# Institutional Investors and the Transformation of Underperforming Firms

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**Abstract**

We focus on chronically underperforming firms and assess the roles of institutional investors in either facilitating asset redeployment or entrenching managers. Institutional investors may facilitate asset redeployment by encouraging managers to abandon unproductive activities or fostering takeover, liquidation, or reorganization. They may entrench managers if they passively hold large positions of company stock and side with management. We find that, in aggregate, institutions exhibit a flight to quality, selling shares in firms that subsequently fail; for underperforming firms that survive, institutional holdings are associated with improved performance, but abnormal returns are still negative and return on assets and Tobin's Q are still low. We find no evidence that holdings of traditional activist public pension funds lead to improved performance. Nor do performance results support positive roles for institutions with long-term holdings. However, activist hedge funds are different in that they significantly increase holdings in firms that are subsequently acquired. Also, short-term holdings by institutions are associated with positive subsequent performance. Results for institutional blockholders are mixed, reflecting their heterogeneity. The distinction between independent and non-independent (gray) institutions does not appear to matter. We contrast the results to those for consistently overperforming firms; the analysis points to a more limited governance role of institutions for firms that are performing well.

**Key words:** institutional investors; corporate governance, underperforming firms; activist pension funds; hedge funds; blockholders, acquisition, failure

JEL Codes: G3, L2, G20, G33, G34

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# Institutional Investors and the Transformation of Underperforming Firms

We focus on chronically underperforming firms and seek to assess the roles of various types of institutional investors in either facilitating asset redeployment or entrenching managers who are resistant to change or abandonment. Asset redeployment is an important aspect of competitive markets. In the presence of agency costs, institutional investors may facilitate asset redeployment by encouraging managers to abandon unproductive activities. They may also encourage takeover, liquidation, or reorganization. Conversely, institutions may entrench managers if they passively hold large positions of company stock and tend to vote with management or if institution managers pursue personal agendas, such as window dressing or publicity seeking, that are inconsistent with value maximization.

The central question we address is: what roles do institutions play in transforming underperforming firms by redeploying assets through acquisition, failure and liquidation or reorganization, or improved performance? In addition to studying aggregate institutional holdings, we rely on hypotheses developed in previous literature for expected impacts of specific types of institutional investors. The types we study are: activist pension funds, activist hedge funds, institutional blockholders, independent versus grey institutions, and institutions with short-term versus long-term holdings.

While our focus is on of chronically underperforming firms (underperformers), we contrast the results to those for consistently overperforming firms (overperfomers). We define a firm as underperforming (overperforming) if its rate of return on assets (ROA) is in the bottom (top) quintile each year for five consecutive years, approximately the length of a typical business cycle. We study performance over the subsequent five years. As detailed below, we draw from a sample of large established firms. The rationale for studying underperforming firms is that they are most likely to be those in need of transformation to survive and be competitive, and those where monitoring and activism is most likely to have an effect.

The collective results of previous literature are difficult to interpret because apparently conflicting results can be due to differences in sample selection, choice of performance metric, timing of performance measurement, and institutional focus. Many studies focus on contemporaneous relationships, making causal inferences difficult. The studies examine an array of indicators of institutional impact, some of which may only weakly relate to long-run performance (e.g., shareholder initiatives, R&D spending, executive compensation, etc.). Typically, the studies examine either all institutions or a single type, such as activist pension funds. Some use broad samples, such as all firms on Compustat, while others use narrow lists, such as the Fortune 800, or a sample of firms targeted for activism, or a sample selected to reveal monitoring (e.g., firms making merger decisions). Our methodology is designed to aid interpretation of prior results and to shed new light by contrasting samples of firms that differ materially in prior performance, spanning a long time period, focusing on a common set of outcomes and important performance metrics, and applying consistent tests to a variety of institutional types.

While not all of the relationships appear to be causal, for underperformers, we find that higher levels of institutional holdings and/or increases in holdings are associated with lower probabilities of subsequent failure, higher probabilities of acquisition, higher market-adjusted returns, higher ROA, and decreases in inverse Tobin's Q (measured as book-to-market). Except, with respect to failure, we find no significant relationships for overperformers. This difference may explain, in part, the mixed results from previous studies that do not differentiate among firms in terms of prior performance.

When we examine specific institutional types, we find no evidence of subsequent performance improvement (abnormal returns, ROA, and Tobin's Q) being associated with traditional activist public pension funds. Similarly, performance results do not support positive roles for blockholder institutions or institutions with long-term holdings. On the other hand, underperforming firms that attract short-term holdings are associated with some measures of positive subsequent performance. The distinction between non-independent (gray) and independent institutions does not appear to matter to our results.

Failure and acquisition are useful means of asset redeployment. We find that the failure probability of underperforming firms is negatively related to levels and changes in institutional holdings. This could have an indirect positive effect if reducing aggregate institutional holdings of equity mitigate conflicts of interest between equity and debt positions in institutional portfolios. The exception to the general result is that institutional blockholding is positively related to subsequent failure of underperforming firms. This relationship, combined with other results for blockholders, appears to be consistent with entrenchment. However, we also find that institutional blockholding is positively related to acquisition of underperformers but negatively related to the probability of acquisition of overperformers. We infer that institutional blockholders are not a homogeneous group. While activist hedge funds tend not to focus on underperforming firms, they do significantly increase holdings prior to acquisition and their holdings are strongly related to the probability of acquisition of overperformers.

Analysis of the overperformer sample yields some fundamentally different results. Most point to a more limited governance role of institutional holdings for firms that are performing well.

This study contributes to several strands research, including on the persistence of firm underperformance, the roles of institutional investors in affecting performance, and on which types of institutions matter for implementing change. It provides a new approach for studying how institutional ownership relates to subsequent asset redeployment, by distinguishing between under- and overperforming firms and through consideration of a range of outcomes and performance metrics, and through explicit controls for attrition by failure and acquisition. As such, it adds to our understanding of the role of institutions in affecting the competitive process.

The remainder of the paper is organized as follows: In sections I and II we review the literature on two broad topics: the persistence of underperforming firms and the roles of institutions in effecting change in performance. In sections III and IV, we describe our methodology and data. In section V, we present results and contrast them with previous literature. Section VI concludes.

## I. Chronic Underperformance

Why do chronically underperforming firms survive? Gimeno, Folta, Cooper, and Woo (1997) argue that the efficacy of competition in selecting the fittest organizations is mitigated by firm-specific thresholds of sufficient performance. Such thresholds could arise from agency costs or owners that may have objectives other than profit maximization. They find that firms with low thresholds can survive for many years despite persistently poor performance. Van Witteloostuijn (1998) develops a model of voluntary exit and chronic failure based on organizational inertia and finds that inefficient firms may outlast their efficient rivals. He points out that inertia can arise when firms use sales maximization as an objective, for example.

Brockner (1992) refers to "escalating commitment" as the tendency of decision makers to persist in a course of action in the face of negative information concerning its viability. He notes that escalation can arise partly from unwillingness to admit failure. Detienne, Sheperd and Castro (2004) propose that persistence can arise from the personal sunk cost of the decision maker, distorted expectations based on previous success, perceived efficacy of the team, and the ultimate attractiveness of the opportunity.

Hannan and Freeman (1984) ascribe persistent underperformance partly to structural inertia. In their view, competitive pressures can compel firms to adopt structures that are highly specialized to a given environment. Because specialization increases inertia, firms may be unable to adapt to fundamental changes in the environment. Structural inertia implies that economic evolution is more likely to come from new organizations than from adaptation by existing ones. Thus, reorganization, liquidation, and acquisition are important mechanisms for asset redeployment.

Overall, the literature establishes that underperformance tends to persist and that decisions to escalate the commitment to a failing venture can arise from a mistaken perception that the opportunity is too attractive to abandon or because of agency conflicts. However, not all underperforming firms persist. Some are acquired, others are liquidated, and still others are able to turn performance around. Failure (liquidation or reorganization) and acquisition are clear means of redeploying underperforming assets. Performance reversal is a less clear indication. Occasionally, a risky bet that could not be justified *ex ante*

proves to be successful *ex post*. In our sample, most underperformers that survive through our study period continue to underperform, suggesting that agency cost is pervasive among the surviving firms.

## II. The Roles of Institutional Investors

Previous research has addressed an array of questions related to the roles of institutional investors. Generally, the literature explores: (1) the empirical relationship between institutional ownership and firm performance and (2) the question of which institutions matter.

### The Influence of Institutional Ownership on Performance

What drives the connection between institutional holdings and firm performance? Institutions face a cost-benefit trade-off when making the choice of whether to monitor and attempt to influence firms or to monitor and sell. The trade-off arises because attempting to influence involves incurring a private cost but positive results are shared. Moreover, the ability to materially influence performance varies across firms. Parrino, Sias, and Starks (2003) find that some institutional investors that monitor performance vote with their feet by selling when they are not pleased with performance. Others may attempt to influence management in a number of ways, such as by pressing the firm to a board member, forcing CEO turnover, or introducing shareholder proposals.

Using ownership percentage data for 1976 and 1986, McConnell and Servaes (1990) find a monotonic positive relationship between Tobin's Q and the percentage of shares held by institutions. Citing Pound (1988) they observe that the finding is consistent with institutions performing a monitoring function, but acknowledge that the contemporaneous relationships they examine could be due to reverse causality. Clay (2002) also finds a positive relationship between institutional ownership and Q during the period from 1988 through 1999. The relationship is stronger for firms with high discretionary cash flows, suggesting the possibility of effective institutional monitoring. However, Woidtke (2002) finds that other shareholders can be hurt when institutional agents have interests that conflict with those of other investors.

Agrawal and Knoeber (1996) study the relationship between Q and several mechanisms for controlling agency problems, including institutional ownership percentage as a proxy for monitoring. In contrast to McConnell and Servaes, they find no significant relationship between Q and institutional holdings. Agrawal and Knoeber limit their study to Fortune 800 firms in 1987, whereas McConnell and Servaes study a much broader sample, so perhaps the difference in results is due to sample construction. Limiting to Fortune 800, may diminish the cross-sectional variation that would be important for assessing the relationship to institutional holdings.

Several early studies focus on institutions that engage in activism. Brickley, Lease, and Smith (1988) study firms listed by the Investor Responsibility Research Center (IRRC) as proposing antitakeover amendments and find that institutions vote more actively than do non-blockholders. However, Pound (1988) argues that conflict-of-interest pressures can lead institutions to vote against their fiduciary responsibilities to investors in their funds. Consistently, Gordon and Pound (1993) find that voting on shareholder proposals increases with institutional ownership, but that institutions tend to vote with management. Black (1992) argues that legal considerations and conflicts of interest limit activism, but that the conflicts are less for some kinds of institutions (e.g. pension funds and endowments) than others (e.g. banks and insurance companies).[1] Opler and Sokobin (1995), however, find that poorly performing firms show improved performance after being targeted by the Council of Institutional Investors.

Traditional activists, such as some pension funds and individuals who collaborate with them, are known for their attempts to influence governance. Sometimes they are successful in changing a feature of governance, but targeted firms do not show improved long-run performance. Wahal (1996), Black (1998), Romano (2001), Song and Szyszwick (2003), and Gillan and Starks (2007) all conclude that there is little evidence of improved long-run performance of firms that have been targeted. Karpoff (2001) summarizes that while activism can bring about small changes in governance, it has negligible impacts on share value or earnings. Gillan and Starks (2007) remark on the evidence and note that more research is needed to assess long-term evidence of improvement in the operating or stock-market performance of targeted firms.

[1] See also, Black (1998).

While some studies find positive relationships between institutional ownership and either Tobin's Q or stock returns, the research points to a variety of possible explanations. Gompers and Metrick (2001) observe that institutions have a revealed preference for large stocks with low market-to-book equity ratios. They find that the increasing fraction of institutional ownership from 1980 through 1996 is associated with a substantial increase in the market-to-book ratios of large stocks relative to small stocks, and that this also is associated with higher realized returns on large stocks compared to small. The implication is that relationships between institutional ownership percentage and either market-to-book ratios or stock returns could simply be the result of sustained price pressure or long-run momentum effects associated with the secular increase in institutional preference for large and liquid stocks, and not of monitoring by institutions.

Nofsinger and Sias (1999) find a strong positive relationship between changes in institutional ownership percentage and contemporaneous stock returns. They discuss their results in terms of institutional herding, arguing that the movement of institutions into a stock creates price pressure that generates the positive returns. However, in contrast to studies that find momentum trading is followed by reversion, Nofsinger and Sias find that institutional herding is positively related to lagged returns. Their results suggest that institutional investors are better informed than individuals and that their trading moves prices toward equilibrium values rather than away. Their approach suggests that the positive relationship is not due to monitoring by institutions.

Ovtcharova (2003) also examines institutional ownership and subsequent stock returns. She finds, however, that stocks with high institutional ownership percentages outperform those with low institutional ownership, controlling for book-to-market equity. She concludes that the performance difference cannot be explained by price pressure or momentum.

Our evidence on aggregate institutional holdings is supportive of a monitoring role for institutions in that we find institutions move away from underperforming firms that subsequently fail and into firms that subsequently show improved performance. It appears that monitoring provides an impetus for

institutions to "vote with their feet" and reduce their positions in underperforming firms. Underperforming firms that survive show improved performance, but continue to underperform the market.

**Which Institutions Matter?**

Because institutions have varying incentives to monitor and influence managers, studying only aggregate institutional holdings is likely to mask the effects of particular types of institutions.

In two early case studies of activist pension funds, Carleton, Nelson, and Weisbach (1998) find that TIAA-CREF was able to negotiate directly with targeted companies, though abnormal returns around announcements suggest mixed effects. Smith (1996) examines shareholder initiatives of CalPERS and finds that the market responds positively when the targeted firm adopts the proposal or settles, and negatively when the target resists. As noted above, however, most studies of traditional activism suggest limited impact. Kale, Ciceksever, and Ryan (2006) employ a system of equations to study the relationships among governance, leverage, and institutional ownership in the joint production of monitoring. They find that activist pension funds influence governance but also tend to invest in firms that already have strong governance. We find no evidence of a positive role for activist pension funds. These funds do not significantly reduce holdings in firms that subsequently fail and their holdings are negatively related to subsequent performance.

The evidence is more positive for activist hedge funds. Clifford (2008) finds that firms targeted by hedge funds for activist purposes have increased accounting returns on assets for up to two years after acquisition of the block. He attributes the improvement to divestiture of underperforming assets. Clifford argues that hedge funds are more likely to be effective monitors than are traditional endowments or pension funds for several reasons, including their compensation incentives, and ability to lock-up investor capital, use leverage to increase the fund's ownership stake, and acquire the firm. He also finds significant positive one-year calendar-time-adjusted abnormal returns for firms targeted by activist hedge funds. While adjusted returns are also positive in subsequent years, he cannot reject the hypothesis that non-activist hedge funds achieve similar returns on the firms they select. Klein and Zur (2009) find that activist

hedge funds target more profitable and healthier firms than do other private investors who engage in activism. Hedge funds are more likely to seek board representation through threat of proxy solicitation, and seek to address agency costs related to cash flows by pressing targeted firms to increase dividends and leverage. They find significant positive abnormal returns surrounding 13D filings and in the subsequent year but report a reduction in operating performance in the year following the filing. Brav, Jiang, Partnoy, and Thomas (2008) also document positive abnormal returns upon announcement of hedge fund activism, with no reversal during the subsequent year, and some improvement in operating performance. Greenwood and Schor (2009) look specifically at how hedge fund activism and takeover are related. They find that firms targeted by activist hedge funds are more likely to be acquired and that long-run abnormal returns are higher for firms that are acquired after targeting. Overall, the results suggest that hedge fund activism has the potential to change the target firms in desired ways and to improve firm performance. We find that activist hedge funds tend to target firms that are already performing well, and that for overperformers, their holdings are positively related to subsequent acquisition, but negatively related to financial performance of firms that survive. While activist hedge funds tend not to target underperformers, they do significantly increase holdings of those that are subsequently acquired.

Many studies focus on blockholders, but few on institutional blockholders. Institutional blockholders can include activist hedge funds and other institutions that either engage in monitoring or are aligned with, and entrench, management. Gorton and Kahl (1999) argue that individual blockholders face fewer agency costs than institutional blockholders, making them better monitors. Blockholder institutions, in their model are either permanent blockholders or facilitate takeover by selling. Edmans (2009) argues that, contrary to the view that liquid markets and transient shareholders exacerbate myopia, institutional blockholders who adhere to "The Wall Street Walk" can drive prices to long-run value.

The empirical findings on institutional blockholders are mixed. Mehran (1995) finds no significant relationship between institutional blockholdings and either ROA or Tobin's Q. Chen, Harford, and Li (2007), using acquisitions to assess the effects of monitoring, find that total institutional holdings mask important

variations in the impact of institutional ownership. However, in their post-merger sample, long-term, independent blockholdings are positively related to abnormal returns over three years and to industry-adjusted change in three-year average ROA. Cronqvist and Fahlenbrach (2009) point out that the lack of large-sample evidence of blockholder effects may arise because of blockholder heterogeneity. They do not specifically study institutional blockholders but do find significant fixed effects for blockholder groups that include institutional types. They find some evidence of significant positive blockholder fixed effects associated with ROA and Tobin's Q. Our evidence suggests that institutional blockholders are not a homogeneous group. For underperformers, both failure and acquisition are positively related to institutional blockholdings, whereas for overperformers acquisition probability is negatively related to blockholding.

Brickley et al. (1988), Del Guercio and Hawkins (1999), Woidtke (2002), Almazan, Hartzell, and Starks (2005), and Jiao and Liu (2008) all seek to assess differences in efficacy of independent versus non-independent (gray) institutions. Independent institutions in this literature include most holdings of pension funds, endowments, foundations, and mutual funds, whereas banks and insurance companies are more likely to have business relationships with investee companies, which could give rise to conflict. These institutions are classified as gray. Brickley et al. (1988) find that independent institutions are more likely than gray institutions to oppose management. Jiao and Liu (2008) find a positive relationship between ownership by independent institutions and subsequent returns, and between ownership and earnings surprises, and that holdings of gray institutions have no predictive power. Chen, et al. (2007) reason that independent institutions with substantial long-term investments are more likely than others to monitor. For outcome and performance measures, we find little difference between independent and gray institutions. Both types reduce their holdings in underperforming firms that subsequently fail.

