93. The minimum market cap of firms in 1995 in this sample was $6.1593 million. This is to ensure that results are not driven by small firms. Only a small number of observations are eliminated by this requirement. Results do not change if these firms are included in the study.

Mergers and acquisitions information is obtained from the SDC domestic M&A database by Thomson Financial. To be included, 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 2,022 firm-year observations. Out of this total, 873 observations are for disclosed value M&A only, 760 observations are for undisclosed value M&A only, and 389 observations are for both types.

The institutional ownership data is obtained from Thomson Financial.[12] I identify public pension funds by their names in the Thomson database. In total I find 15 public pension funds:[13] California public employees retirement system (CalPERS), California state teachers retirement system, Colorado public employees retirement association, Florida state board of administration, Kentucky teachers retirement system, Michigan state treasury, Montana board of investment, New Mexico educational retirement board, New York state common retirement fund, New York state teachers retirement system, Ohio public employees retirement system, Ohio school employees retirement system, Ohio state teachers retirement system, Virginia retirement system, and State of Wisconsin investment board. At the end of June 2000, the average size of equity assets under management is $25.17 billion, and the median is $24.65 billion (the largest fund is CalPERS [$63.53 billion], the smallest is New Mexico educational retirement board [$1.51 billion]). My results remain

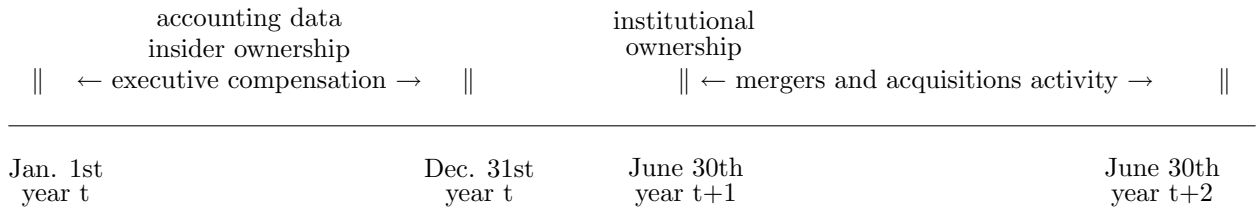
[12] Under the Securities Exchange Act of 1934 (Rule 13f), institutional investment managers who exercise investment discretion over accounts with publicly traded securities (section 13(f) securities) and who hold equity portfolios exceeding $100 million are required to file Form 13f within 45 days after 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.

[13] Not all state and local pension funds holdings are available, because either they are too small and do not file 13f, or their assets are reported by outside money managers.

the same if CalPERS, the most visible activist fund, is excluded. About 2% of the observations have zero PPF ownership. The mutual fund ownership is what Thomson classified as investment company ownership. The rest are classified as other institutional ownership.[14] Two different variables are used to measure institutional ownership: 1) The aggregate holdings by each category; 2) The largest individual holdings within 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 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

[14]The earlier draft of this paper classified the institutional ownership into six types. The other four were: insurance companies, banks, independent advisors, and private pension funds. Because those four types are generally not significant, I group them together as other institutional investors.

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.

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 covers firms from 1992 to 1999. Each year, their corresponding institutional ownership (with a 6-month lag) is from end of June holdings in the following year (1993 to 2000); their merger and acquisition data (with a minimum 6-month lag) is collected from July the following year to June two years after. There are 1,362 firms and a total of 6,681 firm-year observations.

Table I provides a detailed description of all variables. All relevant data are CPI-adjusted. Table II shows that this sample is primarily 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. Results remain if only those firms are included. Thus, my conclusions are not driven by the smaller firms in the sample.

Among the 6,681 firm-year observations, there are in total 2,022 (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 performance than those in non-M&A firm-year observations. A total of 147 observations (2.2%) have zero PPF ownership. 11 (7.5%) of those are M&A observations.

IV 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 the firm-level governance structure and firm characteristics which may affect M&A likelihood,

we 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 value-reducing ones in the subsamples.

A Full Sample Results

I report the results from the pooled logit model and the fixed effect IV model. The pooled logit model includes year and industry dummies as controls. The IV model allows for firm-level unobserved heterogeneity in mergers and acquisitions decisions, and utilizes both the time-series and the cross-sectional dimensions of the data. Unobserved industry-level heterogeneity is incorporated in this firm-level effects. During the sample period 1992-1999, the telecommunication and broadcasting industry went through major deregulation (1996). Dummy variables capturing this shock are not significant after controling for firm level fixed effects.

Institutional Ownership Variables I find that the overall institutional ownership (sum of all types) is positively and significantly associated with future M&A activity. I then decompose the overall institutional ownership into three types as detailed earlier, and report results on different types of institutional ownership.

Table III reports the first-stage from the IV regressions, which provide information on factors influencing various institutional ownership. The "NA" instruments are constructed by decomposing the respective institutional ownership, and acquisition preference is only one factor among many influencing institutions' investment decisions, as a result, the loading on the same-category instrument is very close to one. The potential bias in the IV estimation, which is scaled by this correlation, is likely to be very small (Staiger and Stock (1997)).

There is no evidence that public pension funds prefer firms with better governance structure

measured by the governance index. There is also no consistent evidence that institutions avoid firms with prior M&A activity. I use two independent dummy variables to measure firms' prior M&A activities.[15] 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.

