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The Effects of Institutional Investor Objectives on Firm Valuation and Governance

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The Effects of Institutional Investor Objectives on Firm Valuation and Governance *

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This version: November, 2016

Abstract

We find that ownership by different types of institutional investor has different implications for future firm misvaluation and governance characteristics. Dedicated institutional investors decrease future firm misvaluation relative to fundamentals, as well as the magnitude of this misvaluation. In contrast, transient institutional investors have the opposite effect. Using SEC Regulation FD as an exogenous shock to information dissemination, we find evidence consistent with dedicated institutions having an information advantage. The valuation effects are primarily driven by institutional portfolio concentration while the governance effects are driven by portfolio turnover. These results imply a more nuanced relationship between institutional ownership and firm value and corporate governance.

Keywords: Institutional investors, investor type, dedicated, transient, misvaluation, corporate governance, blockholding, portfolio turnover, information dissemination, SEC Regulation FD

JEL classification: G30, G32, G14, G38

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"Institutional investors are not all the same. They come in many different forms and with many different characteristics."

- Commissioner Luis Aguilar, SEC, April 2013

1 Introduction

Institutional equity ownership has risen dramatically in the last 30 years, inviting a more thorough investigation into its effects on firm valuation and operations. In the 1980s, institutional investors held approximately 20%-30% of the average firm (with individual investors making up the rest). By the 2010s, over 65% of the average firm is owned by institutional investors.[1] This increase in institutional holdings coincides with the growing sophistication of markets and growing importance of corporate governance. Indeed, much of the literature focuses on the informed "smart money" of the institutional investor in contrast to the less sophisticated individual "retail" investor. Barber and Odean (2008) confirm that, unlike institutions, individual investors are net buyers of attention-grabbing stocks due to limited search resources. This ability of institutional investors to gather information and impose market discipline on management should translate into improvements in market efficiency and asset valuation. For example, Sias and Starks (1997) find that institutional trading increases the speed of adjustment of information into prices and Nagel (2005) finds that short sale constraints bind for stocks with low institutional ownership, resulting in underperformance.

Yet, as suggested in a speech by Commissioner Luis Aguilar of the SEC,[2] not all institutional owners are alike nor do they have similar effects on firms. While many characteristics differentiate institutional investors from one another, portfolio turnover and holdings concentration are the most fundamental. For example, Bushee (1998, 2001) finds that short-term, low concentration ("transient") investors lead to myopic investment decision-making by managers and over-weighting of near-term expected earnings to the detriment of long-term earnings. As such, myopic investment behavior leads to myopic corporate decision-making, potentially destroying long-run value for the firm. In addition, Yan and Zhang (2009) show that the pricing impact of large institutional investors is largely driven by short-term investors reacting and trading on new information. These

[1] Based on data from Thomson Reuters s34 Holdings Database and corroborated by Blume and Kein (2014).
[2] http://www.sec.gov/News/Speech/Detail/Speech/1365171515808

findings suggest that, subsets of institutional investors with different holdings horizons and portfolio concentrations may have differential impact on corporate decisions and firm valuation.

In this paper, we study the impact of different institutional investor types on the valuation, corporate governance, and future performance of firms. Specifically, we focus on two fundamental investor characteristics, portfolio turnover and holdings concentration. We begin by using the Bushee (1998, 2001) classification of institutions into "transient" and "dedicated" investor types. Institutional investors are "transient" if they take small positions in the firms they hold and have high portfolio turnover. Due to a short investment horizon and lack of focus on particular firms, these investors are likely to be myopic traders looking for short-term gains. On the other hand, "dedicated" investors take highly concentrated positions in the firms they hold and have low portfolio turnover. Both of these portfolio characteristics suggest dedicated investors are more likely to invest for the long run, gathering costly firm-specific information and trading on growth potential of a firm. Bushee (1998) finds evidence consistent with this interpretation as firms with predominantly dedicated (transient) institutional owners invest more (less) in R&D. Figure 1 shows that transient institutional investors comprise an increasingly large portion of the total institutional investor pool over time, making an investigation into the effects of different institutional investor types particularly relevant.

We find that firms with higher percentages of transient (dedicated) institutional investors experience more (less) subsequent overvaluation and misvaluation. Specifically, using the Rhodes-Kropf, Robinson, and Viswanathan (2005) book-to-market decomposition, firms with more transient (dedicated) institutional investors experience more (less) positive firm-specific deviation from fundamental values in the following quarter, consistent with overvaluation. They also experience more (less) of an absolute deviation from fundamental value in the next quarter, consistent with misvaluation. Furthermore, firms that experience an increase in their percentage of transient (dedicated) institutional investors experience more (less) overvaluation and misvaluation in the next quarter. These effects persist after controlling for common firm characteristics that may impact firm valuation and after considering alternative explanations such as perceived growth opportunities. In the appendix, we obtain similar results using alternative definitions of overvaluation and misvaluation based on the Hirshleifer and Jiang (2010) undervalued minus

overvalued factor.[3]

We posit that the differential impact of transient versus dedicated institutional investors on subsequent firm overvaluation and misvaluation is driven by differences in information gathering. To examine the information channel, we explore the relationship between institutional investor types and firm valuation around the enactment of SEC Regulation FD. Regulation FD, enacted in 2000 by the U.S. Securities and Exchange Commission, mandates that when an issuer discloses material non-public information to specific outsiders (e.g., analysts or institutional investors), this disclosure must be made public, thereby eliminating the informational advantage previously enjoyed by blockholders (Francis, Nanda, and Wang, 2006; Anderson, Reeb, Zhang, and Zhao, 2013). As such, this regulation addresses the problem of selective disclosure of material information and provides a natural experiment in which to test the information channel.

Using a difference-in-difference framework we find that, as expected, Regulation FD has no significant impact on the relationship between dedicated investor ownership and subsequent overvaluation and misvaluation. That is, dedicated institutional investor ownership reduces overvaluation and misvaluation to a similar degree before and after the regulation, consistent with their having access to information both prior to and after Regulation FD. On the other hand, the regulation significantly reduced the subsequent overvaluation and misvaluation for firms with above-median levels of transient investors relative to the preceding time period, consistent with transient investors having lower barriers to access of information previously only enjoyed by dedicated investors. These results do not exist using a placebo event year of 1995.

Although we use a model with lagged changes in institutional ownership type on overvaluation and misvaluation, the observed results may be due to self-selection by investors into certain types of firms rather than a causal effect of ownership type on firm valuation. We create samples matched ex-ante on misvaluation in a difference-in-difference-in-difference framework to control for self-selection issues in the appendix. We obtain similar results.

Having established that transient and dedicated institutional investors have differential impact

[3]The Hirshleifer and Jiang (2010) misvaluation measure is constructed based on incorporating managerial perceptions of firm growth and firm value as implied by equity issuance and repurchase behavior. As such, this measure approahces misvaluation from a managerial perspective while the RKRV measure approaches misvaluation from a fundamentals perspective. Given the use of distinct information sets and perspectives on misvaluation, the two misvaluation measures serve as reasonable robustness checks for each other.

on subsequent firm overvaluation and misvaluation, we next explore which of the associated portfolio characteristics - portfolio turnover or holdings concentration - is responsible for these findings to shed further light on the causes of differences between the two previously defined institutional types. We find that ownership by institutions in the lowest portfolio turnover tercile (i.e., long horizon investors) results in less firm-specific overvaluation as well as lower misvaluation relative to fundamentals in the subsequent quarter. Institutional ownership by investors in the highest portfolio turnover tercile also results in less overvaluation, but statistically insignificant misvaluation. Importantly, firms held by institutions that have diversified portfolios and either high *or* low portfolio turnover experience more future overvaluation.