An important distinction exists between "activist" and "active" or short-term investors. The transient nature of an investment may reduce incentives of the investor to monitor. However, the threat of sell may also serve to discipline managers who want to encourage institutional investments in their firms.

Bushee (1998) finds that firm managers are less likely to cut R&D when ownership by long-term institutional investors is high and that holdings by high turnover institutions are associated with myopic behavior. Consistent with this view, Kahn and Winton (1998) observe that if institutions can trade easily, they are more likely to use information to identify trading opportunities than to influence firms. They argue that restrictions on trading could lead to more effective monitoring. Also consistent, Utete (2008) finds that transient investors tend to abandon poorly performing firms. He finds that the previously documented relationship between institutional holdings and Tobin's Q is driven by the trading actions of institutions that do not seek to influence performance. Atiase, Mayes, and Xue (2006), in contrast, find that institutional ownership increases the probability of restructuring, but short-term ownership decreases it. They infer that non-transient ownership encourages managers to make value-maximizing decisions. Similarly, Burns, Kedia, and Lipson (2010) find that ownership by institutions with short horizons is related to myopic behavior as implied by financial restatements, discretionary accruals, and earnings management.

However, Admati and Pfleiderer (2009) show theoretically that if managerial compensation is tied to stock performance and if selling negatively impacts stock price, then the threat to sell can help align managerial actions with shareholder interest. Consistent with this argument, Almazan, et al. (2005) extending the analysis of monitoring by Hartzell and Starks (2003), find that pay-for-performance sensitivity increases with the concentration of ownership by short-term institutions and that institutional monitoring is attenuated by stock illiquidity because of increased monitoring costs. Thus, the potential for institutional selling appears to discipline management.

It is unclear whether long-term investors can create value by monitoring. Utete (2008) finds that dedicated (long term) and quasi-indexing (passive with broad holdings) investors are attracted to firms that enable them to monitor, but does not find the monitoring to be effective. Chen, et al. (2007), as noted above, expect independent institutions with long-term investments to monitor and others not to. They find that post-acquisition performance is related to independent long-term institutional holdings. In contrast to long-term institutional holdings, we find that short-term holdings are negatively related to failure,

positively related to subsequent acquisition, and positively related to subsequent performance, indicative of an important monitoring role for institutions that monitor and trade actively.

**Recap**

In summary, the prior studies paint a mixed and somewhat confusing picture as to the roles and importance of institutional investors. Studies that relate ownership to contemporaneous performance, in terms of stock returns, ROA, or Q ratios generally find positive results but are divided as to whether the relationships are causal. Moreover, some studies find improved operating performance after targeting, while others find no significant effect. Impact varies by institution type. There is some evidence that ownership by short-term investors encourages myopic behavior on the part of management; others find that these institutions encourage investment that may have positive operating benefits. Traditional activist public pension funds may be able to influence small changes in governance, but there is no significant evidence of improved long-run performance. Activist hedge funds, in contrast, may be able to affect performance through restructuring transactions including divestiture and acquisition. While long-term investors would seem to have incentives to monitor, except for independent blockholders there is little evidence of effective monitoring by this group. Hence, the evidence on aggregate institutional ownership may be confounded by mixing independent and conflicted institutions.

Our analysis demonstrates that (1) previous findings are sensitive to the characteristics of the sample that is being studied; (2) controlling for bias associated with attrition can be important for understanding relationships between institutional holdings and subsequent performance; (3) the type of institution matters when evaluating the effects of monitoring and trading; and (4) some previous findings of positive relationships between institutional holdings and performance may have little to do with effective monitoring by institutions.

## III. Analytical Approach and Methodology

Based on the literature, we test several hypotheses regarding the impact of institutional holdings on subsequent long-term firm performance (abnormal returns, ROA, and Tobin's Q) for our sample of

underperformers. We also consider, and control for, the possibility that institutions may impact asset redeployment by facilitating acquisition or failure (bankruptcy, liquidation, or failure-related delisting). While failure is a negative outcome for stockholders, exit is an essential part of efficient competitive markets; as such, if institutional holdings and trading facilitate or foster asset redeployment, the institutional role is positive compared to the outcome of a surviving but persistently underperforming firm. The literature allows for positive rationales for every group of institutions as well as possible negative rationales for short-term investors, grey investors, and blockholders. Our analysis is designed accordingly.

To study the impact of institutions on subsequent performance and asset redeployment, we focus on a sample of chronically underperforming firms. For contrast, we also use a sample of consistently overperforming firms. For a given fiscal year, we consider a firm to be underperforming (overperforming) if its ROA is in the bottom (top) quintile for that year, of a sample of large, established firms.[2] We measure ROA as EBIT to Total Assets.[3] We classify a firm as chronically underperforming (overperforming) if it is in the bottom (top) ROA quintile each year for five years, approximately the length of a typical business cycle. Thus, a chronic underperformer would need to have underperformed in both good and bad economic environments. To assure independence of the observations and consistency over time, we require that a firm not have underperformed (overperformed) in the year prior to its first year of underperformance.

That is, for each year, we use Compustat to identify a sample of large non-financial firms, where any firm in the top half of the distribution of number of employees, total assets, or total revenue is considered to be large. This screen is designed to exclude small, high-growth, entrepreneurial firms, where low rates of return on assets could be related to early, rapid growth. We then stratify the observations based on ROA and identify the bottom and top quintiles. A firm is included in the underperformer

[2] For the purpose of classifying firms as chronic underperformers we need a criterion that is related to the potential to create value by asset redeployment. Because of this, we rely on an accounting-based, rather than a market-based criterion. Poor stock price performance over the sample period could, for example, result from disappointed expectations about a firm that was expected to be highly successful, and thus would not necessarily imply that asset redeployment would be valuable. Also, if the market correctly anticipates chronically poor operating performance, the effect could be capitalized in the market price quickly and would not be detected as chronic.

[3] We do not use EBITDA, as do some studies, based on the view that the non-cash expense component of EBITDA is likely to be approximately offset by reinvestment cash outflows.

(overperformer) sample for "base-year" *t* if it was not an underperformer (overperformer) in year *t-1*, and was an underperformer (overperformer) in each of years *t* through *t+4*. We refer to *t* through *t+4* as the "sample period" and the last year of the sample period as the "sample year".

We measure firm performance over the ensuing five years, *t+5* through *t+9*, which we refer to as the "study period". We consider three possible binary outcomes (failed or acquired during the study period, or survived) and three performance metrics.[4] Our performance metrics include accounting and market-based measures: (1) the natural log of the cumulative market-adjusted return from the beginning of the study period until the end or until the last trade price before the end; (2) the average annual ROA for all available years of the study period; and (3) the value of Inverse Tobin's Q (book assets/ (market equity plus book debt)) for the last available year of the study period. In some portions of the analysis, we treat acquisition, failure, and survival as mutually exclusive and control for attrition bias when we estimate relationships between institutional holdings and the performance metrics. When we control for attrition, we measure performance only for the survivors and, hence, over the full five-years of the study period.

We measure institutional holdings as the percentage of outstanding shares that are held by institutions. We measure both percent of shares held in the base year and change in percentage holdings over the sample period. The two measures together are equivalent to measuring holdings in the sample year, i.e., at the beginning of the study period. The decomposition allows us to test whether there are important differences between base-year holdings and changes in holdings in terms of impact on firm performance. In addition to aggregate holdings, we measure percentage holdings for the following institutional types: (1) activist public pension funds, (2) activist hedge funds, (3) institutional blockholders (the top one and top five in terms of percentage holdings), (4) independent institutions, (5) gray institutions, (6) short-term institutional holdings, and (7) long-term institutional holdings. We use standard methods to classify the institutions.

## IV. Data

[4] We classify firms as failed or acquired during the study period if the shares were delisted or reporting ended during the study period, even if the acquisition or failure date of record is later than the end of the study period.

Table 1 provides background on sample construction. The sample covers 24 base years from 1978 through 2001. The methodology described above yields samples of 522 underperformers and 507 overperformers. Table 1 shows that the observations are spread fairly evenly over the entire period of study, with more recent years having somewhat higher numbers of observations. No year accounts for more than 6.1% of underperformers or more than 7.5% of overperformers.

Our sample selection methodology allows firms to enter the sample more than once. If, for example, a firm is classified as an underperformer and subsequently has at least one year of ROA being above the bottom quintile, followed by five more years of being in the bottom quintile, a second observation of that firm would result. There are 15 (48) Permno recurrences in the underperformer (overperformer) sample, making the number of unique firms 507 (459).

The underperformer sample includes observations from 201 four-digit SIC Codes and the overperformer sample includes 198. Table 2 lists the industries with at least 10 observations in either sample. The highest for underperformers is Semiconductors and Related Devices, which accounts for 4.4% of the sample. The highest for overperformers is Pharmaceutical Preparations with 4.3%. At the foot of the table we list some exemplar under- and overperformers by base year.

Table 3 provides descriptive data on firm outcome and performance variables, institutional holdings, and additional control variables we use in the analysis. All outcome and performance variables are measured during the study period. For comparison, we report performance measures from the sample period. Based on either means or medians, the performance of underperformers improves during the study period and that of overperformers worsens. However, substantial differences in performance remain between the two samples. Study-period values of ROA, Inverse Q, and Ln Abnormal Returns are also affected by departures due to failure or acquisition.

We obtain institutional holdings from quarterly 13F filings and follow standard approaches for classifying institutions. We measure holdings as of the base year and the end of the sample period. In the empirical analysis, we include the base year level of holdings and the change over the sample period. On

average, as of the sample year, institutions hold 25.5% of the outstanding shares of underperformers and 52.2% of overperformers. Average institutional holdings of overperformers increase during the sample period, whereas holdings of underperformers do not change materially.

"Activist public pension funds" are institutions that proactively seek to bring about corporate change through shareholder initiatives and similar actions. We rely on the list of 18 activist public pension funds identified by Cremers and Nair (2005). We examine the performance of activist hedge funds using the list of 197 hedge fund families identified by Clifford (2008).[5] We follow Hartzell and Starks (2003) and Chen, et al. (2007) by defining institutional "blockholders" as the top 1 or top 5 institutions in terms of percentage shareholdings, which we measure as of the end of the sample period. We also follow them in classifying investment companies and investment advisors as "independent" institutions and classifying banks and insurance companies as "gray". We classify pension funds, foundations, and endowments as gray, recognizing that there are occasional conflicts in this group, such as when a pension fund owns stock of the sponsoring company.[6] Consistent with Chen, et al., we define an institution's holding as long-term if the position is held for more than one year. In our analysis a holding is for more than one year if it is reported in at least 5 continuous quarters of 13F reports. We implicitly define holdings in fewer than five consecutive 13F reports as short-term. We also examined independent, long-term investors, but found that the results were not materially different from those for long-term investors.

Across all categories, institutional holdings are smaller for underperformers than for overperformers. Also, the two activist categories account for percentage holdings that are small, but where other investors may also participate in or imitate the activist strategy of those institutions that are in the sample.

As control variables in the multivariate analysis, we include the sample-period equivalent of performance metric. Specifically, we include Ln Abnormal Return from the start to end of the sample

[5] We thank Chris Clifford for providing the identities of his sample of activist hedge funds.
[6] Classification as independent or gray is based on the CDA database: type 1 (banks), type 2 (insurance companies), type 3 (investment companies), type 4 (investment advisors), and type 5 (ESOPs, endowments, foundations, and pension funds).

period, the average ROA over the sample period (winsorized in the 5% tails), and Inverse Tobin's Q as of the sample year. For firm size controls we include Total Assets, measured both at the base year and the sample year. We control for firm diversification using the number of sample year NAICS codes under which the firm reports on Compustat. As controls for market conditions, we include the Baker and Wurgler (2000, 2006) measure of Investor Sentiment in both the base year and sample year. To control for anticipated risk of default, we include the Modified Altman (1968) z-Score as described in Hillegeist, Keating, Cram, and Lundstedt (2004) as of both the sample year and base year. We also include Book Leverage as of the sample year. Finally, we include calendar Base Year as a trend variable (not reported in Table 3). The trend is included to control for the secular increase in institutional holdings over our period of analysis.

For some observations, we are unable to find data on institutional holdings or some of the performance metrics. Dropping these reduces the underperformer sample to 491 and the overperformer sample to 495. Table 4 shows mean and median performance statistics by outcome for the under- and overperformer samples. Of the underperformers, 27.1% fail during the study period and 21.0% are acquired. Only 1.8% of overperformers fail but 19.6% are acquired, similar to the underperformer sample.

In the underperformer sample, based on study period information up to the delisting year, failed firms have very negative mean and median abnormal returns and very negative ROAs, but inverse Tobin's Q statistics are similar to those of other underperformers. Among underperformers, acquired firms post the least negative abnormal returns but still have negative ROA statistics. The ROA statistics of surviving firms show the greatest improvement relative to the sample period, but mean and median abnormal returns are still quite negative. With respect to ROA and inverse Tobin's Q, the study period statistics are consistently worse for firms that underperformed during the sample period than those of overperformers. Abnormal return statistics are also more negative than for overperformers, except for the small number of overperformers that fail, where the study period abnormal return is quite negative.

In Table 5, we present time-series summary statistics for the firm performance and institutional ownership variables. As shown, the study-period ROA, Inverse Tobin's Q, and Ln Abnormal Returns are

consistently worse on average for underperformers than for overperformers. Because we selected the samples based on ROA in the sample period, this is not unexpected; however, we also find a systematic difference in abnormal returns between under- and overperformers, which is puzzling because it may imply predictability. Campbell, Hilscher, and Szilagyi (2008) also find anomalous returns for their sample of financially distressed firms, and attribute the finding, in part, to reduced holdings by institutional investors. Finally, failure probabilities are consistently higher for underperformers and the number of overperformers that fail is quite low, whereas acquisition probabilities are similar between the two samples.

Consistent with the well-known trend toward institutionalization of money management, the percentages of shares held by institutions are increasing secularly over the period. The pattern is similar for all types of institutions.

## V. Empirical Analysis

As a first indication of the relationships between institutional holdings and subsequent performance of underperformers, Panels (a) and (b) of Table 6 show base-year holdings and sample-period changes in holdings by institutional type for all underperformers and for underperformers that fail or are acquired during the study period or that survive the study period. For survivors, the table also shows those that achieve positive versus negative study-period abnormal returns. We include this breakdown of survivors to help assess whether some types of institutions can predict or contribute to improved performance or whether, among surviving underperformers, good performance appears to be more a result of good luck in the pursuit of a transformation. In addition to the list of institution types shown in Table 3, we include statistics for gray institutions and for short-term positions.

In Panel (c) of the table, we report the sample period change in holdings as a percentage of base-year holdings. Institutions materially reduce holdings of firms that subsequently fail. Noteworthy exceptions are activist hedge funds and institutional blockholders. The increase in holdings by hedge funds of firms that subsequently fail is mainly due to the overall growth of hedge funds - the 60.9% growth of holdings in failing firms is well below the 216.2% overall percentage change for this group. Blockholders, in

contrast appear to be less inclined than other types to reduce their holdings of firms that subsequently fail. The tendency of institutions to reduce holdings of failing firms is not materially different for independent institutions as opposed to gray, or for those with long-term as opposed to short-term holdings.

For the subsample of underperforming firms that are acquired during the study period the table shows varied institutional practices. Activist hedge funds dramatically increase their positions in these firms during the sample period. Activist pension funds, blockholder institutions, and institutions with short-term positions all also materially increase their holdings. In contrast, institutions that hold long-term positions tend to reduce their holdings of acquired firms, though not disproportionately to the overall decline in their percentage holdings.

Holdings of underperformers that survive through the study period increase for all institutional types except those with short-term positions. Even for that group, the decline is smaller than the overall percentage decline in short-term positions. For activist hedge funds, the percentage increase in holdings of survivors is less than their overall percentage increase, consistent with their focus on acquisition targets.

In our sample, two-thirds of surviving firms continue to earn negative abnormal returns during the study period. Thus, the group continues to underperform. Institutions appear to be able to anticipate which of the surviving firms will perform relatively well. During the sample period, all institutional types increase their holdings of survivors with positive study-period abnormal returns by substantially more than they do the holdings of survivors with negative study-period abnormal returns. This pattern may be attributed to flight to quality. Failure is somewhat predictable, and some survivors can be expected to fail after the end of the study period. Also, because, as Campbell et al. (2008) find, distressed firms earn negative abnormal returns, the relationship of institutional holdings to subsequent performance may arise from the distressed firm anomaly.

**Multivariate Analysis**

In the multivariate analysis, we summarize results for all institutions and for institutional types in separate tables. We analyze results using three methods: (1) a simple OLS specification where all control

variables are included, (2) an OLS specification with annual fixed effects where the annual sentiment and base year variables are necessarily dropped, and (3) a two-stage specification where we control for bias due to selective attrition. Bias from attrition (failure or acquisition) can arise because attrition is correlated with the performance metrics. Attrition bias in longitudinal studies can be addressed using inverse propensity score weighting similar to that suggested by Little and Rubin (1987) and McGuigan, et al. (1995).[7] Accordingly, in the first stage models, probabilities of attrition due to failure and acquisition are estimated and used to produce second-stage estimates that are not biased due to attrition. Thus, our second-stage models include two inverse mills ratios, one for failure probability and one for acquisition probability. In the second-stage models, we drop the z-score and book-leverage variables to identify the system.