The results from the second stage IV regressions are reported in Table IV. PPF ownership has a negative and significant impact on M&A. This impact remains significant and is economically larger when I exclude all other controls. Although the control variables can potentially be endogenous, they do not bias the estimations on the variables of interest. Other institutional investors mostly have either a positive effect or no effect on M&A likelihood.

Controls Table IV also includes other variables. From the perspective of my study, they are primarily controls, and not a focus or subject of interest. Thus I discuss the findings only briefly.

Gompers, Ishii, and Metrick (2003) constructed an index on shareholder rights by examining firm-level governance rules, most of which are anti-takeover provisions. This index is especially relevant in the context of this study. Mitchell and Lehn (1990) find that firms that make value-reducing acquisitions become takeover targets. Thus a higher level of anti-takeover protection may insulate the management from possible takeovers following a bad acquisition, and consequently encourages bad acquisitions. On the other hand, the management may want more protection because the firms are likely target, hence are less likely to do acquistion themselves. Gompers, Ishii, and Metrick (2003) find that firms with stronger shareholder rights (lower index value) made fewer corporate acquisitions. However, their study didn't control for the endogeneity issue. After controling for firm level fixed effects, I show that firms with weaker shareholder rights (higher index

[15]The strict exogeneity assumption of panel data models excludes lagged dependent variables(Wooldridge (2001)). This two-dummy approach is to avoid this issue. Results are similar without the inclusion of these two dummies.

value) actually made fewer acquisitions.

When CEOs receive more option grants in their compensation packages, firms are more likely to undertake M&A. If M&A activity adds risk, this result suggests that options encourage risk-taking behavior. However, M&A could also be motivated to reduce risk (diversification for example). Thus the role of options in the context of M&A activity is unclear. In Jensen and Meckling (1976), larger managerial equity ownership aligns managerial incentives with those of outside shareholders. There is some evidence in the data that insider ownership is significantly and negatively correlated with M&A likelihood.

Several firm characteristics variables also matter for M&A activity.

1. Firm prior M&A activity and firm size are significantly and positively related to M&A activity in the cross section. However, for one particular firm, prior activity reduces future activity.

2. Tobin's q ratio is positively and significantly related to future M&A likelihood.

3. There is a substitution effect between capital expenditures and M&A activity.

4. M&A activity is motivated by a firm's prior performance.[16] It is possible that firms either extrapolate their prior performance when making investment decisions or take advantage of their relatively high valuations.

B Subsample Results

Some mergers and acquisitions *can* create value for the acquirers. It is important to know if PPFs have the ability to differentiate between good and bad M&A ex ante, and thus discourage bad deals;

[16] 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.

or, if the presence of PPF investors deters managers from undertaking M&A, whether it deters the bad M&A only.

Lang, Stulz, and Walkling (1991) and Morck, Shleifer, and Vishny (1990) suggest worse performance for cash rich, low q acquirers and "buying-growth" acquirers. Table V confirms it.

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. Annual median q ratios vary from 1.31 to 1.60. Half of the original observations are classified as low q observations. Cash richness is defined as the ratio of non-current-debt cash and cash equivalents to non-cash total assets (see table I). Each year, firms with above industry (by 4-digit SIC code) median cash holdings are classified as cash-rich firms. To define which deal is "buying growth", I need accounting data for the targets. Target growth rate is defined to be the 3-year sales growth rate prior to the takeover. Deals with target sales growth above the sample median are considered to be "buying growth."

Table V reports that among the low q firms, the market responds more favorably towards M&A news when the acquirer is cash poor: cash rich ones have insignificant announcement abnormal returns, while cash poor ones have significant and positive announcement abnormal returns at 68 basis points on average (equal weight). The value-weighted announcement abnormal return is negative for cash-rich and low q firms, and positive for cash poor 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. When I look at long-term performance over a 12-month period including the announcement month, cash poor low q firms and "non-buying-growth" firms appear to perform better.

If PPF monitoring is effective, I would expect PPF ownership to: 1) have a more pronounced effect in the cash rich group than the cash poor group among the low q firms; 2) reduce the likelihood of "buying-growth" M&A. I find strong support for effective PPF monitoring.

Cash Rich Low-q vs Cash Poor Low-q Table VI shows that the PPF impact among low q firms is concentrated in the cash rich firms, which suggests PPFs' ability to reduce ex ante bad M&A. A 1% increase in the largest PPF ownership leads to a 1.8%-9.7% reduction in M&A likelihood, larger than its impact in the whole sample. PPF ownership has no impact in the cash poor low q subsample. On the contrary, there is some evidence that mutual fund ownership is positively associated with more M&A activity in the cash rich low q group.

Buying-growth M&A Table VII looks at PPFs' impact on the likelihood of "buying-growth" M&A. PPFs reduce the likelihood of "buying growth" M&A: a 1% increase in the largest PPF ownership reduces the probability of buying a fast-growing target by 8%. Again, on the contrary, investment company (mostly mutual funds) ownership is positively correlated with "buying-growth" M&A.

V Institutional Ownership and Performance of M&A

This section looks at bidder long-term stock abnormal returns (including the announcement month), and bidder post-M&A operating performance to judge whether an M&A deal is good or bad. Appendix A provides the details on the methodologies measuring the performance.