Finally, we explore whether institutional ownership types also have differential effects on measures of risk, corporate governance, and future firm performance. We document that firms held by transient institutional investors have more expected tail risk, higher realized returns volatility, higher average and median executive compensation, worse accruals quality, lower payout ratios, and lower leverage increases relative to those held by dedicated institutional investors. Firms held by transient investors experience positive abnormal returns relative to the 5-factor model in the subsequent quarter, whereas those held by dedicated investors experience positive abnormal performance later in the year consistent with longer investment horizons. Firms held by dedicated investors experience positive raw returns over the subsequent four quarters, whereas those held by transient investors experience negative or insignificant raw returns over the same period.

These findings enable us to contribute to the ongoing debate within extant literature over whether institutional investors benefit the markets, either through improvements in market efficiency or by providing corporate governance, or whether they harm them through opportunism and pressure exerted on managers to achieve short-term results at the expense of long-term performance. While the literature generally accepts that institutional investors are more informed and allow markets to be more efficient (Sias and Starks, 1997; Nagel, 2005; Barber and Odean, 2008), there are contradicting results and arguments among both academics and practitioners over the institutional benefits to governance and costs of induced myopia. For example, Gillian (1995), Karpoff, Malatesta, and Walkling (1996), Smith (1996), and Wahal (1996) find no long-term effects from shareholder activism while Nesbitt (1994) finds that firms targeted by CalPERS outperform in

subsequent years. More recently, Brav, Jiang, Partnoy, and Thomas (2008) find a positive abnormal return for firms targeted by hedge fund activism and Boone and White (2015) find that higher institutional ownership is associated with greater management disclosure and lower information asymmetry. Conversely, a survey of over 1,000 board members and executives around the world conducted by the Canadian Pension Plan Investment Board and McKinsey and Company (Barton and Wiseman, 2014) draws attention to the effects of short-term investor pressure on corporate decision-making and its negative effects on value maximization. In this report, 79% of respondents felt pressured to demonstrate performance over a horizon of two years or less, and 44% used a horizon of three or less years to set corporate strategy while 86% stated that a longer horizon would have improved financial performance.

These seemingly dissonant effects of institutional ownership on firm performance can be explained by the differential effects we find for institutional ownership types. The conflicting findings in the growing literature above suggest that combining all institutions into one category yields different, and likely mistaken, results than those that would be obtained by more refined categorizations. Indeed, among the papers that find benefits to corporate governance, most focus on a specific type of institutional investor (e.g., CalPERS or hedge funds) rather than institutional investors as a single group.

The main contribution of our paper lies in identifying the distinct effects of institutional investor types and investment styles on subsequent firm overvaluation, misvaluation, governance measures, and realized future performance. Bushee (1998, 2001) groups institutional investors based on their portfolio turnover and holdings concentration and finds that "transient" institutional investors are related to myopic corporate decision-making while "dedicated" institutional investors are not. Gompers and Metrick (2001) find that large institutional investors invest in large companies, thereby increasing the prices of large stocks. Yan and Zhang (2009) show that these trends in large institutional investors is largely driven by short-term investors reacting and trading on new information. On the other hand, Gasper, Massa, and Matos (2005) show that acquisition targets held by short-term investors experience a lower premium and Chen, Harford, and Li (2007) find that only long-term investors are related to positive post-merger performance rather than focusing on short-term gains.

We add to this growing literature by identifying how institutional investor types and their underlying portfolio turnover and holdings concentration affect the valuation, governance characteristics, and future performance of firms in which these institutions invest. We find that dedicated institutional investor ownership results in more accurate future firm valuation, superior characteristics related to corporate governance, and superior long-term performance of the firm. The valuation effects are primarily improved by institutional investors with higher portfolio concentration and the governance and long-term performance effects by institutions with lower portfolio turnover. Specifically, we find that long-term institutions are able to achieve long-term performance: firms with more long-term institutional investors outperform firms with fewer of them by 2.8% on a risk-adjusted basis over the subsequent year.

2 Data

2.1 Institutional Ownership and Investor Types

We start with data on institutional investor ownership obtained from the Thomson Reuters Institutional Holdings database. The Thomson Reuters holdings database covers investment companies and their security holdings as reported on their 13F forms filed with the Securities and Exchange Commission (SEC) every quarter.[4]

We first classify institutional investor types based on the combination of portfolio turnover and holdings concentration from Bushee (1998, 2001) and Bushee and Noe (2000). Bushee (1998, 2001) categorizes institutional investors as "transient", "quasi-indexer", or "dedicated" based on their investment horizons and portfolio concentration.[5] Investors are classified as "transient" if they have short investment horizons reflected by high portfolio turnover and highly diversified portfolio holdings.[6] Analogously, "dedicated" investors have long investment horizons reflected by low portfolio turnover and focused portfolio holdings. The third class of investors, "quasi-indexers", are long-horizon, low turnover investors that are highly diversified. We focus our analysis on dedicated (DED) and transient (TRA) institutional investors as they both have an

[4] All institutions conducting business in the U.S. with investments over $100 million are required to disclose their list and shares held of Section 13F securities, which include exchange-traded stocks.

[5] We are grateful to Brian Bushee for providing this data on his website.

[6] We use the permanent manager classification to avoid issues with institutions that change classification over time. All results hold using the non-permanent (time-varying) classification.

active choice in their investment strategy: dedicated investors do not trade frequently, but hold specifically selected firms (and are therefore different from the passive indexers), while transient investors trade frequently. We exclude the quasi-indexer institutional ownership type as the passive ownership strategy does not imply any asset selection in either the time horizon or portfolio choice dimensions.

Table I presents the top ten dedicated and transient institutional investors in our sample in decreasing order based on average portfolio size. As expected, the dedicated list of investors is comprised of investment management and insurance companies, which may be expected to hold stocks for long periods of time and some of which, like Berkshire Hathaway, are famous for it. On the other hand, many of the investment management firms on the transient list of investors are affiliated with investment banks such as UBS, Morgan Stanley, and Oppenheimer.

To further motivate the distinctions between the two types of institutional investors, we consider empirical differences in their portfolio characteristics. Table II demonstrates that dedicated and transient institutions have different investment styles, as reflected in their significantly different portfolio characteristics. Dedicated institutional investors have average portfolio sizes almost four times larger than transient investors, though they hold fewer stocks on average. Additionally, dedicated investors hold a larger percentage of each firm on average, and at the median, than transients do. They also have a significantly higher variation in these holdings, consistent with the large positions of dedicated blockholders.[7] Notably, dedicated investors hold firms with smaller average and median market capitalizations that are almost half the size of those held by transients, with a correspondingly lower variability in owned-firm capitalizations. This is consistent with dedicated investors possessing an information advantage, as smaller and younger firms are more opaque and difficult to analyze (Hadlock and Pierce, 2010; Karpoff, Lee, Masulis, 2013). As expected, dedicated investors are also more focused, holding firms from fewer unique SIC3 industries and have a much higher Hirshleifer-Herfindahl concentration in portfolio weights than do transient investors. Reassuringly, consistent with the Bushee (1998, 2001) definition, dedicated investors do indeed have more concentrated positions in firms relative to total shares outstanding and have lower portfolio turnover than transients. All institutional investor characteristics between dedicated and

[7]That is, while both dedicated and transient investors hold small stakes in some firms, dedicated are more likely to be blockholders in other firms, leading to the higher variation.

transient institutional investors are significantly different at the 1% level.