For the binary Failure and Acquisition variables, the OLS specifications are linear probability models. For comparison to the OLS results, when we use logit to estimate the first-stage selective attrition models, we report partial effects. Because institutions can affect performance of all firms, not just survivors, both the OLS and the two-stage results can provide information. For example, anticipating some of our findings, institutional blockholdings are significantly negatively related to ROA in our OLS model but the relationship weakens in the attrition model (Table 11). Thus, we infer that the relationship in the OLS model is largely due to blockholder positions in firms that subsequently fail or are acquired. Since most other studies do not control for attrition, their samples are conditioned on survival through completion of their study periods. Hence, interpretation may be confounded by not taking account of attrition.

**Results for All Institutions**

Table 7 shows the underperformer results for all institutions. We first report the complete OLS specification. For each model we include, as the first two variables, the base-year level of percentage holdings by all institutions and the change in holdings over the sample period. To test the significance of total institutional holdings as of the end of the sample period, we also report a Wald test of the sum of base-year holdings plus change in holdings during the sample period. Because the control variable

[7] See also Goodman and Blum (1996), and Heckman (1976).

coefficients in the OLS fixed effects and attrition models are similar to those in the OLS model, we report only the coefficients on institutional holdings and the Wald tests.

The pattern of results in Table 7 is consistent with the Wall Street Walk – overall, institutional investors "vote with their feet." We find that this manifests as a flight to quality - institutions hold low base-year positions in firms that eventually fail, and reduce their holdings during the sample period. Total holdings as of the sample year are also significantly negatively related to subsequent failure (Wald test). These results hold in all three specifications. Coefficients in the outcomes models (failure and acquisition) are similar in both OLS specifications and in the logit models. Based on the logit model estimates of partial effects in Panel (c), a one standard deviation (22.6 percentage point) decrease in institutional holdings at the start of the study period is associated with a 12.2 percentage point higher probability of failure during the study period. The pattern is consistent with such common institutional practices of selling stocks that trade at prices below $5 per share, stocks that are traded in the pink-sheets, and stocks of firms that have discontinued dividends or have negative book equity. Our acquisition results complement Chen, et al. (2007), since we find little indication of a significant relationship between total institutional holdings of underperformers and subsequent acquisition.

The table also shows that firms with higher and increasing institutional holdings have higher abnormal returns in the study period, particularly in the second-stage attrition models (where only firms that survive the study period are included). While the coefficient estimates are positive, surviving firms still underperform, realizing an average continuously-compounded five-year market-adjusted return of -56.7%. This compares to the overall average of -77.9% shown in Table 4 for the full underperformer sample. The marginal relationship between institutional holdings and abnormal returns implies that a one standard deviation increase in institutional holdings of survivors at the start of the study period is associated with a 47.2 percentage point improvement in abnormal returns. While the relationship seems to suggest that institutions can affect performance, it more accurately reflects a flight to quality. Apparently, institutions improve their returns partly by selling firms that subsequently fail to non-institutions, who realize even

lower abnormal returns. Some of the underperforming firms in the survivor sample will have produced results that foreshadow a high probability of failure and cause institutions to reduce their holdings.

Other indications that institutional trading of underperformers reflects a flight to quality are that institutional holdings are positively related to ROA, especially in the attrition model (a one-standard deviation increase in holdings is associated with a 2.7 percentage point higher average annual ROA over the ensuing five years), and negatively related to Inverse Tobin's Q (a one-standard deviation increase in holdings is associated with a 0.073 decrease in inverse Q).

The Table 7 results could indicate either that institutions affect subsequent performance or that they simply predict changes in performance and adjust their portfolios in pursuit of better statistics. Even after controlling for the factors that we include in our models, it should be possible for institutions to predict changes in book assets and earnings, so that ROA and Q are partly forecastable. It is less clear that they should be able to identify underperformers that do better in terms of abnormal stock returns. However, the fact that surviving underperformers still realize sub-normal returns suggests that institutions, overall, are not causing performance to improve. Rather, they appear to be exiting especially poorly-performing firms, which tend to earn low subsequent abnormal returns. The low returns for those firms are consistent with the finding of Campbell, et al. (2008), of an anomaly associated with distressed firms whereby investors in those firms realize negative abnormal returns. They reason that when institutions exit from distressed firms, individual investors with behavioral biases or preference for skewness can drive the price up, and that arbitrage possibilities to discipline the overvaluation are limited because low institutional holdings restrict the supply of shares available for shorting.

Table 8 is identical to Table 7, but is focused on the sample of overperforming firms. The results are weaker, but again align with the flight-to-quality interpretation. A one standard deviation (24.9 percentage point) increase in institutional holdings is associated with a 2.7 percentage point lower probability of failure in the overperformer sample (based on the Panel (c) estimates), and other relationships are not statistically significant. With few failing firms in this sample, there is no significant

evidence of relationships to the performance metrics. The difference between results for under- and overperforming firms illustrates that findings are sensitive to sample composition. The findings in previous studies of positive relationships to subsequent abnormal returns, ROA, or Tobin's Q could all be due to the same underlying phenomenon--a flight to quality combined with the distressed firm anomaly.

Flight-to-quality has a bright side for the question of whether institutions contribute to asset redeployment. Many institutions hold both debt and equity. Funded debt is normally held mainly by institutions and debt of underperforming firms is harder to sell than is equity. When an institution holds only equity, agency cost implies that the institution can be expected to resist liquidation; whereas if it holds only debt, it is likely to press for liquidation or reorganization. Accordingly, divestiture of equity positions by institutions appears to facilitate asset redeployment. The results represent a corollary to the findings of Massa and Rehman (2008), who study mutual fund families and show that the funds condition their equity investment activities on the lending decisions of affiliated lenders.[8]

**Results by Institutional Type**

***Activist Pension Funds***

Models examining the roles of various types of institutions are structured to enable us to test a variety of hypotheses. In each case, we include the same All Institutions variables as in Tables 7 and 8, and add two variables for the institution type of interest (activist pension funds in this subsection). The first variable takes on the value of the base-year percentage holdings if the institution is an activist pension fund and zero otherwise. The second takes on the percentage change if the institution is an activist pension fund and zero otherwise. The coefficients on these variables enable us to test whether activist pension funds are significantly different from other institutions during the sample period. With this structure, the coefficients on the All Institutions variables measure the effects for all institutions except for the differential effect of activist pension funds.

The Wald tests in the tables test whether the summed totals of selected coefficients are significantly different from zero. Summing the base year and change coefficients for All Institutions enables

[8] See also Jiang, Li, and Shao (2011) who study dual holdings of debt and equity by institutions.

us to test whether an outcome or performance variable is significantly related to total holdings of all institutions other than activist pension funds. Summing the base year and change for activist pension funds enables us to test whether the total holdings of activist pension funds have a significantly different effect on subsequent performance than the total holdings of other institutions. Summing the two base year coefficients yields a test of whether the total base-year holdings of activist pension funds has a significant effect on subsequent outcomes or performance. Summing the two change coefficients yields a test of whether the change in activist holdings has a significant effect on outcomes or performance. Summing all four coefficients enables us to test whether the total effect of activist pension funds is significantly related to subsequent outcomes or performance.

In Table 9 (and in similar tables for other investor groups) we suppress reporting fixed-effect results, as they are not materially different from the OLS results without fixed effects. We also suppress reporting the results for all control variables, which results are similar to those in the earlier tables. Underperformer results for OLS and two-stage attrition models are reported in Panel (a) and parallel overperformer results are reported in Panel (b).

Following the literature discussed above, we test the hypothesis that activist pension fund holdings are significantly related to subsequent outcomes and performance. For our underperformer sample, we find, as do others who sample in different ways, that holdings by these institutions are not significantly related to subsequent outcomes or performance.

Results in the table suggest that activist pension funds are not effective at improving firm performance. For underperformers, with respect to both failure and acquisition, the coefficients for activist pension funds are not significantly different from those for other institutions or from zero (Wald test). Although the Activist Pension Fund Total relationship to failure is similar in magnitude to the All Institutions Total, the summed coefficient in the attrition model is not statistically significant. There is weak evidence in the OLS results (significant at the 10 percent level in one-tailed tests), that activist pension funds have larger positions and/or increase their positions of underperformers that subsequently achieve low

Abnormal Returns, low ROA, and high Inverse Tobin's Q (low Q). Moreover, while we find a significant positive relationship to subsequent abnormal returns for the All Institutions Total, similar to the result in Table 7, the relationship between the Activist Pension Fund Total and abnormal returns is negative. The pattern is similar and stronger for overperformers, where, in the OLS models, activist pension funds hold larger positions and increase positions in firms that subsequently produce low Abnormal Returns and ROA.

Our findings that activist pension fund holdings are negatively related to subsequent long-run performance contrasts with the review of evidence on traditional activism by Gillan and Starks (2007), who conclude that there is little evidence of any relationship between traditional activism and long-run performance. Our findings suggest that activist pension funds are more likely than other institutions to hold on to poorly performing firms. Relationships between total holdings of activist pension funds are either negative and significant or not significant.

The most obvious implication of our evidence is that the governance initiatives of activist pension funds do not materially affect performance. It seems unlikely that such investors would actually cause subsequent performance to be more negative. Consistent with arguments made by Pound (1988), Gordon and Pound (1993), Black (1992), and Woidtke (2002), they may just be more willing than others to hang on to firms that begin to build records of poor performance, may be overconfident of their ability to bring about positive change, or the managers of such funds may be more interested in the publicity that comes from activism than in producing positive performance for investors.

***Activist Hedge Funds***

Based on Clifford (2008), Klein and Zur (2009), and Greenwood and Schor (2009), we hypothesize that activist hedge funds will be more effective than traditional activists at facilitating asset redeployment through takeover. Consistent with Greenwood and Schor, for both under- and overperformers, we find, in Table 10, that activist hedge fund holdings increase significantly for firms that are subsequently acquired. For underperformers, the increase in holdings during the sample period partially reverses a significantly low level of base-year holdings. For overperformers both base-year holdings and the change are significantly

related to acquisition. A one-standard deviation change (2.0 percentage points) in holdings is associated with a 12.9 percentage point higher probability of acquisition during the study period in the overperformer logit model, and a 2.5 percentage point increase in the probability of acquisition in the underperformer sample. The difference in base year results between under- and overperformers may be due to the rapid growth of activist hedge funds during the period of our study. [9]

Consistent with Klein and Zur, activist hedge fund ownership is negatively related to the subsequent ROA. This is particularly the case for overperformers, which group, according to Klein and Zur and supported by our data, is more the focus of activist hedge funds. Since, in the attrition model, ROA is only observed for firms that survive the study period, a reasonable interpretation is that the survivors in which activist hedge funds tended to invest may have been acquisition bets that were not successful during the study period. In conjunction with the acquisition results, the evidence points to an incentive for activist hedge funds to encourage takeover, rather than just making passive bets. Results for other performance metrics are generally not significant.

***Institutional Blockholders***

Following Hartzell and Starks (2003) and Chen, et al. (2007), we study the relationships of institutional blockholders to subsequent firm performance using both the top 1 and top 5 institutional blockholders, which we ascertain from 13F filings, as do Hartzell and Starks. Results are similar for both measures and are driven mainly by the holdings of the top 1. We report the results for the top 1 blockholder in Table 11 and comment on the top 5 whenever material differences are apparent.[10]

Economic theory argues that independent blockholders should be more effective monitors than other institutions; however, agency cost considerations can also cause blockholding to contribute to greater entrenchment. Our evidence suggests that blockholders are not a homogenous group. Some may be activist hedge funds, who seek change; others, as observed by Gordon and Pound (1993), may tend to side with management.

[9] Clifford (2008) notes that the hedge fund industry has more than doubled, in both the number of funds and assets under management since 2000, and that approximately 4% of the industry is dedicated to activism.

[10] Results for the top 5 institutional blockholders are provided in Appendix A.

Especially for the underperformer sample, both base-year holdings and the sample period change in holdings of the top 1 institutional blockholder are significantly positively related to the probability of failure during the study period. In the logit model, a one-standard deviation (7.0 percentage point) increase in holdings of the top 1 is associated with a 5.5 percentage point higher probability of failure during the study period. This compares to a 23.6 percentage point lower probability of failure for all but the top 1 institutional blockholder. Apparently, blockholders are less likely to sell underperforming firms that subsequently fail. While, as shown in Table 6, other institutions materially reduce holdings of poorly performing firms, the top blockholder does not. We do not know whether blockholders of failing firms simply hold their positions, riding along with management as the ship goes down, or if they actively seek liquidation. Results for the top 5 are similar but weaker and appear to be driven mainly by the top 1.

The acquisition results for institutional blockholders suggest that they actively foster asset redeployment of underperforming firms. We find that blockholdings of the top institution are positively related to acquisition probability for underperformers but negatively related for overperformers. In the underperformer sample, holdings of institutions other than the top 1 blockholder are negatively related to acquisition but not significantly so. The relationship for the top institution is significantly more positive and, in contrast to the failure result, total holdings of top institution are significantly related to acquisition. In the logit specification, a one standard deviation increase in the holdings of the top 1 is associated with a 5.5 percentage point increase in acquisition probability. For overperformers, the relationship is reversed. A one standard deviation (5.5 percentage point) increase in holdings is associated with a 7.3 percentage point reduction in acquisition probability. If acquisition tends to be good for underperformers and bad for overperformers, which seems likely, then it appears that blockholders contribute to efficient redeployment. For underperformers, while blockholders may impede failure, they may facilitate acquisition as an alternative to failure. A contrast such as this would not be observable in a study that did not distinguish between under- and overperformers. Results for the top 5 blockholders are similar.

Except for the ROA of underperformers, relationships to performance metrics are generally not statistically significant. The direction of the relationship is similar to what we find for activist hedge funds, but stronger in the underperformer sample, where hedge fund holdings are limited. The overall pattern in the underperformer sample is consistent for both the top 1 and top 5 institutions.

Overall, it appears that institutional blockholders play different roles in failures and acquisitions than do other institutions. Whereas selling by institutions that also hold debt positions can help to resolve stockholder-creditor conflict, it appears that blockholders may impede bankruptcy and liquidation but facilitate acquisition, possibly as an alternative to bankruptcy.

***Independent and Gray Institutions***

Table 12 shows results for independent and gray institutions.[11] As our models are structured, the coefficients on the two "All Institutions" variables measure the relationships to performance variables for gray institutions and the two "Independent Institutions" variables measure the differences in performance relationships between independent and gray institutions.

For the underperformer sample, we find almost no significant relationships to outcome or performance variables and no significant differences between gray and independent institutions. The only exceptions are that both institution types hold significantly lower holdings of underperforming firms that subsequently fail, and, consistent with Jiao and Liu (2008), total holdings of independent institutions is positively related to abnormal returns in the second-stage attrition model. The overall results are weak, but, for both types, they are consistent with the flight to quality we observed for all investors.

For overperformers, based on few observations of failure, we find that gray institutions significantly reduce holdings and have lower total holdings of overperforming firms that subsequently fail, whereas independent institutions do not. Consistent with entrenchment, we also find that gray institutions hold low positions in firms that subsequently are acquired, whereas independent institutions do not.

***Short-term and Long-term Institutional Holdings***

[11] Chen, et al. (2007) note that the pension fund, endowment, and foundation category may include both gray and independent investors. As we find no material difference between this group and the others that are classified as gray, we include it with that group.

The literature offers two competing hypotheses as to the roles of short-term and long-term investors. Long-term investors may have greater incentive to monitor and short-term investors may encourage myopia, however the threat of exit by short-term investors can also discipline management to focus on long-run value.

Table 13 shows results for institutions that hold substantial positions for at least 5 quarters of 13F reporting (a minimum interval of just over one year), compared to institutions that exit positions in less than 5 quarters (a maximum of just under 5 quarters). The approach is similar to that of Chen, et al. (2007) in their definition of long-term investors. The coefficients on the two "All Institutions" variables measure the relationships to performance variables for short-term positions and the two "Long-term Institutions" variables measure differences in performance relationships between long- and short-term holdings.

Our evidence is consistent with a positive role for short-term institutional holdings. For the underperformer sample, institutions with short-term positions hold low positions and reduce their positions in firms that subsequently fail and hold larger positions and increase their positions in firms that subsequently are acquired. A one-standard deviation (11.5 percentage point) increase in short-term holdings is associated with a 6.5 percentage point reduction in failure probability in the logit specification. Similarly to the results for all investors in Table 7, their investment positions in underperformers are positively related to subsequent abnormal returns and ROA and negatively related to inverse Tobin's Q. As noted, because underperformers earn negative abnormal returns on average, the positive relationship to subsequent returns does not mean that institutions with short-term positions can, on average, outperform the market. Conversely to the results for underperformers, we find weak evidence (0.10 level in one-tailed test) that institutions reduce short-term holdings of overperformers before acquisitions. For overperformers, relationships to performance metrics are not statistically significant.

Our main finding for long-term holdings is that, except for exiting failing firms, they are, in fact, passive. For the underperformer sample, the directional results for short-term positions are essentially reversed in long-term positions so that for long-term positions there are no significant changes or total

holdings relationships to acquisition. We observe similarly nullifying reversals for abnormal returns, ROA, and inverse Tobin's Q.

Overall, our evidence suggests that active trading may help enable asset redeployment by reducing stockholder-creditor conflict in firms that are threatened with failure and by consolidating shares of underperforming firms that are potential acquisition targets. Because all of our measures are over five years, the relationships are long-term, inconsistent with the view that active trading by institutions encourages myopia. The results are consistent with the theoretical argument of Admati and Pfleiderer (2009) and the empirical analysis of Almazan, Hartzell, and Starks (2005). There is less evidence of an important role for active institutions in the overperformer sample.

## VI. Discussion and Conclusions

In well-functioning markets for real assets and capital, the competitive process drives assets to highest-valued use. Firm failure and acquisition are important aspects of asset redeployment, as is the migration of existing firms from obsolescing activities into emerging ones. In this paper, we study the roles of institutional investors in asset redeployment through their holdings of firms that subsequently fail or are acquired, and through the relationships between holdings and the subsequent performance of firms in which they invest.