The primary goal of examing long-term stock abnormal returns is not to test for market efficiency. It differs from the studies by Barber and Lyon (1997), Mitchell and Stafford (2000) and others, because it includes the announcement month in the calculation of long-term abnormal returns. Results are similar if I look at post-M&A performance only.

Table VIII reports the results on long-term abnormal returns over twelve months, *including* the announcement month. The long-term abnormal returns may provide a better measure of M&A performance since the measure of announcement abnormal returns can be noisy.[17] For example,

[17]If I look at the announcement abnormal returns only, PPF ownership is insignificant, and mutual fund ownership

Mitchell, Pulvino, and Stafford (2004) find that nearly half of the negative acquirer announcement stock return reflects price pressure caused by merger arbitrage.

It appears that M&A firms with higher PPF ownership perform relatively better in the long-run. A one percent increase in the largest PPF investor is correlated with an increase in abnormal return by 0.40%-2.95% per year. In contrast, investment company ownership correlates negatively with long-run abnormal returns.

I also checked 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. It is possibly due to limited sample size (less than 400 firm-years and 261 firms).

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. Consistent with findings in Healy, Palepu, and Ruback (1992), their performance 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 I 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.

Table IX reports that PPF ownership is positively associated with improvements in asset turnover rates. An increase of 1% in the largest PPF investor is significantly correlated with

is significantly negative.

an improvement of over 3 cents per dollar in the abnormal asset turnover rate. Earlier results show a positive relation between PPF ownership and twelve-month stock abnormal returns, thus 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.

VI Robustness check

In a contemporaneous and independent paper, Gaspar, Massa, and Matos (2004) find that institutional investors' investment horizon impacts firms' M&A activity. However, their study does not address the potential endogeneity in institutional ownership. They also 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 membership variable is unlikely to capture the activism impact by major public pension funds. When I include investment horizon variables for various types of institutional investors in the regressions, my results remain. A further discussion is beyond the scope of this paper. Chen, Harford, and Li (2005) provide a more detailed study.

If I measure M&A activity by the deal size, the results are similar. The full sample includes undisclosed deal value M&A. When I restrict the sample to M&A with disclosed deal value, I find that 1% increase in the largest PPF ownership reduces about $109 million dollars in deal size. The aggregate PPF ownership has a similar but smaller economic effect. Investment company ownership encourages bigger deals on the other hand. 1% increase in the largest mutual fund ownership leads to $79 million more in deal size. Moeller, Schlingemann, and Stulz (2003) find that value-reducing M&A occurs mostly in big deals. Thus PPF's negative effect on deal value may be correlated with

better M&A overall.

I also studied the sample of firms from 1980 to 1999 without the inclusion of executive compensation data and insider ownership data (since those data are available only from 1992). The results remain similar.

If I measure the institutional ownership using two different measures: 1) A dummy variable which equals one if there is at least one 5% block holder within a category; 2) The Herfindahl concentration, The results remain similar.

Bebchuk, Cohen, and Ferrell (2004) construct an entrenchment index based on six governance provisions followed by the Investor Responsibility Research Center (IRRC). They show that these six provisions fully drive the correlation identified by Gompers, Ishii, and Metrick (2003), and that the other eighteen IRRC provisions in the governance index are not negatively correlated with either firm value or stock returns during the 1990-2003 period. I replace the governance index with their entrenchment index in the regressions. There is no material changes.

When I look at a much longer horizon, the negative relation between PPF ownership and future M&A remains. 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. A 1% increase in the largest PPF ownership is associated with a 4% reduction in the number of M&As in eight years.

I also model the interaction between institutional ownership and future M&A using a simultaneous equations system. This model assumes that public pension fund ownership and firm M&A activity can have reciprocal influence on each other. The results confirm that the negative impact of PPF ownership on M&A activity is strong and significant.

VII Conclusions

As Holmstrom and Kaplan (2001) point out, the hostile takeover market, which served as a disciplinary force in the 1980s, has largely disappeared in the 1990s. Furthermore, various antitakeover measures adopted by management in the 90s have rendered takeover market ineffective (Bebchuk, Coates IV, and Subramanian (2002)). Black (1992) and Pound (1992) thus argue that the market-and-transaction-based system of corporate governance has evolved into a political model of monitoring. However, empirical research by Bebchuk and Cohen (2005), Yermack (1996), and Shivdasani and Yermack (1999), among many others, have cast doubts on the effectiveness of monitoring by the board of directors. There are also many studies examining institutional investor activism, yet few existing ones have documented strong evidence.

My paper documents a strong effect on corporate M&A activity by one class of institutions, major public pension funds. After controlling for ownership endogeneity, firm-level governance structure, 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 the argument 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. 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 investment company ownership is negatively correlated with M&A stock performance

in the long-run is not explained by the "preference" 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) 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 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

coverage 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 α_i from the time-series regression of the model:

$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \epsilon_{it}$,

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.

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. We follow methodologies used both in Barber and Lyon (1996) and in Healy, Palepu, and Ruback (1992).