2.2 Misvaluation

Our main measure of misvaluation is the Rhodes-Kropf, Robinson, and Viswanathan (2005), hereafter RKRV, decomposition which splits the logarithm of the market-to-book ratio into three components: firm-specific error, time-series sector error, and long-run market value to book value. The RKRV decomposition is provided in equation (3) of their paper and reproduced below:

$$m_{i,t} - b_{i,t} = \underbrace{m_{i,t} - v(\theta_{i,t}; a_{j,t})}_{firm} + \underbrace{v(\theta_{i,t}; a_{j,t}) - v(\theta_{i,t}; a_j)}_{sector} + \underbrace{v(\theta_{i,t}; a_j) - b_{i,t}}_{long-run}. \tag{1}$$

This decomposition relies on a firm having a long-run, target, market-to-book ratio that equals that of its industry. This ratio is determined by a parsimonious set of valuation multiples: book value, leverage, and net income.[8] The firm's market-to-book ratio is comprised of a long-run market-to-book value determined from long-run multiples of the three variables used, with a time-varying sector-wide multiple representing sector-wide deviations and a firm-specific multiple accounting for any additional firm-specific deviations. Following Rhodes-Kropf, Robinson, and Viswanathan (2005), these firm-specific deviations capture the degree of overvaluation and misvaluation. We explore the impact of the different types of institutional investor on the firm-specific error component. Positive firm-specific error is our proxy for overvaluation, and the absolute value of the firm-specific error proxies for misvaluation.[9]

2.3 Financial Statement Data

In addition to institutional investor ownership and firm valuation, we collect information on firm characteristics. We define firm characteristics based on financial statement data obtained from Standard and Poor's Compustat North American quarterly database from 1985 to 2013. All dollar amounts are chained to 2000 dollars using CPI to adjust for inflation. We remove any firms with

[8] Despite the small number of multiples considered, this measure fits the cross-section of market to book ratios within industries reasonably well with an R^2 of 0.80 to 0.94.

[9] The RKRV measure uses deviations from long-run market multiples to approach the issue of misvaluation. As such, there is a potential dual-hypothesis problem regarding our choice of valuation model. We address this issue by considering an alternative measure for overvaluation and misvaluation based on insider information from Hirshleifer and Jiang (2010) in the appendix.

negative book asset value, market equity, book equity, capital stock, sales, dividends, debt, and inventory. Such firms have either unreliable Compustat data or are likely to be distressed or severely unprofitable. In addition, we delete observations in which book assets or sales growth over the quarter is greater than 1 or less than -1 and remove firms worth less than $5 million in 2000 dollars in book value or market value to remove observations that have abnormally large changes due to acquisitions or small asset bases. Next, we remove outliers defined as firm-quarter observations that are in the first and 99th percentile tails for all relevant variables used in our analysis. Following standard practice in the literature, we remove all firms in the financial and insurance, utilities, and public administration industries as they tend to be heavily regulated.

Merging institutional investor data to corporate financial data based on a firm's CUSIP and year-quarter gives us a sample of 236,025 firm-quarter observations spanning 11,116 firms. Appendix A details the construction of all variables. Table III provides the summary statistics for our main sample and Table IV presents the correlation matrix. The average (median) firm in our sample has 41.5% (38.4%) institutional ownership, with 4.6% (2.9%) of the firm owned by dedicated institutional investors and 27.3% (27.3%) owned by transient institutional investors. The correlation between dedicated and institutional ownership is -0.23.[10] While there is a wide range of firm overvaluation, the average and median firm in our sample is overvalued (i.e., has positive firm-specific error) according to the RKRV measure.

In Table V, we compare key characteristics of firms held by the two types of active institutional investors. We subset the data on the highest half of ownership by each investor type and find that the two active types hold firms with significantly different characteristics. This is consistent with the different investment styles and objectives evident in their different approaches to holding period and concentration. Notable differences in the firms each type chooses to hold signal potential notably different effects on firm valuation, operations, and performance. Specifically, we find that dedicated institutional investors hold larger firms than transient investors do, with average total asset values of $1,763.4 and $1,434.2 million respectively. Despite this, dedicated investors hold firms with lower market values than those held by transient investors, with average market values of $1,632.5 and $1,741.9 million respectively. These two observations taken together imply a value

[10]While this is not high enough to warrant concerns about multicollinearity when including both dedicated and transient ownership in regression models, we test for this by including only one at a time. All results hold.

preference by dedicated investors relative to transient ones; indeed the log of long-run market-to-book ratio under the RKRV decomposition is significantly lower for firms held by dedicated (0.479) relative to transient institutional investors (0.578). Furthermore, firms held by dedicated investors experience almost no firm-specific overvaluation (0.004) under the RKRV measure whereas firms held by transient investors experience much more (0.140).

The t-tests of means also suggest significant differences in information quality for firms held by the two types: dedicated investors prefer less popular firms with the average number of institutional investors in firms they hold at 66.9, relative to the 83.8 in firms held by transient investors. Dedicated investors also hold firms with lower analyst following, 3.3 to 4.9 respectively, as well as a higher principal component of several opacity measures,[11] consistent with an informational advantage in selecting less-followed and more opaque firms. Firms held by dedicated investors are also less likely to have a credit rating, further consistent with a preference of dedicated investors in holding firms with less publicly available information.

Dedicated investors also hold firms with significantly different operating characteristics than those held by transient investors: they have higher Z-scores, higher leverage, lower cash flow dispersion, lower realized volatility, lower tai or crash risk for firm cash flowsl risk,[12] lower average, maximum, and median executive pay, higher quality accruals, higher payout ratios, and higher net leverage changes.

Overall, these results are strongly indicative of differing investment preferences by the two institutional investor types, motivating our study of the effects of intuitional ownership type on future firm value. The overlap between firms owned by dedicated, transient, long/short horizon, and focused/diversified institutional investors is imperfect but consistent with expectations. Firms owned by an above-median number of dedicated investors also have more long-horizon institutional investors. Firms owned by an above-median number of transient investors also have more short-horizon institutional investors. The differences observed in Table V also hold when we subsample firms based on the dollar amount held by each institutional ownership type (i.e., value-weighted), rather than by the number of each institutional investor type (i.e., equal-weighted).

[11] See Karpoff, Lee, and Masulis (2013) for details on constructing principal components of opacity proxies.

[12] As measured by $IVspread_{mon}$, the implied volatility spread across moneyness between OTM and ATM put options. See Borochin and Yang (2016) for details on constructing $IVspread_{mon}$.

3 Institutional Investor Type and Firm Value

In this section, we examine the impact of different institutional investors types on overvaluation and misvaluation. We begin with classifying institutional investors as dedicated or transient, following Bushee (1998, 2001). Transient investors are more likely to enter and exit their positions quickly and aggressively, relying on publicly available information and strategies such as technical analysis to choose their investments (Bushee, 2001). In contrast, dedicated investors have more incentive to gather information and build relationships with their investments. Due to the information advantage that dedicated investors have relative to transient investors, we hypothesize that firms with more transient institutional investors will have more future overvaluation and misvaluation while firms with more dedicated institutional investors will have less. Furthermore, if dedicated investors possess an informational advantage an increase in dedicated institutional investors should lead to a decrease in overvaluation and misvaluation, with the opposite effect occurring for increases in transient institutional ownership.

Hypothesis 1. *Firms with a higher percentage of dedicated (transient) institutional investors experience less (more) overvaluation and misvaluation.*

Hypothesis 2. *Firms that experience an increase in dedicated (transient) institutional investors experience less (more) overvaluation and misvaluation.*

3.1 Baseline and Full Models

Starting with a baseline model, we estimate the effects of lagged levels of institutional ownership by investor type on overvaluation and misvaluation variables of interest, $Y_{i,t}$, in the subsequent quarter. We consider two measures: 1) the RKRV firm-specific valuation error, which captures the direction of valuation error with positive error indicating overvaluation, and 2) the absolute value of the RKRV firm-specific error which captures the magnitude of misvaluation regardless of direction of deviation from fundamental value.

$$Y_{i,t} = \alpha + \beta_1 pDED_{i,t-1} + \beta_2 pTRA_{i,t-1} + fe_t + fe_j + \varepsilon_{i,t}, \tag{2}$$

where $pDED$ is the percentage of dedicated institutional owners relative to the total number of institutional owners, and $pTRA$ is the percentage of transient institutional owners relative to the total number of institutional owners. We control for macroeconomic effects with year fixed effects, for seasonality with quarter fixed effects, and for general changes in value with industry fixed effects. Standard errors are double-clustered by firm and year-quarter.