Our methodology is distinguished from other studies of the roles of institutional investors in four respects. First, we recognize that institutions can play different roles as investors in firms that are doing well as opposed to those that are not. Studies that aggregate firms with good and bad prior performance or that employ linear controls for performance may obscure the evidence on the roles of institutions. Likewise, if the monitoring role of institutions is more effective for firms that have been performing poorly, sampling approaches that are focused on historically good firms may fail to detect important institutional relationships. Second, studies that consider only aggregate institutional holdings may fail to detect important roles of different types vary in how they seek to create value for investors; and studies that focus on only one or two types of institutions can be prone to misinterpretation of the evidence they find. Third,

empirical results can be affected by conditioning. Most importantly, longitudinal studies can produce biased results if the measures of long-run performance after institutional targeting do not control for attrition through failure and acquisition. Fourth, in addition to the standard measures of performance, it is important to recognize that some types of institutions may play important roles in fostering asset redeployment through failure and acquisition of companies.

Taking account of these four points, we focus on chronically underperforming firms, those where monitoring by institutions has the most potential to create value, and we contrast results for this sample against those for consistently overperforming firms. We study the roles of institutions in aggregate for each sample and we examine seven different institutional types: activist pension funds, activist hedge funds, blockholder institutions, independent institutions as distinct from gray institutions, and institutions with long-term holdings as distinct from those with short-term holdings. In each case, we estimate relationships between institutional holdings and three outcome measures over a five-year study period (failure, acquisition, and survival) and three standard performance metrics over the study period (abnormal returns, return on assets, and Tobin's Q). With respect to the performance metrics, we estimate and contrast results with and without controlling for bias due to attrition.

Overall, institutions reduce their positions in chronically underperforming firms that subsequently fail and we find similar, but weaker, results for overperforming firms. In the underperformer sample, this flight to quality appears to also account for significant relationships between institutional holdings and subsequent abnormal returns, return on assets, and Tobin's Q. While the relationships are all positive in the underperformer sample, the surviving firms continue to underperform with regard to each metric. Thus, for aggregate institutional holdings, there is little evidence of a direct causal relationship between institutional holdings and the subsequent performance of surviving firms.

We find the following for institutional types:

- Activist pension funds do not significantly improve performance of firms in which they invest. In fact, there is some evidence that holdings are negatively related to performance.

- Activist hedge funds tend not to invest in underperforming firms, but do increase holdings in firms that are subsequently acquired. In the overperformer sample, their holdings are strongly positively related to the probability of subsequent acquisition but negatively related to return on assets of the firms that survive the study period. The survivors with high hedge fund holdings may reflect failed attempts to foster acquisition or cases where the acquisition has yet to occur.
- Blockholder institutions are not a homogeneous group. Some maintain large positions in firms that subsequently fail, appearing to entrench management. In other cases, large holdings by blockholders are positively related to subsequent acquisition in the underperformer sample and negatively related in the overperformer sample. The results suggest that blockholders facilitate asset redeployment of underperforming firms but are resistant to acquisition of firms that are doing well.
- We find little difference between independent institutions and gray institutions. Both exhibit the flight-to-quality pattern, reducing positions in underperforming firms that subsequently fail. In contrast to gray institutions, independent institutions achieve higher abnormal returns on their investments in surviving underperformers.
- Short-term institutional holdings exhibit strong evidence consistent with flight-to-quality, in the underperformer sample, including positive relationships between holdings and all performance metrics of surviving firms. Long-term institutional holdings are also negatively related to the probability of failure, but without significant relationships to performance metrics.

Four overarching themes emerge from the analysis: First, the evidence, coupled with the finding of Campbell, et al (2008) that distressed firms earn subnormal returns, suggests that the findings of positive relationships of institutional holdings to long-run abnormal returns, return on assets, and Tobin's Q that have been reported in some other studies mainly arise from the underperformers in the data, and are all manifestations of the flight to quality where institutions reduce their holdings as the probability of failure increases. Thus, we cannot reliably infer from those studies that higher institutional holdings are causally related to subsequent positive performance.

Second, there is a positive side to institutional selling of equity in firms that chronically underperform. When institutions that hold both debt and equity of a firm reduce their equity positions by selling to individuals, they reduce internal stockholder-creditor conflicts, putting them in better position to encourage asset redeployment through liquidation or reorganization. This potentially important indirect effect of institutional selling is not normally discussed in the literature and appears to be a promising avenue for research.

Third, estimated relationships between institutional holdings and long-term performance measures are sometimes importantly affected by controlling for bias related to attrition. Studies that require firms to survive for several years after targeting events and do not condition for attrition, or that do not explore the probabilities of failure and acquisition after targeting, may not produce reliable results.

Fourth, much of our evidence suggests that the "Wall Street Walk" can facilitate asset redeployment through failure. Beyond this, our most compelling evidence that institutions can affect performance is related to activist hedge funds and blockholder institutions. The evidence suggests that institutions that can take large targeted positions have the greatest potential to effectively monitor performance through direct influence.

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Table 1

# Sample Construction

To be included in the underperformer sample, a firm must (1) be a non-financial firm, (2) have complete Compustat data on total assets and earnings before interest and taxes for a continuous six-year period, (2) be in the upper half of Compustat firm size based on total assets, sales, or employees, and (3) not be in the bottom quintile of return on assets (ROA = EBIT/Assets) in year *t-1*, but be in the bottom quintile in each year, *t* through *t+4*, where *t* is the "base year". Requirements for being in the overperformer sample are parallel (the firm must not be in the top quintile of ROA in year *t-1* but in the top quintile in each year, *t* though *t+4)*. The expected number in the quintile is calculated based on the probability of not being in a given quintile in year t and then being in that quintile each of the next five years, assuming that the realized ROA quintile each year is independent of each other year.

| | | **Complete Data Universe** | **Large Firm Universe** | **Underperformers** | | **Overperformers** | | **Independence Test** |
|---|---|---|---|---|---|---|---|---|
| Base Year | Non-financial firms on Compustat in Base Year | Firms with Total Assets and EBIT Reported for All Six Years | Firms with Base-year Assets, Sales, or Employees Above Median | No. of Firms | Pct. of Firms | No. of Firms | Pct. of Firms | Expected Number in Quintile if Annual Quintile Assignments are Independent |
| 1978 | 5214 | 3028 | 1821 | 7 | 1.3% | 16 | 3.2% | 0.47 |
| 1979 | 5506 | 2992 | 1786 | 24 | 4.6% | 14 | 2.8% | 0.46 |
| 1980 | 6201 | 2901 | 1718 | 19 | 3.6% | 12 | 2.4% | 0.44 |
| 1981 | 6432 | 2867 | 1700 | 22 | 4.2% | 15 | 3.0% | 0.44 |
| 1982 | 6818 | 2905 | 1717 | 26 | 5.0% | 24 | 4.7% | 0.44 |
| 1983 | 7215 | 2846 | 1692 | 27 | 5.2% | 19 | 3.7% | 0.43 |
| 1984 | 7359 | 2982 | 1760 | 23 | 4.4% | 9 | 1.8% | 0.45 |
| 1985 | 7358 | 3050 | 1802 | 20 | 3.8% | 21 | 4.1% | 0.46 |
| 1986 | 7234 | 3055 | 1831 | 17 | 3.3% | 17 | 3.4% | 0.47 |
| 1987 | 7188 | 3267 | 1930 | 19 | 3.6% | 18 | 3.6% | 0.49 |
| 1988 | 7315 | 3409 | 2004 | 25 | 4.8% | 18 | 3.6% | 0.51 |
| 1989 | 7513 | 3475 | 2073 | 26 | 5.0% | 29 | 5.7% | 0.53 |
| 1990 | 7725 | 3502 | 2105 | 23 | 4.4% | 20 | 3.9% | 0.54 |
| 1991 | 7982 | 3509 | 2109 | 22 | 4.2% | 22 | 4.3% | 0.54 |
| 1992 | 8550 | 3594 | 2135 | 18 | 3.4% | 24 | 4.7% | 0.55 |
| 1993 | 8825 | 3709 | 2200 | 23 | 4.4% | 20 | 3.9% | 0.56 |
| 1994 | 9033 | 3821 | 2279 | 26 | 5.0% | 18 | 3.6% | 0.58 |
| 1995 | 9260 | 3939 | 2370 | 12 | 2.3% | 21 | 4.1% | 0.61 |
| 1996 | 9457 | 3879 | 2353 | 22 | 4.2% | 26 | 5.1% | 0.60 |
| 1997 | 9219 | 4053 | 2471 | 15 | 2.9% | 22 | 4.3% | 0.63 |
| 1998 | 8797 | 4179 | 2546 | 23 | 4.4% | 28 | 5.5% | 0.65 |
| 1999 | 8200 | 4211 | 2573 | 28 | 5.4% | 37 | 7.3% | 0.66 |
| 2000 | 7934 | 4074 | 2501 | 23 | 4.4% | 19 | 3.7% | 0.64 |
| 2001 | 7471 | 4818 | 2467 | 32 | 6.1% | 38 | 7.5% | 0.63 |
| **Total** | | | | **522** | | **507** | | |

Table 2

# Industry Composition of Samples

The table shows industries with at least 10 observations in the underperformer or overperformer sample based on the 4-digit SIC code of the firm in the base year, and total number of industries in sample.

| | | Underperformers | | Overperformers | |
|---|---|---|---|---|---|
| **SIC Code** | **Industry Description** | **No.** | **Pct.** | **No.** | **Pct.** |
| 1040 | Gold and Silver Mining | 17 | 3.3% | 0 | 0.0% |
| 1311 | Crude Petroleum and Natural Gas | 22 | 4.2% | 6 | 1.2% |
| 1381 | Drilling Oil and Gas Wells | 11 | 2.1% | 0 | 0.0% |
| 2834 | Pharmaceutical Preparations | 2 | 0.4% | 22 | 4.3% |
| 3312 | Steel Works and Blast Furnaces | 11 | 2.1% | 0 | 0.0% |
| 3576 | Communications Equipment | 12 | 2.3% | 2 | 0.4% |
| 3663 | Radio and TV Broadcasting | 11 | 2.1% | 0 | 0.0% |
| 3674 | Semiconductors and Related Devices | 23 | 4.4% | 7 | 1.4% |
| 4512 | Air transport, Scheduled | 11 | 2.1% | 3 | 0.6% |
| 5812 | Eating Places | 11 | 2.1% | 18 | 3.6% |
| 7370 | Computer Programming, Data Processing | 12 | 2.3% | 4 | 0.8% |
| 7372 | Prepackaged Software | 16 | 3.1% | 13 | 2.6% |
| | Total number of industries in sample | 201 | | 198 | |

**Exemplars by Base Year**

Underperformers: Pabst (1978), Continental Airlines (1979), American Motors (1980), Bethlehem Steel (1980, 1990), Homestake Mining and Refining (1981, 1996), Deere & Co (1982), Tidewater (1983), Tesoro (1984), Advance Micro Devices (1985), American Ship Building (1986), Sprouse-Reitz Stores (1987), Winnebago Industries (1988), US Airways (1989), Orion Pictures (1990), Fairchild (1991), Comcast (1992), Time Warner (1993, 2001), Pope & Talbot (1994), Coram Healthcare (1995), LTV (1989, 1996), Silicon Graphics (1997), Safeguard Scientific (1979, 1985, 1998), 3COM (1999), Gemstar TV Guide (2000), Northwest Airlines (2001).

Overperformers: Hershey (1978, 1989), Standard Oil (1979), Wal-Mart Stores (1980), Lockheed Martin (1981), Pfizer (1982, 1992), New York Times (1983, 1998), Sealed Air (1984), Apple Computer (1985), Home Depot (1986, 1993), Gerber Products (1980, 1987), Intel (1988), Mattel (1989, 2001), Kroger (1990), Bard (C. R.) (1981, 1991, 1998), HBO (1992), Compaq Computers (1985, 1993), Dell (1994), Proctor & Gamble (1995), May Department Stores (1996), Mohawk Industries (1987), Coca-Cola (1998), PepsiCo (1999), Occidental Petroleum (2000), Toll Brothers (2001).

Table 3

# Summary Statistics for Under- and Overperformer Samples

Based on 522 chronically underperforming and 507 consistently overperforming large firms with first under- or overperformance years of 1978 through 2001. Chronic underperformance means that the firm was in the bottom quintile of large firms for ROA each year of a five-year "sample period". Consistent overperformance is defined analogously. Performance is measured over the ensuing five-year "study period." A firm is classified as Failed or Acquired during the study period if it was delisted on CRSP or deleted from Compustat during the study period and concurrently or subsequently filed for bankruptcy or was acquired. Abnormal returns are expressed in natural logs and are market-adjusted using the equal-weighted market index. Inverse Tobin's Q is measured as book assets/(market equity + book debt). Institutional holdings are reported as of the "base year" (the start of the sample period) and as of the "sample year" (the last year of the sample period). Holdings data are from quarterly 13F filings. Institutional types are defined in the text. Diversification is measured as the number of NAICS codes reported by the firm. Investor sentiment is measured as in Baker and Wurgler (2000). The modified Altman z-score is measured as in Hillegeist, et al. (2004). Book leverage is (1 - Book Equity)/Total Assets.

| | **Underperformers** | | | | **Overperformers** | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Median | Skew | Mean | Std. Dev. | Median | Skew |
| **Outcomes and Performance Metrics** | | | | | | | | |
| Failed During Study Period | 28.4% | 45.1% | 0.0 | 0.96 | 2.2% | 14.6% | 0 | 6.59 |
| Acquired During Study Period | 20.1% | 40.1% | 0.0 | 1.50 | 20.1% | 40.1% | 0 | 1.50 |
| Study Period Ln Abnormal Return | -0.763 | 1.310 | -0.546 | -0.85 | -0.172 | 0.824 | -0.091 | -1.35 |
| Study Period ROA | -9.1% | 58.3% | -0.3% | -14.21 | 15.5% | 7.7% | 15.5% | -0.07 |
| Study Period Inverse Tobin's Q | 0.875 | 0.422 | 0.861 | 2.24 | 0.566 | 0.274 | 0.510 | 1.82 |
| **Institutional Holdings** | | | | | | | | |
| All Institutions - Base Year | 25.6% | 21.3% | 21.9% | 0.84 | 43.6% | 24.8% | 45.7% | -0.03 |
| All Institutions - Sample Year | 25.5% | 22.7% | 19.7% | 0.98 | 52.2% | 25.1% | 54.6% | -0.23 |
| Activist Pension Funds - Base Year | 1.1% | 2.5% | 0.0% | 3.40 | 1.4% | 1.8% | 0.6% | 1.96 |
| Activist Pension Funds - Sample Year | 1.2% | 3.1% | 0.1% | 4.11 | 1.9% | 1.7% | 1.9% | 1.54 |
| Activist Hedge Funds - Base Year | 0.2% | 0.6% | 0.0% | 6.74 | 0.4% | 1.6% | 0.0% | 9.12 |
| Activist Hedge Funds - Sample Year | 0.5% | 2.0% | 0.0% | 6.87 | 0.5% | 2.2% | 0.0% | 11.01 |
| Top 1 Institutional Blockholder - Base Year | 6.6% | 5.8% | 5.3% | 2.17 | 7.6% | 6.5% | 6.3% | 4.62 |
| Top 1 Institutional Blockholder - Sample Year | 7.4% | 6.9% | 5.7% | 2.33 | 7.6% | 5.4% | 6.4% | 2.04 |
| Top 5 Institutional Blockholders - Base Year | 15.8% | 11.8% | 14.4% | 0.69 | 19.3% | 10.8% | 19.0% | 0.83 |
| Top 5 Institutional Blockholders - Sample Year | 16.8% | 13.3% | 15.1% | 0.86 | 20.8% | 10.8% | 20.1% | 0.55 |
| Independent Institutions - Base Year | 16.9% | 16.3% | 12.7% | 1.23 | 28.4% | 20.1% | 24.7% | 0.56 |
| Independent Institutions - Sample Year | 16.8% | 16.1% | 12.6% | 1.09 | 33.4% | 20.0% | 31.8% | 0.30 |
| Long-term Inst. Holdings - Base Year | 15.4% | 16.9% | 10.0% | 1.25 | 26.5% | 21.2% | 24.4% | 0.40 |
| Long-term Inst. Holdings - Sample Year | 16.8% | 18.0% | 11.2% | 1.21 | 37.9% | 22.0% | 38.6% | 0.07 |
| **Controls** | | | | | | | | |
| Sample Year Abnormal Return (Ln) | -1.841 | 1.237 | -1.696 | -0.41 | 0.606 | 0.773 | 0.511 | 0.61 |
| Sample Year ROA | -10.0% | 26.2% | -3.5% | -7.75 | 19.6% | 6.1% | 18.1% | 3.91 |
| Sample Year Inverse Tobin's Q | 0.947 | 0.484 | 0.940 | 4.64 | 0.479 | 0.201 | 0.469 | 0.91 |
| Base Year Total Assets | 1578.6 | 11652.2 | 217.9 | 18.16 | 1639.1 | 4388.7 | 367.6 | 6.91 |
| Sample Year Total Assets | 1611.9 | 12967.3 | 145.2 | 18.01 | 2595.7 | 6647.5 | 688.4 | 7.69 |
| Sample Year Diversification (NAICS) | 2.03 | 1.38 | 1 | 1.73 | 2.02 | 1.39 | 1 | 1.31 |
| Base Year Investor Sentiment | 0.43739 | 0.713751 | 0.38 | 0.30 | 0.33887 | 0.688096 | 0.15 | 0.37 |
| Sample Year Investor Sentiment | 0.13996 | 0.646501 | -0.1 | 1.06 | 0.15352 | 0.68677 | -0.1 | 0.93 |
| Base Year Modified z-Score | 0.0095 | 0.0040 | 0.0110 | -0.91 | 0.0069 | 0.0033 | 0.0073 | -0.29 |
| Sample Year Modified z-Score | 0.0102 | 0.0037 | 0.0114 | -1.10 | 0.0055 | 0.0033 | 0.0057 | 0.04 |
| Sample Year Book Leverage | 6.56 | 30.09 | 1.44 | 10.18 | 0.38 | 0.78 | 0.25 | 8.97 |