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

- Operating cash flow return,
  $CF = \frac{\text{Operating Income[13]+Depreciation[14]+Goodwill[204]}}{\text{Total Asset[6]-Book Value Of Equity[60]+Market Value Of Equity Beginning Of Year}}$
- Cash flow margin on sales,
  $CFM = \frac{\text{Operating Income[13]+Depreciation[14]+Goodwill[204]}}{\text{Sales[12]}}$
- Asset turnover rate,
  $AT = \frac{\text{Sales[12]}}{\text{Total Asset[6]-Book Value Of Equity[60]+Market Value Of Equity Beginning Of Year}}$

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,

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

References

Admati, Anat R., Paul Pfleiderer, and Josef Zechner, 1994, Large shareholder activism, risk sharing, and financial market equilibrium, *Journal of Political Economy* 102, 1097–1130.

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.

Bartik, T. J., 1991, *Who Benefits from State and Local Economic Development Policies?* (Kalamazoo, MI:W.E. Upjohn Institute for Employment Research).

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.

Bebchuk, Lucian Arye, and Alma Cohen, 2005, The costs of entrenched boards, *Journal of Financial Economics* 78, 409–433.

——— , and Allen Ferrell, 2004, What matters in corporate governance?, Harvard Law School Olin Discussion Paper No. 491.

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, and Lawrence F. Katz, 1992, Regional evolutions, *Brookings Papers on Economic Activity* I, 1–75.

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.

Chen, Xia, Jarrad Harford, and Kai Li, 2005, Monitoring: Which institutions matter?, working paper, Sauder School of Business, University of British Columbia.

Coval, Joshua D., and Tobias J. Moskowitz, 2001, The geography of investment: Informed trading and asset prices, *Journal of Political Economy* 109, 811–841.

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.

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.

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.

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., 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.

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.

Moeller, Sara B., Frederik P. Schlingemann, and Rene M. Stulz, 2003, Firm size and the gains from acquisitions, *Journal of Financial Economics* 73, 201–228.

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.

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.

Roe, Mark J., 1994, *Strong Managers, Weak Owners: The Political Roots of American Corporate Finance* (Princeton University Press: Princeton, New Jersey).

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.

Shivdasani, Anil, and David Yermack, 1999, Ceo involvement in the selection of new board members: An empirical analysis, *The Journal of Finance* 54, 1829–1853.

Shleifer, Andrei, and Robert Vishny, 2003, Stock market driven acquisitions, forthcoming, Journal of Financial Economics.

Shleifer, Andrei, and Robert W. Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461–488.

——— , 1989, Managerial entrenchment: The case of manager-specific investments, *Journal of Financial Economics* 25, 123–139.

Song, Wei-Ling, and Samuel H Szewczyk, 2003, Does coordinated institutional investor activism reverse the forturnes 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.

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, 1996, Higher market valuation of companies with a small board of directors, *Journal of Financial Economics* 40, 185–211.

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, in 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," *The Quarterly Journal of Economics*, 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(total assets[6] / CPI, base year 1992)
Market capitalization	CRSP	market capitalization at the end of calendar year / CPI, base year 1992
Cash flow ratio	COMPUSTAT	(ebitda[13] - interest[15] - tax[16-Δ35] - common dividends[21] - preferred dividends[19]) / (total assets[6] - cash and cash equivalents[1])
Capital expenditures ratio	COMPUSTAT	capital expenditures[128] / (total assets[6] - cash and cash equivalents[1]), averaged over three years (t, t+1 and t+2)
Leverage ratio	COMPUSTAT	(current debt[34] + long-term debt[9])/(total assets[6] - cash and cash equivalents[1])
Q ratio	COMPUSTAT	(market capitalization + long-term debt[9] + current debt[34] + preferred stock value[130]) / total assets[6]
Cash richness	COMPUSTAT	(cash and cash equivalents[1] - current debt[34]) / (total assets[6] - cash and cash equivalents[1])
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 (6,681 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. The institutional ownership data is from the end of June the following year. Therefore, there is a lag of minimum six months between the firm characteristics data (including the insider ownership and executive compensation data) and the institutional ownership data to ensure that characteristics-related information is all public. The institutional "acquisition preference", $FundScore_{jt}$, was derived from the composition of the largest investor's portfolio within each category. This "preference" was then used to construct the first instrumental variable for institutional ownership, which is the error term (e_{it}) in a fixed effect regression of institutional ownership regressed on this "preference", $InstOwnership_{it} = \alpha + \beta FundScore_{jt} + u_i + e_{it}$. By construction, this error term, called "NA" ownership, is orthogonal to the acquisition-related institutional ownership. The second instrument variable borrows the concept from so-called "Bartik" instrument. It is the interaction between an institutional investor's propensity to invest in each firm and its portfolio size. Each institutional investor j's propensity to invest in a firm i is measured as u_i, the firm-level fixed effect, from the following estimation by each institutional investor: $InstOwnership_{it} = \alpha + \beta FundSize_t + u_i + e_{it}$.