Next, we decompose the lagged level of ownership by type into the second lag of the level and the first lag of the change:

$$X_{i,t-1} \equiv X_{i,t-2} + \Delta X_{i,t-2,t-1}.$$

This allows us to study the dynamics of the effect of ownership type on overvaluation and misvaluation by examining both changes in ownership as well as levels in ownership, giving us a second version of the baseline model:

$$Y_{i,t} = \alpha + \beta_1 pDED_{i,t-2} + \beta_2 \Delta pDED_{i,t-1} + \beta_3 pTRA_{i,t-2} + \beta_4 \Delta pTRA_{i,t-1} + fe_t + fe_j + \varepsilon_{i,t}. \quad (3)$$

This decomposition of the lagged level of ownership into the second lag of the level and the first lag of the change has three main advantages. First, it allows us to study the impact of levels as well as changes of ownership type on firm value. Second, it controls for any persistence in institutional ownership through the second lag level, allowing the change in ownership to act as a shock. Third, although imperfect, it serves as a first attempt to address the potential selection bias issue in controlling for the relationship between firm valuation and pre-existing ownership types. We address the potential selection bias more rigorously in Section 4.1 and in the appendix.

We further supplement our baseline model by including controls for common firm characteristics and factors relevant to firm value. This provides us with our full model:

$$\begin{aligned} Y_{i,t} = {} & \alpha + \beta_1 pDED_{i,t-2} + \beta_2 \Delta pDED_{i,t-1} + \beta_3 pTRA_{i,t-2} + \beta_4 \Delta pTRA_{i,t-1} + \beta_5 lnTA_{i,t-1} \\ & + \beta_6 pINST_{i,t-1} + \beta_7 INSThhi_{i,t-1} + \beta_8 Zscore_{i,t-1} + \beta_9 Lev_{i,t-1} + \beta_{10} LTCR_{i,t-1} \\ & + \beta_{11} CFdisp_{i,t-1} + \beta_{12} NumEst_{i,t-1} + fe_t + fe_j + \varepsilon_{i,t}, \end{aligned} \quad (4)$$

where $lnTA$ is log-transformed total assets of the firm to control for firm size, $pINST$ is the percentage of institutional ownership by all types of institutional investors in the 13F database

to control for overall institutional investment, $INSThhi$ is the Herfindahl-Hirschman index of institutional ownership in the firm to control for concentration of institutional ownership, $Zscore$ is the Altman (1968) Z-score measure to control for firm financial health, Lev is the ratio of long-term debt to total assets to control for capital structure, $LTCR$ is an indicator variable for whether the firm has a S&P long-term credit rating to control for financial constraints, $CFdisp$ is the standard deviation of cash flows over the prior 20 quarters divided by the mean of cash flows over the prior 20 quarters to control for cash flow volatility,[13] and $NumEst$ is the number of analysts reporting EPS forecasts for the firm in a given quarter to control for market attention. All control variables are lagged one quarter. In addition, we include year and quarter fixed effects to control for the macroeconomic environment and seasonality, respectively, and SIC3 fixed effects to control for variation across industries. Standard errors are double-clustered by firm and year-quarter.

Table VI presents the results for the baseline and full models. Columns (1) and (2) report the results using the baseline model in equation (2). We see in Column (1) that firms with higher dedicated institutional ownership experience less overvaluation (-0.767) in the subsequent quarter, while those with higher transient ownership become more overvalued (0.388). That is, for a 100% increase in dedicated ownership, the logarithm of the firm's value relative to fundamentals drops by 0.767 and for a 100% increase in transient ownership, the log firm value relative to fundamentals increases by 0.388.[14] Both effects are significant at the 1% level. Using the misvaluation measure, Column (2) finds that firms with more dedicated ownership are not significantly misvalued in the subsequent quarter, while those with more transient ownership face significantly higher subsequent misvaluation (0.073). In other words, for every 100% increase in transient ownership, the logarithm of misvaluation increases by 0.073 relative to firm fundamentals, which is significant at 1%. These results are consistent with Hypothesis 1, where firms with more dedicated (transient) institutional investors face lower (higher) subsequent overvaluation *and* misvaluation.

When we decompose lagged institutional ownership into second lagged levels and first lagged changes in equation (3), we see in Column (3) of Table VI that firms become less overvalued with both higher levels as well as larger increases in DED ownership whereas they become more

[13] We also consider the dispersion of earnings as well as the dispersion of sales over the same time period, with no difference in the observed results.

[14] Recall that Rhodes-Kropf, Robinson, and Viswanathan (2005) decompose the logarithm of the market-to-book ratio.

overvalued with both higher levels and larger increases in TRA ownership, significant at the 1% level. In fact, overvaluation falls by 0.871 for a 100% increase in $pDED_{i,t-2}$, the level of dedicated institutional ownership, consistent with the decrease documented in column (1), and falls further by 0.516 for a 100% increase in $\Delta pDED_{i,t-1}$, the change in dedicated ownership. Similarly, firm value relative to fundamentals rises by 0.453 for a 100% increase in $pTRA_{i,t-2}$, the level of transient institutional ownership, consistent with the increase documented in column (1), and rises further by 0.410 for a 100% increase in $\Delta pTRA_{i,t-1}$, the change in transient ownership. All effects are significant at the 1% level. Column (4) presents the results for misvaluation, finding a weaker but also positive misvaluation effect on $pTRA_{i,t-2}$, significant at the 10% level.

Finally, Columns (5) and (6) of Table VI present the results for the full model that includes controls in equation (4). These results confirm the prior findings on the distinct effects of dedicated and transient institutional ownership on both overvaluation and misvaluation in the presence of controls. Specifically, accounting for controls, a 100% increase in the level of dedicated ownership reduces overvaluation by 0.568, and a 100% increase in the change in dedicated ownership reduces overvaluation by 0.362, both significant at the 1% level. Similarly to previous findings, a 100% increase in the level of transient ownership increases overvaluation by 0.150, and a 100% increase in the change of transient ownership increases it by 0.285 in Column (5). Column (6) shows a significant positive effect on the magnitude of misvaluation for both levels and changes of transient institutional investors. This result is consistent with, and in fact, stronger than, that in column (4). A 100% increase in the level of transient ownership increases the magnitude of misvaluation by 0.135, and a 100% increase in the change of transient ownership increases it further by 0.096.

We test the robustness of our findings by repeating the analysis in Table VI using an alternative measure of overvaluation and misvaluation based on Hirshleifer and Jiang (2010). Appendix B.1 details the methodology and results. The authors hypothesize that managers who have a private signal that their firm is overvalued (undervalued) will issue (repurchase) equity to take advantage of this inside information. They propose an undervalued-minus-overvalued (UMO) factor as a portfolio that takes long positions in equity repurchasers and shorts equity issuers and finds that this factor is able to identify overvalued and undervalued firms by its explanatory power for the firm's returns. We compute each firm's loading on the UMO factor as an alternative measure

of overvaluation, and its absolute magnitude as an alternative measure of misvaluation. As this alternative measure is based on managerial behavior, the HJ measure is derived with respect to a completely distinct set of information than the RKRV measure, which is based on firm fundamental multiples. As such, we can expect the two to serve as robustness checks for one another. Our results for the two measures are mutually, and reassuringly, consistent.