Table 4

# Summary Performance Statistics by Outcome

Statistics are for all observations with institutional holdings data available, firms that failed during the study period, firms that were acquired during the sample period, and firms that survived the entire sample period. Failure and Acquisition are defined to occur as of the CRSP delisting date or Compustat deletion date. Natural log of abnormal returns and Inverse Tobin's Q are measured as of the end of the sample period and the last available year of the study period. Average ROA is the average annual EBIT to Total Assets percentage for all years of the sample period and all available years of the study period.

| | No. Obs. / Pct. Obs. | Sample Year Abnormal Returns (Ln) | Study Year Abnormal Returns (Ln) | Sample Period Average ROA | Study Period Average ROA | Sample Year Inverse Tobin's Q | Study Year Inverse Tobin's Q |
|---|---|---|---|---|---|---|---|
| **Underperformer Sample** | | | | | | | |
| All Obs. | 491 | -1.829 | -0.779 | -7.60% | -8.24% | 0.937 | 0.873 |
| | | *-1.691* | *-0.549* | *-4.57%* | *0.00%* | *0.984* | *0.944* |
| Failed | 133 | -2.486 | -1.644 | -10.47% | -25.90% | 0.925 | 0.843 |
| | *27.1%* | *-2.567* | *-1.608* | *-7.50%* | *-5.48%* | *0.981* | *0.913* |
| Acquired | 103 | -1.646 | -0.280 | -6.15% | -7.21% | 0.896 | 0.905 |
| | *21.0%* | *-1.557* | *-0.179* | *-4.01%* | *-0.56%* | *0.977* | *0.926* |
| Survived | 255 | -1.560 | -0.567 | -6.69% | -0.75% | 0.960 | 0.875 |
| | *51.9%* | *-1.358* | *-0.435* | *-2.76%* | *1.69%* | *0.984* | *0.972* |
| **Overperformer Sample** | | | | | | | |
| All Obs. | 495 | 0.618 | -0.173 | 19.53% | 15.40% | 0.476 | 0.563 |
| | | *0.514* | *-0.096* | *18.49%* | *15.46%* | *0.468* | *0.506* |
| Failed | 9 | 0.491 | -2.186 | 20.99% | 3.21% | 0.502 | 0.744 |
| | *1.8%* | *0.357* | *-2.567* | *20.01%* | *6.63%* | *0.520* | *0.698* |
| Acquired | 97 | 0.427 | -0.001 | 19.62% | 15.93% | 0.511 | 0.562 |
| | *19.6%* | *0.370* | *0.050* | *19.00%* | *15.13%* | *0.479* | *0.516* |
| Survived | 389 | 0.669 | -0.174 | 19.48% | 15.53% | 0.466 | 0.560 |
| | *78.6%* | *0.547* | *-0.129* | *18.40%* | *15.73%* | *0.463* | *0.504* |

Table 5

# Time-Series Summary Statistics on Firm Performance and Institutional Holdings

Based on 522 chronically underperforming and 507 consistently overperforming firms in terms of ROA. Sample period and study period statistics are simple averages for each interval of four base years, where each base year value is a simple average over all firms with that base year. Sample Year institutional holding statistics are simple averages as of the last year of the sample period.

| **Base Year** | **78-81** | **82-85** | **86-89** | **90-93** | **94-97** | **98-01** |
|---|---|---|---|---|---|---|
| **Underperformers** | | | | | | |
| ***Performance Metrics*** | | | | | | |
| Failed During Study Period | 9.8% | 21.4% | 30.2% | 31.2% | 40.0% | 33.3% |
| Acquired During Study Period | 17.3% | 17.6% | 14.5% | 24.9% | 19.9% | 21.8% |
| Sample Period Abnormal Return (Ln) | -1.446 | -1.817 | -1.867 | -1.592 | -1.697 | -2.331 |
| Study Period Abnormal Return (Ln) | -0.341 | -0.879 | -0.939 | -1.095 | -0.763 | -0.675 |
| Sample Period ROA | -2.6% | -9.2% | -9.1% | -5.2% | -7.3% | -14.4% |
| Study Period ROA | 0.6% | -6.8% | -23.5% | -3.9% | -8.5% | -7.0% |
| Sample Period Inverse Tobin's Q | 1.087 | 0.952 | 0.954 | 0.885 | 0.913 | 0.973 |
| Study Period Inverse Tobin's Q | 0.949 | 0.847 | 0.795 | 0.929 | 0.850 | 0.909 |
| ***Institutional Holdings*** | | | | | | |
| All Institutions - Sample Year | 21.82% | 22.28% | 18.67% | 24.27% | 26.28% | 35.96% |
| Activist Pension Funds - Sample Year | 0.44% | 0.89% | 0.62% | 1.00% | 2.20% | 2.16% |
| Activist Hedge Funds - Sample Year | 0.01% | 0.10% | 0.05% | 0.37% | 0.58% | 1.52% |
| Top 1 Institutional Blockholder - Sample Year | 6.67% | 7.22% | 6.61% | 6.51% | 7.52% | 8.49% |
| Top 5 Institutional Blockholders - Sample Year | 15.29% | 15.23% | 13.89% | 16.08% | 17.93% | 20.72% |
| Independent Institutions - Sample Year | 11.01% | 12.47% | 12.35% | 17.18% | 20.42% | 23.84% |
| Long-term Institutions - Sample Year | 15.20% | 13.56% | 12.20% | 14.83% | 17.42% | 25.09% |
| **Overperformers** | | | | | | |
| ***Performance Metrics*** | | | | | | |
| Failed During Study Period | 0.0% | 1.0% | 1.7% | 2.5% | 4.4% | 1.6% |
| Acquired During Study Period | 28.2% | 13.5% | 16.7% | 23.2% | 21.1% | 19.8% |
| Sample Period Abnormal Return (Ln) | 0.560 | 0.797 | 0.820 | 0.491 | 0.666 | 0.464 |
| Study Period Abnormal Return (Ln) | 0.303 | -0.051 | -0.182 | -0.222 | -0.644 | -0.143 |
| Sample Period ROA | 20.6% | 19.7% | 18.6% | 18.8% | 21.6% | 19.0% |
| Study Period ROA | 15.7% | 15.9% | 16.3% | 14.4% | 14.5% | 15.9% |
| Sample Period Inverse Tobin's Q | 0.635 | 0.520 | 0.476 | 0.464 | 0.414 | 0.442 |
| Study Period Inverse Tobin's Q | 0.636 | 0.568 | 0.511 | 0.579 | 0.516 | 0.586 |
| ***Institutional Holdings*** | | | | | | |
| All Institutions - Sample Year | 32.03% | 43.41% | 49.78% | 49.64% | 57.29% | 67.98% |
| Activist Pension Funds - Sample Year | 0.75% | 2.18% | 2.42% | 2.31% | 1.68% | 2.12% |
| Activist Hedge Funds - Sample Year | 0.03% | 0.03% | 0.08% | 0.23% | 0.55% | 1.31% |
| Top 1 Institutional Blockholder - Sample Year | 5.69% | 6.80% | 7.13% | 6.72% | 8.75% | 9.27% |
| Top 5 Institutional Blockholders - Sample Year | 13.39% | 17.83% | 18.59% | 20.02% | 23.97% | 26.10% |
| Independent Institutions - Sample Year | 13.37% | 22.27% | 29.48% | 34.62% | 42.13% | 45.82% |
| Long-term Institutions - Sample Year | 23.16% | 32.85% | 36.99% | 36.24% | 39.17% | 49.15% |

Table 6

# Mean Institutional Holdings of Underperformer Sample

Institutional holdings as percentages of all outstanding shares. Based on the sample of chronic underperformers with base years from 1978 through 2001. Means are based on all observations with institutional holdings reported on 13F filings. Percentages are simple averages for all observations and for subsamples that failed or were acquired during the study period or that survived through the study period.

| | No. Obs. | All Insts. | Activist Pension Funds | Activist Hedge Funds | Top 1 Inst. Blkhlder | Top 5 Inst. Blkhlders | Indep. Insts. | Gray Insts. | Short-term Inst. Hldgs. | Long-term Inst. Hldgs. |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Panel (a) Base Year Holdings*** | | | | | | | | | | |
| All Obs. | 491 | 26.07% | 1.13% | 0.16% | 6.64% | 16.04% | 17.17% | 8.90% | 10.40% | 15.67% |
| Failed | 133 | 23.70% | 1.10% | 0.15% | 7.01% | 16.25% | 16.51% | 7.19% | 8.45% | 15.25% |
| Acquired | 103 | 29.67% | 1.26% | 0.06% | 7.33% | 18.35% | 19.61% | 10.07% | 12.30% | 17.37% |
| Survived | 255 | 25.86% | 1.09% | 0.20% | 6.17% | 14.99% | 16.54% | 9.32% | 10.65% | 15.21% |
| Negative AR | 169 | 26.74% | 1.23% | 0.25% | 6.47% | 15.43% | 17.50% | 9.24% | 10.70% | 16.04% |
| Positive AR | 86 | 24.12% | 0.82% | 0.11% | 5.57% | 14.13% | 14.65% | 9.47% | 10.53% | 13.59% |
| ***Panel (b) Change During Sample Period*** | | | | | | | | | | |
| All Obs. | | -0.44% | 0.07% | 0.34% | 0.81% | 0.94% | -0.32% | -0.12% | -1.71% | 1.27% |
| Failed | | -7.23% | -0.29% | 0.09% | -0.28% | -2.95% | -5.10% | -2.13% | -2.35% | -4.88% |
| Acquired | | 0.96% | 0.26% | 0.88% | 1.36% | 2.01% | 0.71% | 0.25% | -1.54% | 2.50% |
| Survived | | 2.54% | 0.19% | 0.26% | 1.16% | 2.54% | 1.76% | 0.78% | -1.44% | 3.98% |
| Negative AR | | 1.44% | 0.12% | 0.24% | 0.76% | 1.65% | 1.01% | 0.44% | -2.11% | 3.55% |
| Positive AR | | 4.70% | 0.33% | 0.30% | 1.95% | 4.29% | 3.24% | 1.46% | -0.13% | 4.83% |
| ***Panel (c) Sample Period Change as a Percent of Base Year*** | | | | | | | | | | |
| All Obs. | | -1.68% | 6.63% | 217.55% | 12.25% | 5.87% | -1.86% | -1.33% | -16.42% | 8.10% |
| Failed | | -30.50% | -26.65% | 60.92% | -3.96% | -18.17% | -30.89% | -29.61% | -27.81% | -31.99% |
| Acquired | | 3.22% | 20.73% | 1374.15% | 18.58% | 10.97% | 3.61% | 2.48% | -12.52% | 14.38% |
| Survived | | 9.83% | 17.54% | 129.09% | 18.82% | 16.95% | 10.64% | 8.39% | -13.52% | 26.17% |
| Negative AR | | 5.39% | 9.65% | 97.37% | 11.69% | 10.70% | 5.74% | 4.73% | -19.68% | 22.13% |
| Positive AR | | 19.49% | 41.01% | 272.61% | 35.07% | 30.35% | 22.12% | 15.41% | -1.20% | 35.52% |

Table 7

# Underperformer Regression Results - All Institutions

Results are for chronically underperforming firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. Model specifications are: (Panel (a)) OLS without fixed effects, (Panel (b)) OLS with annual fixed effects (dropping the sentiment and base year variables), and (Panel (c)) two-stage selective attrition models where failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported. The three performance metrics are second-stage, with modified z-score and leverage variables dropped for identification. Regression p-values are for two-tailed t-tests. Wald statistic for summed coefficients of Base Year plus Change in institutional holdings are p-values are for F-tests. Control variable results are suppressed except in the OLS model. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | **Outcomes** | | | | **Performance Metrics** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Failed** | | **Acquired** | | **Abn. Ret. (Ln)** | | **ROA** | | **Inv. Tobin's Q** | |
| ***Panel (a) OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| **All Inst. Base Year Pct.** | -0.288 | 0.004 *** | 0.138 | 0.180 † | 0.546 | 0.086 * | 0.013 | 0.587 | -0.129 | 0.077 * |
| **All Inst. Sample Period Pct. Chg.** | -0.269 | 0.035 ** | 0.087 | 0.512 | 0.207 | 0.613 | 0.016 | 0.596 | -0.018 | 0.844 |
| Sample Year Total Assets (mil.) | 0.000 | 0.220 | 0.000 | 0.661 | 0.000 | 0.752 | 0.000 | 0.478 | 0.000 | 0.495 |
| Sample Period Chg. in Total Assets (mil.) | -0.063 | 0.052 * | 0.048 | 0.154 † | -0.118 | 0.268 | -0.008 | 0.337 | -0.017 | 0.471 |
| Sample Period Ln Abn. Returns (decimal) | -0.026 | 0.246 | 0.009 | 0.710 | 0.017 | 0.815 | 0.000 | 0.973 | 0.010 | 0.542 |
| Sample Period Avg. ROA (decimal) | -0.864 | 0.034 ** | -0.132 | 0.756 | 3.019 | 0.022 ** | 0.808 | 0.000 *** | 0.925 | 0.003 *** |
| Sample Year Inverse Tobin's Q | 0.105 | 0.102 † | -0.133 | 0.046 ** | 0.468 | 0.048 ** | -0.018 | 0.250 | 0.165 | 0.000 *** |
| Sample Year Diversification (NAICS) | 0.006 | 0.738 | -0.018 | 0.321 | 0.014 | 0.806 | 0.002 | 0.619 | -0.006 | 0.615 |
| Base Year Investor Sentiment | -0.050 | 0.064 * | 0.012 | 0.682 | 0.259 | 0.003 *** | 0.022 | 0.001 *** | 0.023 | 0.245 |
| Sample Year Investor Sentiment | 0.013 | 0.671 | 0.008 | 0.804 | 0.196 | 0.042 ** | 0.004 | 0.632 | -0.006 | 0.801 |
| Sample Year Modified z-Score | 11.296 | 0.148 † | 15.830 | 0.052 * | 22.680 | 0.372 | 3.598 | 0.056 * | 11.429 | 0.045 ** |
| Sample Period Chg. in Modified z-Score | -4.381 | 0.527 | -6.504 | 0.369 | 21.252 | 0.350 | -0.832 | 0.627 | -8.506 | 0.102 † |
| Sample Year Book Leverage | 0.201 | 0.000 *** | -0.118 | 0.040 ** | -0.290 | 0.107 † | -0.003 | 0.843 | -0.110 | 0.005 *** |
| Base Year (index) | 0.014 | 0.000 *** | 0.003 | 0.442 | 0.009 | 0.382 | 0.000 | 0.976 | 0.002 | 0.318 |
| Constant | -27.153 | 0.000 *** | -4.798 | 0.469 | -19.628 | 0.347 | 0.027 | 0.986 | -3.988 | 0.401 |
| **All Inst. Base Year + Chg.** (Wald test) | -0.556 | 0.003 *** | 0.225 | 0.243 | 0.753 | 0.206 | 0.029 | 0.513 | -0.147 | 0.279 |
| No. Obs | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.220 | | 0.009 | | 0.089 | | 0.228 | | 0.158 | |
| ***Panel (b) OLS with Annual Fixed Effects*** | | | | | | | | | | |
| **All Inst. Base Year Pct.** | -0.243 | 0.017 ** | 0.164 | 0.125 † | 0.553 | 0.088 * | 0.007 | 0.771 | -0.170 | 0.020 ** |
| **All Inst. Sample Period Pct. Chg.** | -0.266 | 0.042 ** | 0.054 | 0.691 | 0.289 | 0.491 | 0.022 | 0.482 | -0.059 | 0.527 |
| **All Inst. Base Year + Chg.** (Wald test) | -0.509 | 0.008 *** | 0.218 | 0.275 | 0.842 | 0.167 † | 0.029 | 0.524 | -0.229 | 0.092 * |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Panel (c) Selective Attrition Models*** | | | | | | | | | | |
| **All Inst. Base Year Pct.** | -0.282 | 0.006 *** | 0.142 | 0.134 † | 1.144 | 0.008 *** | 0.063 | 0.050 ** | -0.200 | 0.117 † |
| **All Inst. Sample Period Pct. Chg.** | -0.256 | 0.056 * | 0.044 | 0.726 | 0.945 | 0.067 * | 0.055 | 0.156 † | -0.125 | 0.462 |
| **All Inst. Base Year + Chg.** (Wald test) | -0.538 | 0.012 ** | 0.186 | 0.921 | 2.089 | 0.003 ** | 0.119 | 0.053 * | -0.324 | 0.171 † |