	Mean	Median	Std Dev	Min	Max
Ownership Data					
Aggregate public pension fund holdings (%)	3.14	2.44	2.47	0.00	20.25
Aggregate investment company holdings (%)	12.92	10.79	9.19	0.00	59.59
Aggregate other institutional holdings (%)	41.562	42.357	14.080	0.000	99.914
Largest individual public pension fund holdings (%)	1.42	0.80	1.81	0.00	18.39
Largest individual investment company holdings (%)	5.57	4.59	4.01	0.00	50.13
Largest individual other institutional holdings (%)	7.071	5.850	4.963	0.000	57.104
Institutional "Acquisition Preference"					
Public pension funds	0.016	0.016	0.004	0.000	0.026
Investment companies	0.018	0.018	0.007	0.000	0.067
Others	0.019	0.017	0.010	0	0.130
Instrumental Variables - Version one					
NA aggregate PPF	0.000	-0.050	1.537	-12.268	10.064
NA aggregate investment co.	0.000	-0.061	5.377	-22.713	38.760
NA others	0.000	0.000	7.955	-53.839	38.651
NA largest PPF	0.000	-0.023	1.056	-9.381	9.509
NA largest investment co.	0.000	-0.082	2.692	-9.990	36.889
NA largest others	0.000	-0.078	2.813	-32.038	40.847
Instrumental Variables - Version two					
"Bartik" PPF	0.111	0.061	0.186	-0.224	1.877
"Bartik" investment co.	3.791	0.910	7.133	-6.137	60.805
"Bartik" others	0.760	0.326	1.683	-0.778	34.474

Table II: Descriptive Statistics: continued

	Mean	Median	Std Dev	Min	Max
Firm Characteristics					
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
Firm Level Governance Structure					
Governance index	9.26	9.00	2.78	2	16
Insider ownership (%)	4.38	0.86	8.72	0.00	82.47
CEO Compensation					
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
Industry Characteristics					
Ln(industrial concentration)	8.00	8.12	0.87	5.29	9.21
Stock Return Data (%)					
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					
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 from the first stage regressions. The instrumental variable for each category of institutional ownership, "NA" ownership, is the non-acquisition related component of the ownership. It is the e_{it} from the fixed effect regression: $InstOwnership_{it} = \alpha + \beta FundScore_{jt} + u_i + e_{it}$. The dummy variable "prior M&A good" equals one if the firm had prior M&A activity which received positive announcement CAR, and equals zero if otherwise. The dummy variable "prior M&A bad" equals one if the firm had prior M&A activity which received negative announcement CAR, and equals zero if otherwise. Firm's prior M&A activity is split into two dummies to satisfy the strict exogeneity assumption of panel data analysis. For equation 1, 3, 5, 7, 9 and 11, the dependent variables are the aggregate PPF, investment company, and other institutional ownership, respectively. For equation 2, 4, 6, 8, 10 and 12, the dependent variables are the largest PPF, the largest investment company, and the largest other institutional ownership, respectively. The constants are not reported.

	Instrument Version I						Bartik Instrument					
Dependent Variable	PPF ownership		Investment Co.		Others		PPF ownership		Investment Co.		Others	
	aggregate	largest	aggregate	largest	aggregate	largest	aggregate	largest	aggregate	largest	aggregate	largest
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Instrumental Variables												
IV PPF	0.996***	0.998***	0.095***	0.014**	0.040***	0.003	2.824***	2.115***	0.227	0.454	6.321***	0.436
IV investment co.	-0.000***	-0.000***	0.939***	0.991***	0.006**	0.006***	0.000	-0.001	0.310***	0.171***	0.029	-0.002
IV others	-0.001***	-0.000***	0.056***	0.015***	1.014***	1.004***	-0.010	0.009	0.166***	0.001	0.216***	0.116***
Shareholder Rights												
Governance index	0.001***	0.000***	-0.097**	-0.016	-0.002	0.001	0.081**	0.010	-0.276**	-0.106*	0.354*	0.202***
Managerial Incentives												
Insider ownership	0.000	0.000*	0.015*	0.003	0.013***	0.004**	-0.005	-0.000	0.000	-0.006	-0.006	0.034**
CEO cash compensation	0.001*	0.000	-0.014	-0.005	-0.002	0.001	-0.055	-0.030	0.309**	-0.031	0.208	-0.106
CEO options (% of total comp)	0.000	0.000	-0.000	-0.000	-0.001	-0.000	0.001	0.001	0.009***	0.001	-0.000	-0.001
Firm Characteristics												
Prior M&A good	-0.001	-0.001**	0.137*	0.031*	0.057	0.023	0.043	0.043	0.379*	-0.189	0.234	-0.175
Prior M&A bad	-0.000	-0.000	-0.007	0.003	-0.017	-0.000	0.001	-0.031	0.160	-0.264**	0.583	-0.108
Size	-0.003***	-0.001***	0.254**	0.046*	-0.291***	-0.092***	0.591***	0.108*	-0.338	-0.903***	-2.966***	-1.141***
Q ratio	0.000	0.000	0.085***	0.017***	-0.009	-0.003	-0.058***	-0.048***	0.215***	-0.061	-0.018	-0.135***
Cash flow ratio	-0.000	-0.000**	-0.001	0.000	0.000	0.000	-0.005**	-0.006***	0.026***	0.007	0.039***	-0.006
Leverage ratio	-0.000	-0.000	0.004**	0.001	0.000	-0.000	-0.005***	-0.002*	0.005	0.003	-0.001	0.008**
Capital expenditures ratio	0.000***	0.000*	0.023**	0.006**	-0.007	-0.001	-0.002	-0.006	0.144***	0.037***	0.131***	-0.003
Prior Performance												
CAR, benchmarked	0.000***	0.000***	0.001	0.000**	-0.000	0.000	-0.004***	-0.003***	0.015***	0.003***	0.027***	-0.004***
Industry Characteristics												
Ln(industrial concentration)	0.001	0.000	-0.145	-0.034	-0.034	-0.015	-0.212***	-0.133**	-0.456	-0.086	-0.679	-0.387**
Year fixed effects	Yes						Yes					
Firm fixed effects	Yes						Yes					