3.2 Channels for Ownership Effects on Firm Value

Having observed the differing effects that institutional investor types have on firm-specific overvaluation and misvaluation, we next seek to understand and test several explanations by which these differences may arise.

3.2.1 Corporate Events

First, one potential reason for the observed differences is due to the occurrence of corporate events in which one type of institutional investor is involved in some capacity, resulting in both increased ownership by that investor type as well as increased (over) valuation. One such corporate event is merger and acquisition activity in which transient institutions may either engage in event-specific trading strategies or in advisory roles. To examine whether mergers and acquisitions drive the relationship between investor type and misvaluation, we obtain and include mergers and acquisition information from the Thomson Reuters SDC M&A database. We repeat our full model analysis in equation (4) using three alternative subsamples: 1) excluding firms that have participated in M&A (as either the acquirer or target) in the current quarter, 2) excluding firms that have participated in M&A in the quarter before, during, and after the current, and 3) excluding firms that have ever participated in M&A in its entire available history. In all cases, our results are highly similar to the main findings in Table VI, suggesting that investor involvement or influence in M&A is not the main driver of investor type on misvaluation.

Another such corporate event is equity offerings. It may be the case that transient investors, many of whom are large investment banks, may act in advisory roles, inflating both the valuation of the firm as well as transient ownership. To consider the effect of equity offerings, we obtain and include seasoned equity offering information from the Thomson Reuters SDC Global Issuances

database. Similarly to the treatment of M&A, we consider three alternative subsamples: 1) excluding firms that have issued an equity offering in the current quarter, 2) excluding firms that have issued equity in the quarter before, during, and after the current, and 3) excluding firms that have ever participated in a seasoned equity offering in its entire available history. Again, in all cases, our results are highly similar to the main findings. Altogether, these results suggest that corporate events are not the main driver of the observed effect of institutional ownership type on firm value. These results are suppressed for brevity.

3.2.2 Momentum

A second potential explanation for the observed differences between different institutional investor types could be that, given the high portfolio turnover and short investment horizon characteristics of transient investors, these investors may be momentum return chasers. A momentum trend could jointly cause an increase in both current transient ownership and future firm-specific RKRV overvaluation and misvaluation.[15] We create a Momentum Returns measure calculated as the cumulative return over the prior 12 to seven months following Novy-Marx (2012) to control for this potential confounding effect.[16] Novy-Marx (2012) shows that intermediate-term past returns serve better in predicting future returns than recent past performance. Using intermediate-term past returns has the additional advantage of basing momentum on a period prior to our lagged institutional investor level and change measures.

Columns (1) and (2) of Table VII include the Momentum Returns variable to control for momentum trends in firm value. The coefficients on both dedicated and transient institutional ownership types, their significances, and the R^2's are highly similar to those observed in our main findings in Table VI. This rules out momentum chasing as the driving explanatory mechanism for the observed overvaluation effect of transient institutional investors. As expected, Momentum Returns, itself, increases firm overvaluation significant at the 1% level as firms experiencing upward

[15]Momentum may increase firm-specific error due to an exacerbation of true misvaluation or due to a mechanical increase in firm-specific error caused by the slower adjustment of valuation multiples in the RKRV valuation model relative to market value. The fact that our results hold when using the alternative misvaluation measure based on Hirshleifer and Jiang (2010) that has a faster adjustment period provides additional evidence against the second possibility.

[16]We additionally construct a Momentum Returns measure based on Asness, Moskowitz, and Pedersen (2013) that uses cumulative monthly returns over the past year. Furthermore, we also construct measures using abnormal returns relative to the Fama-French 3-factor model in place of raw returns in our definitions. All results hold.

momentum in the past intermediate-term will on average continue to exceed their firm-specific fundamental value.

3.2.3 Firm Opacity

Third, we examine the possibility that the observed differences between dedicated versus transient investors on overvaluation and misvaluation is due to different investor incentives in gathering information. As such, we would expect any information advantages that dedicated investors use in correcting valuation errors to be stronger for more opaque firms, and transient-induced mispricing to be higher. We measure Firm Opacity as the principal component of known opacity proxies following the approach of Karpoff, Lee, and Masulis (2013) to control for information asymmetry. These opacity proxies include log of firm age, log of firm size, and average bid-ask spread, standard deviation of returns, Amihud ratio, and skewness of the Fama-French 3-factor model residuals over the prior year.[17] Since this principal component includes the Amihud ratio and bid-ask spread, this effectively controls for firm liquidity as well.[18]

Columns (3) and (4) of Table VII include the Firm Opacity measure as an additional control for availability of information. This appears to strengthen our results from Columns (5) and (6) of Table VI with higher magnitude coefficients on the levels of and changes in dedicated ownership for firm overvaluation and levels of and changes in transient ownership for firm misvaluation and the R^2's are the highest among all specifications we consider. Firm Opacity itself lowers overvaluation and increases misvaluation. This is consistent with information asymmetries playing a role in the effect of institutional investor types on firm valuation, particularly that of dedicated institutional investors with a superior information advantage. We revisit the role of information gathering on the observed results in more detail in Section 4.

[17] This principal component has a correlation between 70-98% with larger sets of information asymmetry proxies similar to those used by Karpoff, Lee, and Masulis (2013), including number of analysts, analyst dispersion, and analyst error. We use the more parsimonious set of proxies to maximize the number of usable observations due to the relatively low availability of analyst observations from the I/B/E/S database.

[18] We repeat the analysis with separate control variables for Amihud ratio and bid-ask spread, and find no difference in results.

3.2.4 Perceived Growth Opportunities

Finally, it may also be the case that dedicated and transient institutional investors have distinct perceptions regarding the growth and future value of firms, driving the observed differences in results. Specifically, higher perceived growth opportunities may drive both transient ownership and increased firm overvaluation and misvaluation. To address this concern, we rely on the firm's investment in innovation as a proxy for perceived growth opportunities. We measure R&D Intensity, defined as annual research and development expenses as a ratio to annual sales revenue, to capture the degree to which a firm invests in innovation and growth. A firm with more R&D investment is harder to value correctly given the long-term nature of the investment and is more likely to generate diverging perceptions of growth.[19] As such, R&D Intensity proxies for perceived future growth opportunities.

Columns (5) and (6) of Table VII include R&D Intensity as a control for perceived growth opportunities. The results for the effect of institutional ownership type on firm-specific overvaluation and misvaluation are unchanged - dedicated (transient) institutional investors leads to significantly lower (higher) overvaluation in the next quarter and transient institutional investors lead to significantly higher misvaluation in the next quarter.

3.3 Sector-wide Misvaluation and Long-run Value

In the previous section, we study the relationship between institutional investor types and firm-specific overvaluation and misvaluation, including using a firm-specific proxy for differences in perceived growth opportunities. To further explore whether firm-specific characteristics such as perceived growth opportunities drive the observed differences between investor types and firm valuation, we examine the effect of institutional ownership type on sector-wide misvaluation and long-run market-to-book value from the remaining two components of the RKRV decomposition in equation (1). These components eliminate firm-specific cross-sectional differences, including firm-specific perceived growth opportunities, and allows us to examine institutional investor objectives at the sector level as well as in the long-run.

[19] Hirshleifer, Hsu, and Li (2013) find that firms with higher innovation efficiency have higher future positive returns, which are related to investor inattention and valuation uncertainty.