Table 8

# Overperformer Regression Results - All Institutions

Results are for consistently overperforming firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year of overperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. Model specifications are: (Panel (a)) OLS without fixed effects, (Panel (b)) OLS with annual fixed effects (dropping the sentiment and base year variables), and (Panel (c)) two-stage selective attrition models where failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported. The three performance metrics are second-stage, with modified z-score and leverage variables dropped for identification. Regression p-values are for two-tailed t-tests. Wald statistic for summed coefficients of Base Year plus Change in institutional holdings are p-values are for F-tests. Control variable results are suppressed except in the OLS model. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | **Outcomes** | | | | **Performance Metrics** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Failed** | | **Acquired** | | **Abn. Ret. (Ln)** | | **ROA** | | **Inv. Tobin's Q** | |
| ***Panel (a) OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| **All Inst. Base Year Pct.** | -0.049 | 0.117 † | 0.024 | 0.792 | -0.044 | 0.805 | 0.001 | 0.963 | -0.040 | 0.424 |
| **All Inst. Sample Period Pct. Chg.** | -0.111 | 0.015 ** | -0.115 | 0.394 | 0.034 | 0.897 | 0.019 | 0.303 | 0.100 | 0.174 † |
| Sample Year Total Assets (mil.) | 0.000 | 0.097 * | 0.000 | 0.685 | 0.000 | 0.095 * | 0.000 | 0.105 † | 0.000 | 0.528 |
| Sample Period Chg. in Total Assets (mil.) | 0.046 | 0.012 ** | 0.013 | 0.802 | -0.065 | 0.534 | -0.031 | 0.000 *** | 0.073 | 0.014 ** |
| Sample Period Ln Abn. Returns (decimal) | -0.027 | 0.052 * | -0.029 | 0.467 | -0.269 | 0.001 *** | -0.005 | 0.354 | 0.002 | 0.936 |
| Sample Period Avg. ROA (decimal) | 0.327 | 0.148 † | 0.341 | 0.609 | 0.546 | 0.672 | 0.283 | 0.003 *** | -0.214 | 0.563 |
| Sample Year Inverse Tobin's Q | 0.000 | 0.995 | 0.575 | 0.006 *** | -0.113 | 0.778 | -0.055 | 0.056 * | 0.566 | 0.000 *** |
| Sample Year Diversification (NAICS) | -0.004 | 0.523 | 0.003 | 0.860 | -0.045 | 0.148 † | -0.002 | 0.362 | 0.002 | 0.811 |
| Base Year Investor Sentiment | -0.007 | 0.422 | -0.035 | 0.191 † | 0.229 | 0.000 *** | 0.007 | 0.060 * | 0.018 | 0.213 |
| Sample Year Investor Sentiment | 0.007 | 0.465 | 0.004 | 0.885 | -0.072 | 0.189 † | -0.006 | 0.129 † | 0.007 | 0.644 |
| Sample Year Modified z-Score | 1.139 | 0.836 | -35.577 | 0.029 ** | 18.142 | 0.567 | -4.114 | 0.067 * | 6.105 | 0.493 |
| Sample Period Chg. in Modified z-Score | -4.920 | 0.094 * | 0.636 | 0.941 | -18.490 | 0.270 | 0.517 | 0.668 | -4.663 | 0.329 |
| Sample Year Book Leverage | 0.056 | 0.354 | 0.401 | 0.024 ** | -0.272 | 0.437 | 0.026 | 0.284 | -0.102 | 0.292 |
| Base Year (index) | 0.003 | 0.008 *** | 0.001 | 0.746 | -0.026 | 0.000 *** | -0.001 | 0.004 *** | 0.005 | 0.003 *** |
| Constant | -5.978 | 0.007 *** | -2.239 | 0.733 | 51.616 | 0.000 *** | 2.781 | 0.003 *** | -10.566 | 0.004 *** |
| **All Inst. Base Year + Chg.** (Wald test) | -0.160 | 0.012 ** | -0.091 | 0.627 | -0.010 | 0.979 | 0.020 | 0.444 | 0.060 | 0.559 |
| No. Obs | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.025 | | 0.010 | | 0.110 | | 0.144 | | 0.224 | |
| ***Panel (b) OLS with Annual Fixed Effects*** | | | | | | | | | | |
| **All Inst. Base Year Pct.** | -0.055 | 0.084 * | 0.025 | 0.794 | -0.073 | 0.684 | -0.006 | 0.659 | -0.027 | 0.599 |
| **All Inst. Sample Period Pct. Chg.** | -0.132 | 0.006 *** | -0.075 | 0.595 | 0.038 | 0.888 | 0.019 | 0.329 | 0.120 | 0.114 † |
| **All Inst. Base Year + Chg.** (Wald test) | -0.187 | 0.005 *** | -0.050 | 0.796 | -0.035 | 0.925 | 0.013 | 0.622 | 0.093 | 0.374 |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Panel (c) Selective Attrition Models*** | | | | | | | | | | |
| **All Inst. Base Year Pct.** | -0.022 | 0.451 | 0.017 | 0.849 | -0.117 | 0.539 | -0.006 | 0.658 | -0.071 | 0.204 |
| **All Inst. Sample Period Pct. Chg.** | -0.088 | 0.035 ** | -0.122 | 0.360 | -0.202 | 0.496 | 0.009 | 0.658 | 0.068 | 0.445 |
| **All Inst. Base Year + Chg.** (Wald test) | -0.110 | 0.036 ** | -0.105 | 0.462 | -0.319 | 0.428 | 0.003 | 0.905 | -0.004 | 0.974 |

Table 9

# Under- and Overperformer Regression Results - Activist Pension Funds

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. Activist Pension Funds are the 18 public pension plans identified in Cremers and Nair (2005). Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Activist Pension Fund" variables are percentage holdings of activist pension funds only. Thus, coefficients on activist pension fund holdings reflect differences in relationships to dependent variables between activist pension funds and all other institutions. Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All; Activist Pension Fund Total Difference = Base Year Activist + Change Activist; Activist Pension Fund Total Base Year = Base Year All + Base Year Activist; Activist Pension Fund Total Change = Change All + Change Activist; Activist Pension Fund Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **LnAR** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.293 | 0.008 *** | 0.146 | 0.206 | 0.785 | 0.027 ** | 0.024 | 0.372 | -0.180 | 0.027 ** |
| All Inst. Sample Period Pct. Chg. | -0.267 | 0.039 ** | 0.076 | 0.574 | 0.288 | 0.491 | 0.026 | 0.402 | -0.051 | 0.585 |
| Activist Pension Funds Base Year Pct. | 0.124 | 0.886 | -0.260 | 0.774 | -3.924 | 0.154 † | -0.120 | 0.597 | 0.710 | 0.301 |
| Activist Pension Funds Sample Period Pct. Chg. | -0.033 | 0.966 | 0.330 | 0.684 | -2.581 | 0.295 | -0.358 | 0.075 * | 1.209 | 0.047 ** |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.560 | 0.005 *** | 0.222 | 0.280 | 1.073 | 0.089 * | 0.050 | 0.291 | -0.231 | 0.107 † |
| Activist Pension Fund Total Difference (BY + Chg) | 0.091 | 0.946 | 0.070 | 0.960 | -6.506 | 0.126 † | -0.478 | 0.174 † | 1.919 | 0.071 * |
| Activist Pension Fund Total Base Year (BY + BY) | -0.169 | 0.837 | -0.114 | 0.895 | -3.139 | 0.231 | -0.096 | 0.658 | 0.531 | 0.418 |
| Activist Pension Fund Total Change (Chg + Chg) | -0.300 | 0.694 | 0.406 | 0.610 | -2.294 | 0.343 | -0.332 | 0.093 * | 1.157 | 0.054 * |
| Activist Pension Fund Total (BY + BY + Chg + Chg) | -0.469 | 0.716 | 0.292 | 0.828 | -5.433 | 0.184 † | -0.428 | 0.206 | 1.688 | 0.100 * |
| No. Obs. | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.217 | | 0.005 | | 0.090 | | 0.230 | | 0.162 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.289 | 0.010 *** | 0.163 | 0.127 † | 1.233 | 0.010 *** | 0.057 | 0.112 † | -0.238 | 0.054 * |
| All Inst. Sample Period Pct. Chg. | -0.251 | 0.067 * | 0.030 | 0.814 | 0.999 | 0.089 * | 0.061 | 0.113 † | -0.123 | 0.439 |
| Activist Pension Funds Base Year Pct. | 0.157 | 0.842 | -0.520 | 0.546 | -1.073 | 0.786 | 0.209 | 0.549 | 0.860 | 0.498 |
| Activist Pension Funds Sample Period Pct. Chg. | -0.089 | 0.904 | 0.344 | 0.642 | -2.366 | 0.582 | -0.132 | 0.667 | 0.190 | 0.880 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.540 | 0.017 ** | 0.193 | 0.898 | 2.232 | 0.004 *** | 0.118 | 0.066 * | -0.361 | 0.124 † |
| Activist Pension Fund Total Difference (BY + Chg) | 0.069 | 0.988 | -0.176 | 0.899 | -3.439 | 0.621 | 0.076 | 0.894 | 1.050 | 0.627 |
| Activist Pension Fund Total Base Year (BY + BY) | -0.132 | 0.745 | -0.357 | 0.612 | 0.160 | 0.966 | 0.266 | 0.426 | 0.623 | 0.613 |
| Activist Pension Fund Total Change (Chg + Chg) | -0.340 | 0.736 | 0.374 | 0.701 | -1.367 | 0.743 | -0.071 | 0.814 | 0.066 | 0.957 |
| Activist Pension Fund Total (BY + BY + Chg + Chg) | -0.471 | 0.693 | 0.017 | 0.911 | -1.206 | 0.859 | 0.195 | 0.726 | 0.689 | 0.742 |

| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **LnAR** | | **ROA** | | **Inv. Tobin's Q** | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.057 | 0.107 † | 0.103 | 0.322 | 0.223 | 0.268 | 0.017 | 0.253 | -0.038 | 0.513 |
| All Inst. Sample Period Pct. Chg. | -0.119 | 0.013 ** | -0.064 | 0.649 | 0.218 | 0.428 | 0.027 | 0.166 | 0.107 | 0.167 † |
| Activist Pension Funds Base Year Pct. | 0.210 | 0.667 | -2.288 | 0.111 † | -7.575 | 0.006 *** | -0.478 | 0.015 ** | -0.031 | 0.968 |
| Activist Pension Funds Sample Period Pct. Chg. | 0.270 | 0.554 | -1.312 | 0.329 | -4.707 | 0.071 * | -0.150 | 0.420 | -0.263 | 0.723 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.176 | 0.012 ** | 0.039 | 0.848 | 0.441 | 0.272 | 0.043 | 0.126 † | 0.069 | 0.542 |
| Activist Pension Fund Total Difference (BY + Chg) | 0.479 | 0.563 | -3.600 | 0.140 † | -12.282 | 0.010 *** | -0.629 | 0.062 * | -0.294 | 0.826 |
| Activist Pension Fund Total Base Year (BY + BY) | 0.153 | 0.746 | -2.185 | 0.116 † | -7.352 | 0.006 *** | -0.462 | 0.016 ** | -0.069 | 0.928 |
| Activist Pension Fund Total Change (Chg + Chg) | 0.150 | 0.736 | -1.375 | 0.294 | -4.489 | 0.078 * | -0.123 | 0.498 | -0.156 | 0.829 |
| Activist Pension Fund Total (BY + BY + Chg + Chg) | 0.303 | 0.706 | -3.560 | 0.132 † | -11.841 | 0.010 *** | -0.585 | 0.072 * | -0.225 | 0.862 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.022 | | 0.011 | | 0.120 | | 0.152 | | 0.221 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.026 | 0.419 | 0.096 | 0.343 | 0.045 | 0.847 | -0.011 | 0.509 | -0.060 | 0.390 |
| All Inst. Sample Period Pct. Chg. | -0.091 | 0.034 ** | -0.068 | 0.621 | -0.048 | 0.871 | 0.004 | 0.860 | 0.072 | 0.414 |
| Activist Pension Funds Base Year Pct. | 0.130 | 0.702 | -2.393 | 0.122 † | -4.658 | 0.199 † | 0.108 | 0.670 | -0.219 | 0.839 |
| Activist Pension Funds Sample Period Pct. Chg. | 0.042 | 0.924 | -1.394 | 0.316 | -3.318 | 0.277 | 0.166 | 0.437 | -0.407 | 0.652 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.117 | 0.049 ** | 0.029 | 0.987 | -0.003 | 0.994 | -0.007 | 0.815 | 0.013 | 0.921 |
| Activist Pension Fund Total Difference (BY + Chg) | 0.172 | 0.924 | -3.787 | 0.151 † | -7.977 | 0.186 † | 0.273 | 0.516 | -0.626 | 0.726 |
| Activist Pension Fund Total Base Year (BY + BY) | 0.103 | 0.906 | -2.297 | 0.130 † | -4.613 | 0.186 † | 0.097 | 0.691 | -0.278 | 0.788 |
| Activist Pension Fund Total Change (Chg + Chg) | -0.048 | 0.835 | -1.462 | 0.277 | -3.367 | 0.265 | 0.169 | 0.422 | -0.335 | 0.708 |
| Activist Pension Fund Total (BY + BY + Chg + Chg) | 0.055 | 0.938 | -3.758 | 0.138 † | -7.980 | 0.175 † | 0.266 | 0.516 | -0.614 | 0.725 |

Table 10

# Under- and Overperformer Regression Results - Activist Hedge Funds

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. Activist Hedge Funds are the 197 activist hedge funds identified in Clifford (2007). Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Activist Hedg Fund" variables are percentage holdings of activist hedge funds only. Thus, coefficients on activist hedge fund holdings reflect differences in relationships to dependent variables between activist hedge funds and all other institutions Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All; Activist Hedge Fund Total Difference = Base Year Activist + Change Activist; Activist Hedge Fund Total Base Year = Base Year All + Base Year Activist; Activist Hedge Fund Total Change = Change All + Change Activist; Activist Hedge Fund Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.279 | 0.005 *** | 0.135 | 0.191 † | 0.575 | 0.074 * | 0.019 | 0.437 ** | -0.131 | 0.077 ** |
| All Inst. Sample Period Pct. Chg. | -0.242 | 0.063 * | 0.056 | 0.680 | 0.260 | 0.537 | 0.027 | 0.384 ** | -0.017 | 0.855 |
| Activist Hedge Funds Base Year Pct. | 1.073 | 0.722 | -5.239 | 0.095 * | -5.944 | 0.544 | -0.214 | 0.773 | 2.434 | 0.280 |
| Activist Hedge Funds Sample Period Pct. Chg. | -1.161 | 0.218 | 1.890 | 0.054 * | -1.141 | 0.703 | -0.455 | 0.075 * | -0.343 | 0.658 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.521 | 0.006 *** | 0.191 | 0.332 | 0.834 | 0.173 † | 0.046 | 0.315 | -0.148 | 0.288 |
| Activist Hedge Fund Total Difference (BY + Chg) | -0.088 | 0.979 | -3.350 | 0.341 | -7.085 | 0.517 | -0.669 | 0.431 | 2.091 | 0.418 |
| Activist Hedge Fund Total Base Year (BY + BY) | 0.794 | 0.792 | -5.104 | 0.102 † | -5.370 | 0.582 | -0.195 | 0.792 | 2.304 | 0.305 |
| Activist Hedge Fund Total Change (Chg + Chg) | -1.403 | 0.129 † | 1.945 | 0.043 ** | -0.881 | 0.765 | -0.428 | 0.088 * | -0.360 | 0.636 |
| Activist Hedge Fund Total (BY + BY + Chg + Chg) | -0.609 | 0.856 | -3.159 | 0.365 | -6.251 | 0.564 | -0.623 | 0.459 | 1.943 | 0.447 |
| No. Obs. | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.220 | | 0.023 | | 0.085 | | 0.230 | | 0.158 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.288 | 0.006 *** | 0.168 | 0.080 * | 1.155 | 0.009 *** | 0.059 | 0.122 † | -0.198 | 0.117 † |
| All Inst. Sample Period Pct. Chg. | -0.236 | 0.086 * | 0.034 | 0.790 | 0.920 | 0.093 * | 0.053 | 0.154 † | -0.104 | 0.540 |
| Activist Hedge Funds Base Year Pct. | 4.763 | 0.154 † | -14.324 | 0.054 * | 1.422 | 0.926 | 0.023 | 0.980 | 4.793 | 0.323 |
| Activist Hedge Funds Sample Period Pct. Chg. | -0.914 | 0.488 | 1.223 | 0.138 † | 0.373 | 0.939 | -0.189 | 0.628 | -0.929 | 0.483 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.523 | 0.019 ** | 0.202 | 0.812 | 2.074 | 0.005 *** | 0.112 | 0.073 * | -0.302 | 0.227 |
| Activist Hedge Fund Total Difference (BY + Chg) | 3.849 | 0.962 | -13.101 | 0.088 * | 1.795 | 0.915 | -0.166 | 0.869 | 3.864 | 0.446 |
| Activist Hedge Fund Total Base Year (BY + BY) | 4.475 | 0.849 | -14.156 | 0.062 * | 2.577 | 0.866 | 0.082 | 0.927 | 4.595 | 0.339 |
| Activist Hedge Fund Total Change (Chg + Chg) | -1.150 | 0.519 | 1.258 | 0.233 | 1.293 | 0.794 | -0.136 | 0.731 | -1.034 | 0.430 |
| Activist Hedge Fund Total (BY + BY + Chg + Chg) | 3.325 | 0.923 | -12.898 | 0.088 * | 3.870 | 0.818 | -0.054 | 0.957 | 3.561 | 0.476 |
| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.046 | 0.148 † | -0.026 | 0.776 | -0.075 | 0.677 | 0.002 | 0.883 | -0.041 | 0.427 |
| All Inst. Sample Period Pct. Chg. | -0.110 | 0.017 ** | -0.102 | 0.444 | 0.046 | 0.862 | 0.018 | 0.340 | 0.103 | 0.167 † |
| Activist Hedge Funds Base Year Pct. | -0.263 | 0.580 | 4.981 | 0.000 *** | 3.214 | 0.236 | -0.171 | 0.387 | 0.093 | 0.906 |
| Activist Hedge Funds Sample Period Pct. Chg. | 0.032 | 0.916 | 1.958 | 0.026 ** | 1.388 | 0.420 | -0.127 | 0.317 | 0.181 | 0.718 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.156 | 0.015 ** | -0.128 | 0.489 | -0.029 | 0.938 | 0.020 | 0.447 | 0.062 | 0.547 |
| Activist Hedge Fund Total Difference (BY + Chg) | -0.231 | 0.737 | 6.939 | 0.001 *** | 4.602 | 0.240 | -0.298 | 0.297 | 0.273 | 0.809 |
| Activist Hedge Fund Total Base Year (BY + BY) | -0.308 | 0.513 | 4.954 | 0.000 *** | 3.138 | 0.243 | -0.169 | 0.389 | 0.052 | 0.947 |
| Activist Hedge Fund Total Change (Chg + Chg) | -0.078 | 0.801 | 1.856 | 0.039 ** | 1.435 | 0.416 | -0.109 | 0.401 | 0.284 | 0.580 |
| Activist Hedge Fund Total (BY + BY + Chg + Chg) | -0.386 | 0.574 | 6.811 | 0.001 *** | 4.573 | 0.244 | -0.278 | 0.331 | 0.336 | 0.767 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.022 | | 0.011 | | 0.120 | | 0.152 | | 0.221 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.020 | 0.500 | -0.035 | 0.693 | -0.239 | 0.219 | -0.001 | 0.935 | -0.062 | 0.282 |
| All Inst. Sample Period Pct. Chg. | -0.087 | 0.035 ** | -0.108 | 0.410 | -0.206 | 0.489 | 0.008 | 0.719 | 0.058 | 0.512 |
| Activist Hedge Funds Base Year Pct. | -0.182 | 0.822 | 4.459 | 0.002 *** | 12.524 | 0.071 * | -0.640 | 0.192 † | -1.208 | 0.563 |
| Activist Hedge Funds Sample Period Pct. Chg. | 0.108 | 0.590 | 2.129 | 0.037 ** | -0.142 | 0.973 | -0.566 | 0.053 * | 0.026 | 0.983 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.107 | 0.038 ** | -0.144 | 0.344 | -0.446 | 0.285 | 0.006 | 0.826 | -0.004 | 0.974 |
| Activist Hedge Fund Total Difference (BY + Chg) | -0.074 | 0.900 | 6.588 | 0.004 *** | 12.382 | 0.230 | -1.206 | 0.099 * | -1.182 | 0.704 |
| Activist Hedge Fund Total Base Year (BY + BY) | -0.202 | 0.924 | 4.423 | 0.003 *** | 12.285 | 0.074 * | -0.641 | 0.187 † | -1.270 | 0.539 |
| Activist Hedge Fund Total Change (Chg + Chg) | 0.021 | 0.722 | 2.021 | 0.057 * | -0.348 | 0.932 | -0.559 | 0.053 * | 0.085 | 0.945 |
| Activist Hedge Fund Total (BY + BY + Chg + Chg) | -0.181 | 0.999 | 6.444 | 0.005 *** | 11.937 | 0.242 | -1.200 | 0.097 * | -1.186 | 0.700 |