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

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

We report the marginal effects for the pooled logit regressions, and coefficients for the fixed effect IV regressions (a linear probability model). There are a total of 6,693 firm-years in the sample, out of which 30% are M&A observations. This table reports regressions in which institutional ownership is measured as the aggregate holding level (equation 1, 2, 5, and 6) or the largest individual holding level (equation 3, 4, 7, and 8). The dummy variable "prior M&A good" equals one if the firm had prior M&A activity which received positive announcement CAR, and equals zero if otherwise. The dummy variable "prior M&A bad" equals one if the firm had prior M&A activity which received negative announcement CAR, and equals zero if otherwise. Firm's prior M&A activity is split into two dummies to satisfy the strict exogeneity assumption of panel data analysis. The log of total assets is used as the measure for firm size because the Q ratio is strongly correlated with a firm's market capitalization. Results are similar if firm size is measured as the log of market capitalization.

	Dependent variable — 1=M&A(30%); 0=no M&A											
	pooled logit				Instrument Version I				Bartik Instrument			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Ownership	aggregate		largest		aggregate		largest		aggregate		largest	
PPF	[-0.008]***	[-0.007]***	[-0.023]***	[-0.012]***	-0.001	0.002	-0.002	0.001	-0.089*	-0.084*	-0.079**	-0.061*
Investment Co.	[0.005]***	[0.003]***	[0.007]***	[0.006]***	0.002***	0.001	0.004**	0.003	0.007	0.007	0.024**	0.017**
Others	[0.003]***	[0.002]***	[-0.003]**	[0.000]	0.001**	0.001	0.001	0.002	0.025	0.022	0.086*	0.064*
Shareholder Rights												
Governance index		[0.007]***		[0.007]***		-0.021**		-0.021**		-0.019*		-0.030**
Managerial Incentives												
Insider ownership		[-0.001]		[-0.001]		-0.004**		-0.004**		-0.004**		-0.006**
CEO cash compensation		[-0.001]		[0.001]		0.020*		0.021*		0.008		0.025*
CEO options (% of total comp)		[0.001]**		[0.001]***		0.001***		0.001***		0.001**		0.001***
Firm Characteristics												
Prior M&A good		[0.239]***		[0.243]***		-0.064***		-0.063***		-0.068***		-0.047**
Prior M&A bad		[0.213]***		[0.217]***		-0.080***		-0.078***		-0.094***		-0.070***
Size		[0.036]***		[0.037]***		-0.079***		-0.076***		0.034		0.010
Q ratio		[0.009]**		[0.009]***		0.012**		0.013**		0.005		0.017**
Cash flow ratio		[0.000]		[0.000]		0.000		0.000		-0.001		0.000
Leverage ratio		[-0.000]*		[-0.000]		-0.001		-0.001*		-0.001**		-0.001**
Capital expenditures ratio		[-0.003]***		[-0.003]***		-0.005***		-0.005***		-0.009***		-0.006**
Prior Performance												
CAR, benchmarked		[0.001]***		[0.001]***		0.000***		0.001***		-0.001		0.001**
Industry Characteristics												
Ln(industrial concentration)		[0.001]		[0.002]		-0.018		-0.019		-0.018		-0.001
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No

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

Table V: Performance of Low Q and "Buying-growth" Acquirers

This table reports the means and medians of short-term and long-term M&A performance measures among subgroups of observations. 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 cash poor 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."

	cash rich, low q		cash poor, low q	
# of obs	483		479	
	mean	median	mean	median
Announcement abnormal return	0.29	0.18	0.68***	0.46
Announcement value-weighted AR	−0.04		0.05	
Long-term CAR, benchmarked	0.54	0.01	0.64	0.25
Long-term CAR, 3-factor	−0.28	−1.82	4.45**	2.90
Long-term BHAR	−0.34	−5.54	0.67	−2.76
	"buying-growth" M&A		"non-buying-growth" M&A	
# of obs	156		154	
Announcement abnormal return	−0.90**	−0.27	−0.42	0.11
Announcement value-weighted AR	−0.73		−1.14	
Long-term CAR, benchmarked	−1.30	−1.62	0.55	−0.03
Long-term CAR, 3-factor	3.62	6.41	10.05**	5.37
Long-term BHAR	−4.04	−5.39	2.40	−6.37

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

Table VI: Low Q Firms

This table reports the marginal effects for the pooled logit regressions, and the coefficients for the IV regressions with firm-level effects. The subsample is restricted to low q firms with different cash holding levels. For equations 1, 3, 4, 7, and 8, institutional ownerships are measured by the aggregate holding levels. For equations 2, 5, 6, 9, and 10, they are measured by the largest individual holding levels. Other controls are the same as those used in Table IV. 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 median cash richness are defined to be cash rich firms, otherwise cash poor firms. There are a total of 1,554 cash-rich firm-years and 643 cash rich firms, and a total of 2,169 cash poor firm-years and 747 cash poor firms. Whether the median is defined as cash rich or cash poor does not matter.