The RKRV sector overvaluation is defined by Rhodes-Kropf, Robinson, and Viswanathan (2005) as the difference between the log of firm value derived from current sector multiples and the log of firm value derived from long-run sector multiples. The RKRV long-run market-to-book value is the difference between the log of fundamental value derived from long-run multiples and the log of book value. Similar to the firm-specific misvaluation measure, we create a sector-wide misvaluation measure as the absolute value of the sector-wide overvaluation measure.

Table VIII presents the results. Columns (1) through (3) present the baseline results following equation (3) for the sector overvaluation and sector misvaluation measures, as well as the firm's long-run market-to-book value. Column (1) shows that the lagged level of transient ownership increases subsequent sector-wide overvaluation by 0.038 while an increase in transient ownership increases it by 0.053 both significant at the 5% level without controls. Column (2) finds that the lagged level of transient ownership reduces sector-wide misvaluation by 0.032 significant at the 1% level. The results suggest that while transient ownership increases future sector-wide overvaluation, the magnitude of the overvaluation (i.e., misvaluation) falls in the future. Column (3) finds that both higher levels of dedicated and transient ownership lead to higher long-run market-to-book value, significant at the 1% level, with a similar effect for an increase in transient ownership.

The inclusion of our controls from equation (4) in Columns (4) through (6) of Table VIII absorbs some of the effects. In Column (4), the level of transient ownership increases sector-wide overvaluation by 0.038 and the change in transient ownership increases it by 0.060, both significant at the 5% level. These results are consistent with those observed in Column (1). However, in Column (5) with the inclusion of control variables, transient investors no longer significantly reduce sector misvaluation. This suggests that the previous result in Column (2), where the lagged level of transient investors reduces sector misvaluation, is due to publicly known firm characteristics (as measured by the controls), rather than any specific influence by the transient investors. Finally, when we include controls in Column (6), we find that the level of dedicated ownership decreases long-run market to book by 0.107, and the change in dedicated ownership decreases long-run market to book by 0.095. Meanwhile, the level of transient ownership increases long-run market to book by 0.083 and the change increases it by 0.109. In other words, after controlling for firm characteristics, dedicated institutional investors appear to have a value preference while transient institutional

investors do not.[20]

4 The Role of Information in Institutional Valuation

In the preceding section we have identified the differential effects of institutional ownership types on firm value and have tested their robustness against alternative explanations. We found that Firm Opacity strengthens our findings, and now seek to further test the information channel.

In October 2000 the SEC implemented a selective disclosure and insider trading rule, informally known as Regulation FD, which prohibited selective disclosure of information to institutions and required all material disclosures to be public. As a result, this regulation effectively serves as an exogenous shock to the information advantage previously enjoyed by some well-connected institutions, improving market efficiency (Heflin, Subramanyam, Zhang, 2003), reducing flow of private information to analysts (Francis, Nanda, and Wang, 2006) and reducing informed trading in firms with blockholders and analyst access (Anderson, Reeb, Zhang, and Zhao, 2013). We take advantage of this exogenous shock to examine the importance of dedicated and transient ownership for firm overvaluation and misvaluation. Specifically, we hypothesize that by reducing the information advantage to well-connected dedicated institutions, this regulation will result in lower misvaluation for transient institutional owners that do not possess these connections to the same degree that dedicated intuitional owners do.[21]

4.1 Exogenous Shock to Institutions' Information Asymmetry

The implementation of Regulation FD (RegFD) allows for a difference-in-difference framework. We identify three potential treatment and control groups designated by three indicator variables, $isDED$, $isTRA$, and TvD. The first set is comprised of firms with above-median dedicated institutional ownership at the end of 1999, for which the respective control group is all firms with

[20] Recall that the long-run value component of the RKRV market-to-book decomposition relies on long-run industry-wide multiples. While firm-specific and, to a lesser extent, time-series sector misvaluation can be driven by trends in institutional ownership, allowing more for a causal interpretation of the results, it is unlikely that institutional ownership influences long-run industry-wide multiples, making the results for long-run value more consistent with strategic portfolio selection. We further test the causal interpretation for institutional ownership type on firm-specific misvaluation in Section 4.

[21] Since the Bushee (1998, 2001) definition of dedicated institutions includes concentrated ownership of firms, this makes them likely to be blockholders and therefore more likely to receive private information through firms prior to Regulation FD consistent with Anderson, Reeb, Zhang, and Zhao (2013).

below-median dedicated ownership. The second, of those with above-median transient institutional ownership with a corresponding below-median transient ownership control. The third set is drawn from a subsample of firms with only above-median dedicated, or transient, institutional ownership, but not both. The treatment group in this subsample are those with above-median transient ownership and the control group are those with above-median dedicated ownership. We define a post-event indicator, $isFD$, that takes the value of one from 2001 through 2005 and 0 from 1995 through 1999. We remove 2000 from the sample to avoid any anticipation or adjustments taken by the firms. We also restrict the sample to observations between 1995 and 2005 to get a balanced sample prior to and following the event.

We follow a standard difference-in-differences model by including an interaction term between the treatment indicator and the post-event indicator as the difference-in-difference variable in studying our measures of misvaluation, $Y_{i,t}$:

$$\begin{aligned} Y_{i,t} = \alpha &+ \beta_1 isFD_t + \beta_2 isType_i + \beta_3 isFD_t \times isType_i + \beta_4 pDED_{i,t-2} \\ &+ \beta_5 \Delta pDED_{i,t-2,t-1} + \beta_6 pTRA_{i,t-2} + \beta_7 \Delta pTRA_{i,t-2,t-1} + \beta_8 lnTA_{i,t-1} \\ &+ \beta_9 pINST_{i,t-1} + \beta_{10} HHI\_INST_{i,t-1} + \beta_{11} Zscore_{i,t-1} + \beta_{12} Lev_{i,t-1} \\ &+ \beta_{13} LTCR_{i,t-1} + \beta_{14} CFdisp_{i,t-1} + \beta_{15} NumEst_{i,t-1} + fe_t + fe_j + \varepsilon_{i,t} \end{aligned} \tag{5}$$

where $isFD$ is the indicator variable for the implementation of Regulation FD after 2000Q4 and captures effects that would occur in firms regardless of treatment effect, $isType$ is the indicator variable for whether the firm has an above-median level of institutional ownership by type (i.e., $isDED$, $isTRA$, and TvD) as of 1999Q4 and captures possible differences between treatment and control groups in the absence of a policy change, and $isFD \times isType$ is the difference-in-difference variable of interest that captures the effect of the policy on the treatment group net of control.

One potential complication is changes in treatment/control classification over the estimation period of 1995 through 2005. We control for this by benchmarking the treatment and control classifications to 1999Q4. In other words, a firm is classified based on their institutional ownership at 1999Q4, regardless of how their ownership changes. Additionally, we include the firm's level and change in dedicated and transient institutional ownership to account for any actual changes in institutional ownership that may occur. The coefficients β_4 through β_7 absorb effects due to a

firm's potential change in in ownership composition after the 1999 classification. We also control for firm characteristics as discussed in Section 3.1. Finally, we control for macroeconomic effects and seasonality with year and quarter fixed effects respectively and for industry trends with SIC3 fixed effects. Standard errors are double clustered by firm and year-quarter.

Panel A of Table IX presents the results of our difference-in-difference model in equation (5) for the RKRV overvaluation and misvaluation measures. Columns (1) and (2) report findings for the effect of Regulation FD on the valuation of firms held by dedicated institutional investors. As we expect, there is no significant effect on the interaction term between the implementation of RegFD and above-median pre-implementation ownership by the dedicated institutional type both for overvaluation and for misvaluation. This implies that the introduction of RegFD did not change the information available to the better-informed dedicated investors relative to the rest of the market.