Table 11

# Under- and Overperformer Regression Results - Top 1 Blockholder Institution

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Top 1 Blockholder" variables are percentage holdings of the top 1 institutional blockholder only. Thus, coefficients on the top 1 blockholder reflect differences in relationships to dependent variables between the top 1 blockholder and all other institutions. Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All, Top 1 Blockholder Total Difference = Top 1 Base Year + Top 1 Change: Top 1 Blockholder Total Base Year = Base Year All + Top 1 Base Year; Top 1 Blockholder Total Change = Change All + Top 1 Change; Top 1 Blockholder Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.470 | 0.000 *** | 0.084 | 0.529 | 0.774 | 0.061 * | 0.046 | 0.133 † | -0.200 | 0.034 ** |
| All Inst. Sample Period Pct. Chg. | -0.416 | 0.010 *** | -0.021 | 0.901 | 0.178 | 0.732 | 0.066 | 0.090 * | 0.041 | 0.730 |
| Top 1 Blockholders Base Year Pct. | 0.968 | 0.028 ** | 0.273 | 0.554 | -1.253 | 0.376 | -0.176 | 0.102 † | 0.407 | 0.213 |
| Top 1 Blockholders Sample Period Pct. Chg. | 0.631 | 0.093 * | 0.417 | 0.290 | -0.008 | 0.995 | -0.200 | 0.029 ** | -0.176 | 0.529 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.886 | 0.000 *** | 0.063 | 0.799 | 0.952 | 0.212 | 0.112 | 0.050 ** | -0.159 | 0.359 |
| Top 1 Blockholders Total Difference (BY + Chg) | 1.599 | 0.019 ** | 0.690 | 0.334 | -1.261 | 0.564 | -0.376 | 0.025 ** | 0.231 | 0.650 |
| Top 1 Blockholders Total Base Year (BY + BY) | 0.498 | 0.181 † | 0.358 | 0.359 | -0.479 | 0.689 | -0.129 | 0.155 † | 0.207 | 0.454 |
| Top 1 Blockhholders Total Change (Chg + Chg) | 0.215 | 0.479 | 0.396 | 0.214 | 0.170 | 0.861 | -0.135 | 0.072 * | -0.135 | 0.552 |
| Top 1 Blockholders Total (BY + BY + Chg + Chg) | 0.713 | 0.210 | 0.754 | 0.206 | -0.309 | 0.865 | -0.264 | 0.060 * | 0.072 | 0.865 |
| No. Obs. | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.226 | | 0.007 | | 0.086 | | 0.234 | | 0.160 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.545 | 0.000 *** | 0.114 | 0.357 | 1.444 | 0.008 *** | 0.100 | 0.017 ** | -0.248 | 0.105 † |
| All Inst. Sample Period Pct. Chg. | -0.500 | 0.008 *** | -0.040 | 0.804 | 0.950 | 0.209 | 0.098 | 0.071 * | -0.002 | 0.992 |
| Top 1 Blockholders Base Year Pct. | 1.047 | 0.016 ** | 0.298 | 0.494 | -1.611 | 0.448 | -0.203 | 0.191 † | 0.460 | 0.451 |
| Top 1 Blockholders Sample Period Pct. Chg. | 0.786 | 0.044 ** | 0.409 | 0.259 | -0.160 | 0.928 | -0.183 | 0.195 † | -0.356 | 0.505 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -1.045 | 0.000 *** | 0.074 | 0.237 | 2.394 | 0.020 ** | 0.198 | 0.015 ** | -0.250 | 0.380 |
| Top 1 Blockholders Total Difference (BY + Chg) | 1.833 | 0.003 *** | 0.707 | 0.051 * | -1.770 | 0.597 | -0.386 | 0.147 † | 0.104 | 0.922 |
| Top 1 Blockholders Total Base Year (BY + BY) | 0.502 | 0.072 * | 0.412 | 0.119 † | -0.167 | 0.929 | -0.103 | 0.448 | 0.212 | 0.698 |
| Top 1 Blockhholders Total Change (Chg + Chg) | 0.286 | 0.161 † | 0.369 | 0.105 † | 0.790 | 0.570 | -0.085 | 0.456 | -0.358 | 0.455 |
| Top 1 Blockholders Total (BY + BY + Chg + Chg) | 0.788 | 0.053 * | 0.781 | 0.062 * | 0.623 | 0.825 | -0.189 | 0.406 | -0.146 | 0.878 |

| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.058 | 0.096 * | 0.053 | 0.608 | -0.020 | 0.919 | 0.000 | 0.997 | -0.043 | 0.452 |
| All Inst. Sample Period Pct. Chg. | -0.150 | 0.003 *** | 0.001 | 0.997 | -0.055 | 0.849 | 0.025 | 0.231 | 0.100 | 0.220 |
| Top 1 Blockholders Base Year Pct. | 0.143 | 0.310 | -0.433 | 0.299 | -0.026 | 0.974 | -0.006 | 0.925 | 0.021 | 0.926 |
| Top 1 Blockholders Sample Period Pct. Chg. | 0.298 | 0.065 * | -0.894 | 0.060 * | 0.625 | 0.497 | -0.040 | 0.555 | 0.007 | 0.980 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.208 | 0.003 *** | 0.053 | 0.795 | -0.076 | 0.851 | 0.025 | 0.388 | 0.057 | 0.616 |
| Top 1 Blockholders Total Difference (BY + Chg) | 0.441 | 0.105 † | -1.326 | 0.098 * | 0.599 | 0.700 | -0.045 | 0.689 | 0.028 | 0.950 |
| Top 1 Blockholders Total Base Year (BY + BY) | 0.085 | 0.510 | -0.380 | 0.320 | -0.046 | 0.950 | -0.005 | 0.919 | -0.022 | 0.918 |
| Top 1 Blockhholders Total Change (Chg + Chg) | 0.148 | 0.315 | -0.893 | 0.041 ** | 0.570 | 0.501 | -0.015 | 0.806 | 0.107 | 0.663 |
| Top 1 Blockholders Total (BY + BY + Chg + Chg) | 0.234 | 0.351 | -1.273 | 0.085 * | 0.524 | 0.715 | -0.021 | 0.843 | 0.085 | 0.837 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.028 | | 0.013 | | 0.107 | | 0.141 | | 0.220 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.027 | 0.432 | 0.053 | 0.599 | -0.072 | 0.740 | -0.006 | 0.695 | -0.081 | 0.210 |
| All Inst. Sample Period Pct. Chg. | -0.107 | 0.031 ** | -0.013 | 0.928 | -0.162 | 0.616 | 0.005 | 0.826 | 0.073 | 0.444 |
| Top 1 Blockholders Base Year Pct. | 0.045 | 0.787 | -0.488 | 0.268 | -0.441 | 0.620 | 0.011 | 0.859 | 0.060 | 0.821 |
| Top 1 Blockholders Sample Period Pct. Chg. | 0.144 | 0.292 | -0.886 | 0.079 * | -0.227 | 0.870 | 0.049 | 0.616 | -0.133 | 0.746 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.134 | 0.044 ** | 0.040 | 0.976 | -0.235 | 0.609 | -0.001 | 0.975 | -0.008 | 0.955 |
| Top 1 Blockholders Total Difference (BY + Chg) | 0.189 | 0.539 | -1.375 | 0.132 † | -0.668 | 0.751 | 0.060 | 0.685 | -0.073 | 0.906 |
| Top 1 Blockholders Total Base Year (BY + BY) | 0.018 | 0.966 | -0.435 | 0.286 | -0.514 | 0.523 | 0.005 | 0.928 | -0.022 | 0.928 |
| Top 1 Blockhholders Total Change (Chg + Chg) | 0.037 | 0.909 | -0.899 | 0.057 * | -0.389 | 0.763 | 0.054 | 0.553 | -0.059 | 0.877 |
| Top 1 Blockholders Total (BY + BY + Chg + Chg) | 0.055 | 0.928 | -1.334 | 0.104 † | -0.903 | 0.641 | 0.059 | 0.664 | -0.081 | 0.888 |

Table 12

# Under- and Overperformer Regression Results - Independent versus Gray Institutions

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. We classifying investment companies, independent investment advisors as "independent" institutions and banks and insurance companies, and public pension funds, endowments, and foundations as "gray" institutions. Percentage holdings are as of the base year of underperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Independent Institutions" variables are percentage holdings of independent institutions only. Thus, coefficients on independent institutions reflect differences in relationships to dependent variables between independent institutions and gray institutions. Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All, Independent Institutions Total Difference = Base Year Independent + Change Independent; Independent Institutions Total Base Year = Base Year All + Base Year Independent; Independent Institutions Total Change = Change All + Change Independents; Independent Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.328 | 0.202 | 0.237 | 0.379 | 0.196 | 0.811 | 0.029 | 0.646 | 0.026 | 0.892 |
| All Inst. Sample Period Pct. Chg. | -0.343 | 0.131 † | 0.073 | 0.758 | -0.318 | 0.662 | -0.002 | 0.976 | 0.007 | 0.965 |
| Indep. Inst. Base Year Pct. | 0.066 | 0.858 | -0.150 | 0.696 | 0.564 | 0.631 | -0.024 | 0.794 | -0.238 | 0.386 |
| Indep. Inst. Sample Period Pct. Chg. | 0.121 | 0.692 | 0.020 | 0.950 | 0.857 | 0.380 | 0.029 | 0.698 | -0.044 | 0.846 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.671 | 0.098 * | 0.310 | 0.465 | -0.121 | 0.925 | 0.027 | 0.783 | 0.033 | 0.912 |
| Indep. Inst. Total Difference (BY + Chg) | 0.186 | 0.747 | -0.130 | 0.830 | 1.421 | 0.439 | 0.005 | 0.970 | -0.281 | 0.513 |
| Indep. Inst. Total Base Year (BY + BY) | -0.262 | 0.108 † | 0.087 | 0.609 | 0.760 | 0.147 † | 0.005 | 0.891 | -0.212 | 0.082 * |
| Indep. Inst. Total Change (Chg + Chg) | -0.222 | 0.200 | 0.093 | 0.607 | 0.539 | 0.333 | 0.027 | 0.519 | -0.036 | 0.775 |
| Indep. Inst. Total (BY + BY + Chg + Chg) | -0.484 | 0.089 * | 0.180 | 0.545 | 1.299 | 0.155 † | 0.033 | 0.639 | -0.248 | 0.239 |
| No. Obs. | 476 | | 476 | | 462 | | 0 | | 439 | |
| Adj R2 | 0.217 | | 0.005 | | 0.086 | | 0.225 | | 0.156 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.345 | 0.228 | 0.259 | 0.301 | 1.049 | 0.309 | 0.102 | 0.250 | -0.165 | 0.563 |
| All Inst. Sample Period Pct. Chg. | -0.352 | 0.173 † | 0.045 | 0.844 | 0.515 | 0.520 | 0.055 | 0.524 | -0.064 | 0.807 |
| Indep. Inst. Base Year Pct. | 0.092 | 0.817 | -0.174 | 0.623 | 0.155 | 0.915 | -0.062 | 0.619 | -0.065 | 0.878 |
| Indep. Inst. Sample Period Pct. Chg. | 0.146 | 0.660 | 0.002 | 0.994 | 0.702 | 0.550 | 0.001 | 0.991 | -0.103 | 0.777 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.696 | 0.168 † | 0.305 | 0.822 | 1.564 | 0.310 | 0.157 | 0.308 | -0.228 | 0.622 |
| Indep. Inst. Total Difference (BY + Chg) | 0.238 | 0.752 | -0.172 | 0.856 | 0.858 | 0.697 | -0.060 | 0.759 | -0.167 | 0.808 |
| Indep. Inst. Total Base Year (BY + BY) | -0.253 | 0.148 † | 0.085 | 0.971 | 1.204 | 0.080 * | 0.041 | 0.470 | -0.229 | 0.287 |
| Indep. Inst. Total Change (Chg + Chg) | -0.206 | 0.249 | 0.048 | 0.915 | 1.217 | 0.111 † | 0.056 | 0.297 | -0.166 | 0.456 |
| Indep. Inst. Total (BY + BY + Chg + Chg) | -0.459 | 0.134 † | 0.133 | 0.963 | 2.421 | 0.035 ** | 0.096 | 0.290 | -0.395 | 0.287 |
| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.107 | 0.139 † | -0.364 | 0.087 * | 0.006 | 0.988 | 0.023 | 0.437 | -0.143 | 0.224 |
| All Inst. Sample Period Pct. Chg. | -0.205 | 0.036 ** | -0.310 | 0.280 | 0.265 | 0.636 | 0.069 | 0.084 * | 0.028 | 0.859 |
| Indep. Inst. Base Year Pct. | 0.092 | 0.359 | 0.592 | 0.045 ** | -0.086 | 0.880 | -0.036 | 0.383 | 0.157 | 0.334 |
| Indep. Inst. Sample Period Pct. Chg. | 0.125 | 0.279 | 0.251 | 0.459 | -0.310 | 0.638 | -0.066 | 0.159 † | 0.094 | 0.614 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.312 | 0.033 ** | -0.674 | 0.117 † | 0.271 | 0.747 | 0.092 | 0.124 † | -0.115 | 0.630 |
| Indep. Inst. Total Difference (BY + Chg) | 0.216 | 0.250 | 0.842 | 0.128 † | -0.396 | 0.713 | -0.102 | 0.184 † | 0.251 | 0.410 |
| Indep. Inst. Total Base Year (BY + BY) | -0.015 | 0.741 | 0.227 | 0.098 * | -0.080 | 0.765 | -0.013 | 0.509 | 0.014 | 0.852 |
| Indep. Inst. Total Change (Chg + Chg) | -0.080 | 0.137 † | -0.060 | 0.708 | -0.045 | 0.885 | 0.003 | 0.902 | 0.122 | 0.162 † |
| Indep. Inst. Total (BY + BY + Chg + Chg) | -0.096 | 0.256 | 0.168 | 0.499 | -0.125 | 0.797 | -0.010 | 0.773 | 0.137 | 0.318 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.024 | | 0.015 | | 0.106 | | 0.144 | | 0.222 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.121 | 0.298 | -0.380 | 0.087 * | -0.588 | 0.303 | 0.039 | 0.320 | -0.125 | 0.461 |
| All Inst. Sample Period Pct. Chg. | -0.225 | 0.119 † | -0.312 | 0.273 | -0.092 | 0.889 | 0.088 | 0.055 * | -0.062 | 0.750 |
| Indep. Inst. Base Year Pct. | 0.133 | 0.368 | 0.599 | 0.047 ** | 0.702 | 0.403 | -0.072 | 0.216 | 0.090 | 0.718 |
| Indep. Inst. Sample Period Pct. Chg. | 0.169 | 0.297 | 0.251 | 0.460 | -0.116 | 0.873 | -0.105 | 0.038 ** | 0.172 | 0.428 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.347 | 0.117 † | -0.692 | 0.070 * | -0.680 | 0.536 | 0.127 | 0.094 * | -0.187 | 0.566 |
| Indep. Inst. Total Difference (BY + Chg) | 0.302 | 0.249 | 0.850 | 0.095 * | 0.586 | 0.672 | -0.177 | 0.064 * | 0.262 | 0.523 |
| Indep. Inst. Total Base Year (BY + BY) | 0.011 | 0.682 | 0.219 | 0.094 * | 0.114 | 0.748 | -0.032 | 0.187 † | -0.035 | 0.743 |
| Indep. Inst. Total Change (Chg + Chg) | -0.056 | 0.229 | -0.061 | 0.625 | -0.209 | 0.529 | -0.017 | 0.450 | 0.109 | 0.267 |
| Indep. Inst. Total (BY + BY + Chg + Chg) | -0.044 | 0.610 | 0.158 | 0.551 | -0.095 | 0.860 | -0.050 | 0.178 † | 0.075 | 0.638 |