	Cash rich, low q, Dependent variable — 1=M&A (25.2%); 0=no M&A													
	Pooled logit		Instrument Version I						Bartik Instrument					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	aggregate	largest	aggregate			largest			aggregate			largest		
PPF	[-0.015]***	[-0.021]***	-0.016**	-0.016**	-0.013**	-0.021**	-0.021**	-0.018*	-0.066**	-0.070*	-0.076	-0.097**	-0.073	-0.054
Investment Co.	[0.003]*	[0.006]**	0.005**	0.005**	0.005*	0.011***	0.011***	0.008**	0.009	0.008	0.004	0.017	0.023	0.015
Others	[0.002]*	[0.001]		0.000	0.001		-0.001	-0.000		0.011	0.027		0.036	0.044
Other controls	Yes	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Industry fixed effects	Yes	Yes	No	No	No	No	No	No	No	No	No	No		
	Cash poor, low q, Dependent variable — 1=M&A (26.7%); 0=no M&A													
PPF	[-0.003]	[-0.001]	0.005	0.004	0.008	0.006	0.007	0.009	-0.036	0.038	0.051	-0.055	-0.057	-0.062
Investment Co.	[0.003]**	[0.005]*	0.002	0.002	0.001	0.003	0.003	0.002	0.016	0.016	0.015	0.028	0.028	0.030
Others	[0.002]**	[0.000]		0.003**	0.002*		0.003	0.003		-0.036	-0.038		-0.036	-0.062
Other controls	Yes	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Industry fixed effects	Yes	Yes	No	No	No	No	No	No	No	No	No	No		

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

Table VII: "Buying-Growth" M&A

This table reports the marginal effects from logistic regressions on the subsample with target sales growth rates available. The robust standard errors were estimated using a Huber-White "sandwich estimator" and adjusted for firm level clustering. 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. Other controls included are the same as in Table IV.

Dependent variable — 1=target sales growth rate above median;
0=target sales growth rate below median

	Aggregate	largest
Institutional Ownership		
PPFs	[-0.043]**	[-0.076]**
Investment companies	[0.012]**	[0.019]*
Others	[0.012]***	[0.010]
other controls	Yes	Yes
year fixed effect	Yes	Yes
industry fixed effect	Yes	Yes
Observations	269	269
Pseudo R-square	0.219	0.200

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

Table VIII: Long-term Abnormal Returns

This table reports the coefficients from regressions with firm level effects examining the relation between institutional ownership and long-term M&A performance. Long-term performance is measured using three different methods.

	Dependent variable - abnormal returns 12 months including announcement month					
	CAR, benchmarked		CAR, 3-factor		BHAR	
	Aggregate	Largest	Aggregate	Largest	Aggregate	Largest
PPF	0.146	0.401**	1.099	2.958**	0.444	2.030
Investment companies	−0.061**	−0.042	−0.958***	-0.005	−1.308***	−0.846*
Others	−0.036*	−0.014	−0.548***	0.842*	−0.283	1.117**
Year Dummies	Yes		Yes		Yes	
Firm-level effects	Yes		Yes		Yes	
Observations	2,013		2,015		2,013	
Number of firms	825		826		825	

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

Table IX: Asset Turnover and Institutional Ownership

This table reports the coefficients from panel data regressions. The dependent variable, abnormal asset turnover rate, is the change in industry-adjusted asset turnover rate (IAAT) post M&A completion. The left panel follows the method in Healy, Palepu, and Ruback (1992). The right panel follows the method in Barber and Lyon (1996).

	Dependent variable - abnormal asset turnover			
	$IAAT_{post,i}$ - $(-0.358 + 0.850 IAAT_{pre,i})$		$IAAT_{post,i}$ - $IAAT_{pre,i}$	
	Aggregate	Largest	Aggregate	Largest
PPF	1.723***	3.057***	1.881***	3.038***
Investment Co.	0.090	0.275	0.090	0.207
Others	−0.416***	−0.200	−0.451***	−0.280
Year fixed effects	Yes			
Firm level effects	Yes			
Observations	1,743			
Number of firms	734			

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

Table X: For The 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 2,022 M&A firm-years, and 4,659 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)
Largest public pension ownership	1.23	1.50	(0.000)
Largest investment co. ownership	5.91	5.42	(0.000)
Largest insurance co. ownership	2.66	2.47	(0.000)
Largest private pension ownership	1.01	1.03	(0.003)
largest bank ownership	3.28	3.34	(0.000)
Largest indep. advisor ownership	5.48	5.70	(0.003)
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	2,022	4,659	