However, when we consider the effects of Regulation FD on the valuation of firms with above-median pre-implementation ownership by transient institutional investors, we find significant results (at the 5% level) for the expected direction of RKRV overvaluation in Column (3). That is, by mandating public disclosure of material information - thereby reducing the information asymmetry between the less-informed transient and more-informed dedicated institutional investors - RegFD increases the transient investors' information set and reduces their overvaluation after the regulation is implemented. There is no significant effect of transient institutional investor ownership on the magnitude of misvaluation reported in Column (4).

Columns (5) and (6) of Table IX compare the valuation effects of above-median transient institutional ownership to that of above-median dedicated ownership in 1999Q4, TvD, around the RegFD policy change. The treatment group is comprised of only the $isTRA$ firms and the control group is comprised of only the $isDED$ firms. This smaller subsample reduces our number of observations to 39,899 firm-quarters. However, this approach allows us to more cleanly address the potential information advantage enjoyed by dedicated institutional investors by directly comparing them to transient ones. Column (5) shows the effect of the policy change on overvaluation, and finds that overvaluation decreases for TvD, which is to say it falls for transient-owned firms relative to dedicated-owned ones. This effect is significant at the 10% level. Furthermore, Column (6)

shows that the magnitude of misvaluation falls much more strongly for transient-owned relative to dedicated-owned firms, significant at the 1% level.

These results suggest that following Regulation FD and the easier availability of information, the overvaluation and misvaluation observed previously with transient investors are mitigated. In Panel B of Table IX, we check the robustness of the above difference-in-difference results around the RegFD event with a placebo test. Specifically, we pick a counterfactual year for the exogenous shock event and repeat the difference-in-differences analysis to test whether the effect we observed around 2000, the implementation of RegFD, is spurious. We select 1995 as the counterfactual year and conduct the analysis over three-year pre- and post-event windows to minimize overlap with the timeframe considered in the main analysis in Panel A.

The counterfactual analysis in Panel B of Table IX shows only a weakly significant negative effect on the direction of RKRV misvaluation for firms with above-median transient ownership in Column (3). More notably, there is no effect in Columns (5) and (6) on the change in direction and magnitude of RKRV misvaluation on firms held by transient versus dedicated institutions. This absence of an effect in a counterfactual year supports the validity of our analysis in Panel A and suggests that information availability plays a large role in observed misvaluation effects by the different institutional investor types.

There are two potential explanations for our results thus far: either institutional investor types cause distinct value effects on the firms they own in the subsequent quarter, or they simply choose to own firms that are distinctly different to begin with (i.e., selection bias) and these differences persist. While our analysis is predictive and uses both lagged levels and changes of explanatory variables, we seek to further distinguish between these two potential explanations. To do this, we use the Mahalanobis (1936) distance measure to match each firm prior to the enactment of Regulation FD in 2000 that *has* above-median dedicated or transient ownership with a contemporaneous control firm that does *not*, but is similarly misvalued both at the firm and sector levels and has a similar size and book-to-market ratio. We create an alternative set of matches using propensity score matching. We discuss the matching process quality and results in Appendix B.2. The matched-firm tests around Regulation FD in the appendix show that these overvaluation and misvaluation effects are not merely due to institutional self-selection into firms. The overvaluation and misvaluation

of firms owned by transient institutions falls relative to that of matched control firms around the implementation of the regulation in the difference-in-difference analysis, and this decrease is significantly greater than that for firms owned by dedicated institutions in the difference-in-difference-in-difference.

Overall the findings around the Regulation FD exogenous shock to the informational advantage of dedicated institutional investors point to both future overvaluation and future misvaluation falling for firms owned by transient institutions. This is to be expected as the SEC regulation puts transient investors on a more even footing with their better-informed dedicated counterparts. These results also support the interpretation of asymmetric information as one channel for the observed differences between firms owned by dedicated and transient investors. Furthermore, matched-firm analysis rules out self-selection by institutions into misvalued firms as the explanation.

4.2 Individual Characteristics of Institutional Investor Types

Having established that dedicated and transient institutional investors have different impacts on firm overvaluation and misvaluation, we examine the individual investor characteristics that form the dedicated and transient classifications, specifically investor portfolio turnover and holdings concentration. By considering the individual portfolio characteristics separately, we test whether the information advantage enjoyed by dedicated institutions documented in Section 4 is primarily due to their concentration or duration of ownership. To do this, we classify institutions based on the individual characteristics of portfolio turnover and concentration of ownership.

Following Yan and Zhang (2009), we measure the portfolio turnover of each institutional investor based on the prior four quarters. In each quarter, we calculate the aggregate purchase and sale of each institutional investor based on the changes in portfolio value of purchases and sales between the current and previous quarter:

$$Ag\_buys_{k,t} = \sum_{i \in N_k} \left| S_{k,i,t} P_{i,t} - S_{k,i,t-1} P_{i,t-1} - S_{k,i,t-1} \Delta P_{i,t} \right|, \, where \, S_{i,t} > S_{i,t-1}$$

$$Ag\_sells_{k,t} = \sum_{i \in N_k} \left| S_{k,i,t} P_{i,t} - S_{k,i,t-1} P_{i,t-1} - S_{k,i,t-1} \Delta P_{i,t} \right|, \, where \, S_{i,t} \leq S_{i,t-1}$$

where $S_{k,i,t}$ is the number of shares held by investor k in firm i in quarter t and $P_{i,t}$ is the share price

of firm i in quarter t. We then take the minimum between the aggregate purchase and aggregate sale in each quarter and divide by the average portfolio value between the current and previous quarter, providing us with a churn rate for each institution in each quarter:

$$CR_{k,t} = \frac{\min(Ag\_buys_{k,t}, Ag\_sells_{k,t})}{\sum_{i \in N_k} \frac{S_{k,i,t}P_{i,t} + S_{k,i,t-1}P_{i,t-1}}{2}}$$

We take the average churn rate over the past four quarters as our measure for portfolio turnover.

Similarly, following Bushee (1998, 2001), we measure holdings concentration of each institutional investor. We start with the institutional holding of each firm in the portfolio, that is the number of shares held in a firm that institutional investor as a ratio over the shares outstanding for the firm:

$$IOHold_{k,i,t} = \frac{S_{k,i,t}}{S_{i,t}}$$

where $S_{k,i,t}$ is the number of shares held by investor k in firm i in quarter t and $S_{i,t}$ is the number of shares outstanding for firm i in quarter t. To calculate holdings concentration, we take the average of the squared institutional holding over the institutional investor's portfolio of firms:[22]

$$IOConc_{k,t} = \frac{1}{N_k} \sum_{i \in N_k} IOHold^2_{k,i,t}.$$

This measure has the interpretation that if the investor tends to be a blockholder in the firms of their portfolio, then on average they take concentrated positions in their holdings.

Hypothesis 3. *Firms with a higher percentage of long-horizon or focused (short-horizon or diversified) institutional investors experience less (more) overvaluation and misvaluation.*

Hypothesis 4. *Firms that experience an increase in long-horizon or focused (short-horizon or diversified) institutional investors experience less (more) overvaluation and misvaluation.*

We form terciles based on portfolio turnover in each quarter, and select the top turnover tercile as the "short-horizon" institutional type, and the bottom tercile as the "long-horizon". Similarly, we form terciles based on holdings concentration in each quarter and take the top tercile as the

[22]For robustness, we also take the sum of the squared institutional holdings and all results hold.

"focused" institutional type, and the bottom as the "diversified". For each firm in our sample, we then compute the percentage held by each of these institutional investor types. We also identify the joint percentage held by institutions in specific terciles of both portfolio turnover and concentration. That is, we estimate the percentage of the firm owned by long-horizon *and* focused institutional investors as that held by institutions that are both in the lowest portfolio turnover tercile *and* the highest concentration tercile. We create analogous ownership percentages for the three other possible combinations of institutional investor types based on portfolio turnover and holdings concentration.