Table 13

# Under- and Overperformer Regression Results - Long-term versus Short-term Institutional Holdings

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. We classifying institutional holdings as "long-term" if holdings are reported for at least 5 quarters of 13F reporting and as "short-term" if the postion is maintained for a shorter period. Percentage holdings are as of the base year of underperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Long-term Investor" variables are percentage holdings of long-term investments only. Thus, coefficients on long-term investor reflect differences in relationships to dependent variables between long-term holdings of institutoins and short-term holdings of institutions. Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All, Short-term Independents Total Difference = Base Year Short-term + Change Short-term; Short-term Institutions Total Base Year = Base Year All + Base Year Short-term; Short-term Institutions Total Change = Change All + Change Short-term; Short-term Institutions Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.333 | 0.084 * | 0.345 | 0.087 * | 1.153 | 0.061 * | 0.065 | 0.180 † | -0.277 | 0.060 * |
| All Inst. Sample Period Pct. Chg. | -0.257 | 0.144 † | 0.164 | 0.372 | 0.833 | 0.138 † | 0.066 | 0.124 † | -0.246 | 0.057 * |
| Long-term Inst. Base Year Pct. | 0.076 | 0.758 | -0.310 | 0.226 | -0.806 | 0.302 | -0.070 | 0.255 | 0.179 | 0.339 |
| Long-term Inst. Sample Period Pct. Chg. | -0.017 | 0.938 | -0.143 | 0.523 | -1.119 | 0.103 † | -0.088 | 0.098 * | 0.403 | 0.012 ** |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.591 | 0.066 * | 0.509 | 0.129 † | 1.986 | 0.052 * | 0.131 | 0.102 † | -0.522 | 0.031 ** |
| Long-term Inst. Total Difference (BY + Chg) | 0.059 | 0.886 | -0.453 | 0.294 | -1.925 | 0.143 † | -0.158 | 0.127 † | 0.582 | 0.063 * |
| Long-term Inst. Total Base Year (BY + BY) | -0.258 | 0.045 ** | 0.035 | 0.794 | 0.347 | 0.400 | -0.005 | 0.871 | -0.098 | 0.298 |
| Long-term Inst. Total Change (Chg + Chg) | -0.274 | 0.082 * | 0.021 | 0.899 | -0.285 | 0.575 | -0.022 | 0.563 | 0.158 | 0.174 † |
| Long-term Inst. Total (BY + BY + Chg + Chg) | -0.532 | 0.026 ** | 0.056 | 0.823 | 0.061 | 0.936 | -0.027 | 0.639 | 0.060 | 0.733 |
| No. Obs. | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.217 | | 0.007 | | 0.090 | | 0.229 | | 0.168 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.324 | 0.108 † | 0.366 | 0.043 ** | 1.705 | 0.025 ** | 0.157 | 0.014 ** | -0.370 | 0.149 † |
| All Inst. Sample Period Pct. Chg. | -0.242 | 0.177 † | 0.147 | 0.384 | 1.603 | 0.038 ** | 0.105 | 0.116 † | -0.385 | 0.062 * |
| Long-term Inst. Base Year Pct. | 0.069 | 0.789 | -0.330 | 0.153 † | -0.720 | 0.413 | -0.138 | 0.061 * | 0.189 | 0.571 |
| Long-term Inst. Sample Period Pct. Chg. | -0.018 | 0.935 | -0.178 | 0.385 | -1.192 | 0.178 † | -0.083 | 0.334 | 0.480 | 0.077 * |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.567 | 0.188 † | 0.512 | 0.254 | 3.308 | 0.013 ** | 0.262 | 0.029 ** | -0.754 | 0.068 * |
| Long-term Inst. Total Difference (BY + Chg) | 0.052 | 0.820 | -0.508 | 0.188 † | -1.912 | 0.226 | -0.222 | 0.139 † | 0.668 | 0.222 |
| Long-term Inst. Total Base Year (BY + BY) | -0.255 | 0.056 * | 0.035 | 0.707 | 0.986 | 0.037 ** | 0.019 | 0.613 | -0.181 | 0.288 |
| Long-term Inst. Total Change (Chg + Chg) | -0.260 | 0.090 * | -0.032 | 0.436 | 0.411 | 0.549 | 0.022 | 0.662 | 0.095 | 0.646 |
| Long-term Inst. Total (BY + BY + Chg + Chg) | -0.515 | 0.038 ** | 0.004 | 0.466 | 1.397 | 0.116 † | 0.041 | 0.581 | -0.086 | 0.782 |

| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.043 | 0.396 | 0.008 | 0.955 | 0.004 | 0.988 | -0.013 | 0.523 | 0.025 | 0.763 |
| All Inst. Sample Period Pct. Chg. | -0.082 | 0.171 † | -0.259 | 0.142 † | -0.247 | 0.471 | -0.007 | 0.788 | 0.170 | 0.079 * |
| Long-term Inst. Base Year Pct. | 0.000 | 0.995 | -0.025 | 0.882 | -0.182 | 0.586 | 0.014 | 0.567 | -0.084 | 0.377 |
| Long-term Inst. Sample Period Pct. Chg. | -0.039 | 0.486 | 0.188 | 0.252 | 0.350 | 0.273 | 0.036 | 0.110 † | -0.105 | 0.241 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.125 | 0.187 † | -0.250 | 0.368 | -0.243 | 0.652 | -0.020 | 0.608 | 0.195 | 0.201 |
| Long-term Inst. Total Difference (BY + Chg) | -0.039 | 0.703 | 0.163 | 0.584 | 0.168 | 0.771 | 0.050 | 0.224 | -0.189 | 0.246 |
| Long-term Inst. Total Base Year (BY + BY) | -0.042 | 0.259 | -0.017 | 0.877 | -0.177 | 0.409 | 0.001 | 0.972 | -0.059 | 0.335 |
| Long-term Inst. Total Change (Chg + Chg) | -0.121 | 0.014 ** | -0.070 | 0.628 | 0.103 | 0.720 | 0.030 | 0.139 † | 0.065 | 0.418 |
| Long-term Inst. Total (BY + BY + Chg + Chg) | -0.163 | 0.024 ** | -0.087 | 0.680 | -0.075 | 0.858 | 0.030 | 0.304 | 0.005 | 0.963 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.022 | | 0.010 | | 0.112 | | 0.146 | | 0.223 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.034 | 0.570 | -0.028 | 0.853 | -0.130 | 0.654 | -0.015 | 0.460 | 0.000 | 0.996 |
| All Inst. Sample Period Pct. Chg. | -0.077 | 0.132 | -0.306 | 0.108 | -0.657 | 0.127 | 0.001 | 0.962 | 0.128 | 0.316 |
| Long-term Inst. Base Year Pct. | 0.023 | 0.770 | 0.007 | 0.968 | -0.123 | 0.717 | 0.013 | 0.585 | -0.097 | 0.335 |
| Long-term Inst. Sample Period Pct. Chg. | -0.015 | 0.762 | 0.236 | 0.198 | 0.590 | 0.128 | 0.012 | 0.647 | -0.106 | 0.352 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.110 | 0.174 † | -0.335 | 0.229 | -0.788 | 0.188 | -0.014 | 0.744 | 0.128 | 0.471 |
| Long-term Inst. Total Difference (BY + Chg) | 0.008 | 0.890 | 0.243 | 0.450 | 0.468 | 0.443 | 0.025 | 0.551 | -0.203 | 0.259 |
| Long-term Inst. Total Base Year (BY + BY) | -0.011 | 0.765 | -0.021 | 0.822 | -0.253 | 0.263 | -0.002 | 0.894 | -0.097 | 0.148 |
| Long-term Inst. Total Change (Chg + Chg) | -0.091 | 0.033 ** | -0.070 | 0.509 | -0.067 | 0.832 | 0.014 | 0.532 | 0.022 | 0.817 |
| Long-term Inst. Total (BY + BY + Chg + Chg) | -0.102 | 0.116 | -0.092 | 0.565 | -0.320 | 0.485 | 0.012 | 0.717 | -0.076 | 0.579 |

Appendix A

# Under- and Overperformer Regression Results - Top 5 Blockholder Institutions

Results are for chronically underperforming (Panel (a)) and consistently overperforming (Panel (b)) firms with base years of 1978 through 2001. Institutional holdings are based on 13F filings. Percentage holdings are as of the base year (BY) of underperformance and overperformance and the change over the five-year sample period. Dependent variables are measured over the five-year study period. ROA and Inverse Tobin's Q are winsorized at the 5% level. The "All Institutions" independent variables are percentage holdings for all institutions. The "Top 5 Blockholders" variables are percentage holdings of the top 5 blockholder insititutions only. Thus, coefficients on the top 5 blockholders reflect differences in relationships to dependent variables between the top 5 blockholders and all other institutions. Institutional percentage holdings are in decimal form. Model specifications are OLS without fixed effects and two-stage selective attrition models. In the attrition models, failure probability and acquisition probability are estimated by logit in the first stage and partial effects are reported; the three performance metrics are second-stage. Modified z-score and leverage variables dropped in the second stage for identification. All control variable results are suppressed. Regression p-values are from two-tailed t-tests. Wald tests are used to test selected summed coefficients. Wald tests: All Institutions Total = Base Year All + Change All, Top 5 Blockholders Total Difference = Top 5 Base Year + Top 5 Change: Top 5 Blockholders Total Base Year = Base Year All + Top 5 Base Year; Top 5 Blockholders Total Change = Change All + Top 5 Change; Top 5 Blockholders Total = Sum of all coefficients. Wald statistic p-values are for F-tests. Two-tailed significance: *** = 0.01, ** = 0.05. * = 0.10. One-tailed significance: † = 0.10.

| | Outcomes | | | | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Panel (a) Underperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.589 | 0.003 *** | -0.163 | 0.436 | 0.805 | 0.213 | 0.074 | 0.130 † | -0.359 | 0.015 ** |
| All Inst. Sample Period Pct. Chg. | -0.420 | 0.063 * | -0.130 | 0.580 | 0.586 | 0.419 | 0.085 | 0.117 † | 0.000 | 0.998 |
| Top 5 Blockholders Base Year Pct. | 0.602 | 0.088 * | 0.594 | 0.107 † | -0.492 | 0.665 | -0.119 | 0.171 † | 0.482 | 0.068 * |
| Top 5 Blockholders Sample Period Pct. Chg. | 0.299 | 0.350 | 0.409 | 0.222 | -0.671 | 0.515 | -0.125 | 0.105 † | 0.008 | 0.973 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -1.009 | 0.004 *** | -0.293 | 0.420 | 1.391 | 0.214 | 0.158 | 0.058 * | -0.358 | 0.157 † |
| Top 5 Blockholders Total Difference (BY + Chg) | 0.901 | 0.105 † | 1.003 | 0.084 * | -1.164 | 0.514 | -0.244 | 0.071 * | 0.490 | 0.232 |
| Top 5 Blockholders Total Base Year (BY + BY) | 0.013 | 0.950 | 0.431 | 0.043 ** | 0.313 | 0.635 | -0.045 | 0.371 | 0.123 | 0.423 |
| Top 5 Blockhholders Total Change (Chg + Chg) | -0.121 | 0.514 | 0.278 | 0.150 † | -0.085 | 0.887 | -0.040 | 0.370 | 0.008 | 0.952 |
| Top 5 Blockholders Total (BY + BY + Chg + Chg) | -0.108 | 0.738 | 0.709 | 0.036 ** | 0.227 | 0.827 | -0.086 | 0.281 | 0.131 | 0.586 |
| No. Obs. | 476 | | 476 | | 462 | | 439 | | 439 | |
| Adj R2 | 0.222 | | 0.011 | | 0.086 | | 0.230 | | 0.162 | |
| | **1st Stage Marginal Effects** | | | | **2nd Stage Estimates** | | | | | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.868 | 0.002 *** | -0.056 | 0.787 | 1.712 | 0.041 ** | 0.104 | 0.091 * | -0.365 | 0.184 † |
| All Inst. Sample Period Pct. Chg. | -0.812 | 0.014 ** | -0.034 | 0.883 | 1.032 | 0.267 | 0.111 | 0.092 * | 0.018 | 0.948 |
| Top 5 Blockholders Base Year Pct. | 0.915 | 0.029 ** | 0.489 | 0.170 † | -1.192 | 0.461 | -0.083 | 0.511 | 0.463 | 0.375 |
| Top 5 Blockholders Sample Period Pct. Chg. | 0.837 | 0.046 ** | 0.225 | 0.491 | -0.248 | 0.852 | -0.109 | 0.283 | -0.181 | 0.661 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -1.680 | 0.001 *** | -0.090 | 0.059 * | 2.744 | 0.071 * | 0.216 | 0.050 * | -0.348 | 0.478 |
| Top 5 Blockholders Total Difference (BY + Chg) | 1.752 | 0.005 *** | 0.714 | 0.019 ** | -1.440 | 0.578 | -0.192 | 0.346 | 0.283 | 0.739 |
| Top 5 Blockholders Total Base Year (BY + BY) | 0.047 | 0.367 | 0.433 | 0.023 ** | 0.520 | 0.615 | 0.021 | 0.796 | 0.098 | 0.743 |
| Top 5 Blockhholders Total Change (Chg + Chg) | 0.025 | 0.641 | 0.191 | 0.258 | 0.785 | 0.330 | 0.003 | 0.962 | -0.163 | 0.521 |
| Top 5 Blockholders Total (BY + BY + Chg + Chg) | 0.072 | 0.403 | 0.624 | 0.037 ** | 1.305 | 0.396 | 0.024 | 0.850 | -0.065 | 0.891 |

| **Panel (b) Overperformers** | **Failed** | | **Acquired** | | **Abn. Returns** | | **ROA** | | **Inv. Tobin's Q** | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***OLS*** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** | **Coef.** | **p-value** |
| All Inst. Base Year Pct. | -0.091 | 0.048 * | -0.002 | 0.986 | 0.105 | 0.690 | -0.001 | 0.945 | -0.049 | 0.518 |
| All Inst. Sample Period Pct. Chg. | -0.131 | 0.033 * | 0.078 | 0.663 | -0.231 | 0.510 | 0.025 | 0.327 | 0.110 | 0.267 |
| Top 5 Blockholders Base Year Pct. | 0.130 | 0.214 | 0.021 | 0.945 | -0.355 | 0.552 | 0.004 | 0.926 | 0.021 | 0.901 |
| Top 5 Blockholders Sample Period Pct. Chg. | 0.059 | 0.592 | -0.504 | 0.117 † | 0.684 | 0.272 | -0.014 | 0.760 | -0.024 | 0.890 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.222 | 0.012 ** | 0.076 | 0.770 | -0.126 | 0.803 | 0.023 | 0.520 | 0.062 | 0.667 |
| Top 5 Blockholders Total Difference (BY + Chg) | 0.189 | 0.307 | -0.483 | 0.375 | 0.329 | 0.755 | -0.010 | 0.899 | -0.003 | 0.991 |
| Top 5 Blockholders Total Base Year (BY + BY) | 0.039 | 0.613 | 0.019 | 0.935 | -0.251 | 0.572 | 0.003 | 0.932 | -0.027 | 0.829 |
| Top 5 Blockhholders Total Change (Chg + Chg) | -0.072 | 0.382 | -0.426 | 0.080 * | 0.454 | 0.339 | 0.011 | 0.748 | 0.086 | 0.522 |
| Top 5 Blockholders Total (BY + BY + Chg + Chg) | -0.033 | 0.814 | -0.407 | 0.319 | 0.203 | 0.798 | 0.014 | 0.812 | 0.058 | 0.796 |
| No. Obs. | 482 | | 482 | | 479 | | 465 | | 465 | |
| Adj R2 | 0.024 | | 0.013 | | 0.111 | | 0.141 | | 0.220 | |
| ***Selective Attrition Models*** | | | | | | | | | | |
| All Inst. Base Year Pct. | -0.047 | 0.411 | -0.005 | 0.971 | -0.044 | 0.878 | -0.002 | 0.934 | -0.118 | 0.159 † |
| All Inst. Sample Period Pct. Chg. | -0.100 | 0.101 † | 0.061 | 0.726 | -0.243 | 0.546 | 0.009 | 0.758 | 0.122 | 0.308 |
| Top 5 Blockholders Base Year Pct. | 0.068 | 0.592 | 0.009 | 0.975 | -0.221 | 0.724 | -0.011 | 0.811 | 0.135 | 0.470 |
| Top 5 Blockholders Sample Period Pct. Chg. | 0.032 | 0.744 | -0.471 | 0.134 † | 0.177 | 0.840 | 0.006 | 0.924 | -0.191 | 0.461 |
| **Wald Tests** | | | | | | | | | | |
| All Institutions Total (BY + Chg) | -0.147 | 0.145 † | 0.056 | 0.950 | -0.286 | 0.616 | 0.007 | 0.860 | 0.003 | 0.985 |
| Top 5 Blockholders Total Difference (BY + Chg) | 0.100 | 0.671 | -0.461 | 0.412 | -0.044 | 0.971 | -0.005 | 0.956 | -0.057 | 0.875 |
| Top 5 Blockholders Total Base Year (BY + BY) | 0.020 | 0.801 | 0.005 | 0.962 | -0.265 | 0.562 | -0.012 | 0.705 | 0.016 | 0.906 |
| Top 5 Blockhholders Total Change (Chg + Chg) | -0.068 | 0.241 | -0.410 | 0.075 * | -0.066 | 0.921 | 0.015 | 0.757 | -0.070 | 0.726 |
| Top 5 Blockholders Total (BY + BY + Chg + Chg) | -0.048 | 0.655 | -0.405 | 0.296 | -0.331 | 0.716 | 0.002 | 0.970 | -0.053 | 0.843 |