Table XI: For The 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

Table XII: For The 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			
Institutional Ownership	Aggregate	Top indiv.	5% block	Concentration
PPF	−1.68	−4.08*	−22.71	−4.92*
	(0.255)	(0.059)	(0.110)	(0.060)
Investment Co.	0.09	−0.37	−6.78	−0.37
	(0.908)	(0.769)	(0.446)	(0.819)
Insurance Co.	2.46**	1.58	17.6	1.28
	(0.010)	(0.210)	(0.203)	(0.390)
Private Pension	2.32	2.28	19.21	2.11
	(0.101)	(0.147)	(0.445)	(0.228)
Banks	1.16**	0.11	−4.16	−0.23
	(0.031)	(0.891)	(0.653)	(0.834)
Indep. Advisor	−0.10	0.99	4.37	1.05
	(0.794)	(0.398)	(0.590)	(0.658)
CEO options (% of total compensation)	0.33**	0.31*	0.33**	0.31*
	(0.044)	(0.061)	(0.047)	(0.055)
Prior M&A +ve announcement CAR	85.33***	88.35***	91.23***	88.57***
	(0.000)	(0.000)	(0.000)	(0.000)
Prior M&A -ve announcement CAR	64.84***	66.4***	67.96***	67.71***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow ratio	1.07*	1.14**	1.1*	1.16**
	(0.064)	(0.043)	(0.051)	(0.039)
Size	9.68**	11.95***	11.92***	11.63***
	(0.014)	(0.002)	(0.002)	(0.004)
Capital expenditures ratio	−2.73***	−2.72***	−2.79***	−2.73***
	(0.002)	(0.002)	(0.002)	(0.002)
Prior CAR, benchmarked	0.31**	0.29**	0.31**	0.28**
	(0.022)	(0.031)	(0.017)	(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 XIII: For The Referee — Simultaneous Equations Analysis on PPF Impact

This table reports the coefficients and standard errors from the simultaneous equations estimations. The linear system assumes that both the PPF ownership variable and the M&A activity dummy variable are endogenous. The control variables are the same as in Table III and Table IV. Their coefficients and significance are also similar to those reported in Table III and Table IV.

	Dependent Variables			
	system (1)		system (2)	
	Aggregate PPF Ownership	M&A Activity (1=Yes)	PPF concentration (normalized)	M&A Activity (1=Yes)
	(1)	(2)	(3)	(4)
M&A Activity Dummy	0.258		0.158	
	(0.218)		(0.116)	
Aggregate PPF		-0.013***		
		(0.004)		
Largest PPF				-0.021***
				(0.005)
Instrument for aggregate PPF	0.795***			
	(0.018)			
Instrument for largest PPF			0.749***	
			(0.013)	
Controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Industry dummies (3-digit SIC)	Yes	Yes	Yes	Yes
Observations	6,686	6,686	6,686	6,686
R-squared	0.654	0.143	0.629	0.144

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

Table XIV: For The Referee — Post-M&A Operating Performance

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

Panel A

	Operating cash flow returns			Cash flow margin on sales			Asset turnover ratio		
Year relative to M&A	Firm median	Industry-adj median	# of obs	Firm median	Industry-adj median	# of obs	Firm median	Industry-adj median	# of obs
all M&A firm-years									
-3	14.66%	2.72%	1,963	23.21%	6.71%	1,970	68.76(c/$)	−3.86(c/$)	1,965
-2	14.61	2.83	1,991	23.81	7.24	1,995	65.08	−3.79	1,992
-1	14.83	3.13	2,002	24.76	8.02	2,005	62.92	−4.72	2,002
1	15.72	3.84	1,746	26.57	9.39	1,746	61.22	−4.66	1,749
2	16.07	3.99	1,404	26.14	9.24	1,404	60.94	−4.94	1,408
3	15.85	3.86	1,028	25.67	9.21	1,028	61.56	−5.76	1,031
public targets only									
-3	13.86%	2.47%	295	25.06%	7.65%	296	58.36(c/$)	−8.12(c/$)	297
-2	13.76	1.99	335	26.79	8.97	335	55.64	−5.13	338
-1	13.84	2.37	311	26.85	8.37	311	50.07	−7.74	315
1	13.71	2.73	276	29.32	13.95	279	46.47	−8.98	279
2	12.55	3.44	216	27.69	11.33	219	49.92	−9.72	219
3	12.75	3.91	145	27.91	10.65	147	51.75	−7.89	148

Panel B

Abnormal industry-adjusted post-M&A operating performance - method 1

	all M&A firm-years			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							
$IACF_{post,i}$	=	2.586***	+	0.767***	$IACF_{pre,i}$	R^2=0.41	N=1,741
		(0.219)		(0.022)			
$IACFM_{post,i}$	=	8.357***	+	0.714***	$IACFM_{pre,i}$	R^2=0.24	N=1,743
		(0.775)		(0.031)			
$IAAT_{post,i}$	=	−0.358	+	0.850***	$IAAT_{pre,i}$	R^2=0.71	N=1,743
		(0.719)		(0.013)			
public targets only							
$IACF_{post,i}$	=	2.146***	+	0.949***	$IACF_{pre,i}$	R^2=0.52	N=322
		(0.460)		(0.051)			
$IACFM_{post,i}$	=	22.834***	+	0.007	$IACFM_{pre,i}$	R^2=0.00	N=321
		(3.304)		(0.037)			
$IAAT_{post,i}$	=	−2.468*	+	0.857***	$IAAT_{pre,i}$	R^2=0.74	N=323
		(1.422)		(0.029)			

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