Finally, as before, we decompose the lagged level of each single-dimensional institutional ownership type (long/short horizon, focused/diversified portfolio) into a second lag of the level and first lag of the change in the ownership by a given institutional investor type. While correlation between these fundamental types is approximately 40% (see Table IV), the results are not driven by multicollinearity as they are robust to the inclusion of only one type at a time. These results are suppressed for brevity.

Table X presents the effects of these fundamental institutional ownership types on RKRV overvaluation and misvaluation in the full sample, as well as the pre- and post- RegFD subsamples. Panel A presents the full-sample results for next quarter's firm-specific RKRV overvaluation and the absolute magnitude of misvaluation. Column (1) of Panel A shows that overall the lagged level and change in long-horizon institutional ownership surprisingly results in higher subsequent overvaluation significant at the 1% and 10% levels respectively, but notably so does lagged change in short-horizon institutional ownership, also significant at the 1% level. There is no ownership effect on the absolute magnitude of misvaluation in Column (2) for long-horizon ownership but both the lagged level and change in short-horizon institutional ownership increases the magnitude of misvaluation significant at the 5% level in both cases.

Columns (3) and (4) of Panel A present analogous full-sample findings for the focused and diversified institutional types. Consistent with expectations, we find that lagged levels and changes in focused institutional ownership decrease overvaluation, significant at the 10% and 1% levels respectively. Also consistent with prior results, lagged levels and changes in diversified ownership increase overvaluation with 1% level of significance for both. However, in Column (4) we find that

it is only the diversified institutional types that reduce the magnitude of firm misvaluation, with both the level and change effects significant at the 5% and 10% levels respectively.

Columns (5) and (6) consider the joint effects of institutional portfolio turnover and concentration. Notice that long-horizon and focused investors are more likely to be dedicated whereas short-horizon and diversified investors are more likely to be transient investors. We find that the effect of focused institutional ownership reduces subsequent overvaluation in Column (5) regardless of its joint pairing with long- or short-horizon ownership. Similarly, diversified ownership increases subsequent overvaluation regardless of pairing with horizon types. Consistent with Column (4), we find in Column (6) that diversified ownership reduces the magnitude of misvaluation regardless of any joint effects with institutional investment horizon. This result is surprising given that we previously found that TRA investors, those most likely to be short and diversified, increase the magnitude of misvaluation.

Given the information advantage for TRA investors with the enactment of Regulation FD, we split our full sample into pre- and post- RegFD to test whether the disclosure requirement had an effect on the fundamental institutional ownership types. Panel B presents results for the pre-RegFD (pre-2000) subsample and Panel C presents results for the post-RegFD (post-2000) subsample. The results along the horizon dimension are similar to that of the full sample (see Columns (1) and (2)). However, when we turn our attention to focused and diversified investors, we see that prior to the enactment of Regulation FD, ownership by diversified investors in Columns (3) and (4) as well as that by short-horizon diversified investors in Columns (5) and (6) increases the magnitude of misvaluation. It is only in the post-RegFD period that this reverses in Panel C. These results suggest that the concentration of institutional ownership is primarily responsible for the information advantage enjoyed by DED investors and reinforce the idea that Regulation FD provided TRA institutions with the information that previously flowed only to DED investors. This importance of blockholder status in obtaining private information prior to the implementation of RegFD is consistent with the findings of Anderson, Reeb, Zhang, and Zhao (2013).

Overall these findings present mixed evidence for Hypotheses 3 and 4, due to the regime change in the distribution of information after RegFD. To a large degree, the effects of long-horizon and focused ownership appear to occur prior to the implementation of the SEC regulation. The effects

of diversified institutional ownership in reducing misvaluation only appear after its passage.

5 Institutional Investor Types, Governance, and Performance

In the preceding sections we consider a puzzle in the literature regarding the effect of institutional investors on firm value. Several papers document the ability of institutional investors to acquire information, improve governance, and make markets more efficient (Lakonishok, Shleifer, Vishny, 1992; Nesbitt, 1994; Sias and Starks, 1997; Nagel, 2005; Barber and Odean, 2008) while other research finds results suggestive of opportunism without long-term benefit, and with potentially destabilizing value effects (Gillian, 1995; Karpoff, Malatesta, and Walkling, 1996; Smith, 1996; Wermers, 1999; Barton and Wiseman, 2014). The differential effect on firm value by institutional investor type that we document provides a view towards reconciling this tension in the literature. Institutional investors are indeed not all the same: some reduce overvaluation and misvaluation, while others stoke it.

Examining different institutional investor types can also help refine prior findings regarding the role of institutions and blockholders on corporate governance and long-term firm performance. Some studies have shown that institutional investors improve governance (Gillan and Starks, 2000; Hartzell and Starks, 2003), while others find no effect (Agarwal and Knoeber, 1996; Karpoff, Malatesta, and Walkling, 1996). Recent work in asset pricing research also demonstrates that holding period matters for performance studies (Kamara, Korajcyk, Lou, Sadka, 2016; Chaudhuri and Lo, 2016). In this section, we examine some common firm governance and performance measures to gain additional insight on the roles that different institutional investor types play.

Table XI Panel A reports findings about the effect of institutional investor type on key characteristics related to firm performance and risk as well as corporate governance. We find that firms held by dedicated institutions have lower realized volatility and lower average, median, and maximum executive compensation. Firms held by transient institutions have higher tail risk, as proxied by the $IVspread_{mon}$ implied volatility spread between out-of-the-money and in-the-money puts, higher realized volatility, higher executive pay, lower payout ratios, and lower leverage increases than those in firms held by dedicated institutions.[23]

[23]Borochin and Yang (2016) find that change in the implied volatility spread across option moneyness predicts

While the information advantage enjoyed by dedicated institutional investors prior to the implementation of RegFD clearly plays a role in their effects on firm overvaluation and misvaluation, it is not obvious that the firm characteristics considered in Table XI should be impacted due to having private information. We test this by subsampling into pre- and post- RegFD subsamples in Panels B and C respectively, and find that the effects of dedicated and transient ownership on the firm characteristics related to good governance are largely consistent through time. The only notable exception to this is the payout ratio whose negative coefficients become similar in magnitude post-2000. Overall, these results suggest that some, but not all, institutional investors provide governance benefits, consistent with Chen, Harford, and Li (2007).

In Table XII, we again deompose investors along investor horizon and portfolio concentration and consider the joint pairings between the two portfolio characteristics. We find that long-horizon ownership levels and changes are associated with lower historical volatility, higher payout ratios, and net leverage increases, largely invariant to the dimension of the concentration of ownership. At the same time, short-horizon ownership is associated with higher tail risk, higher executive compensation, and lower payout ratios, also largely invariant to portfolio concentration. Some, but not all, institutional investors do provide governance benefits consistent with Chen, Harford and Li (2007).

Therefore, while the effects of dedicated and transient ownership on firm overvaluation and misvaluation are shown to be largely due to the holdings concentration dimension in Table X, the corporate governance effects of these institutional investor types appear largely due to the portfolio turnover dimension as shown in Table XII. The changes in over- and misvaluation effects found for dedicated and transient ownership around the implementation of RegFD, coupled with their strong relation to the holdings concentration dimension, suggest that the concentration dimension in particular was sensitive to the information effect from RegFD. The largely time-invariant firm characteristics in Table XI, coupled with their strong relation to the portfolio turnover dimension, suggest that institutional variation on investment horizon was not as big a driver of informational asymmetries addressed by RegFD.

Next, we test the economic significance of institutional ownership types by considering the raw

leverage increase and is a significant signal of firm quality and is related to other quality firm characteristics.

and risk-adjusted performance of firms held by each institutional type over the following year. This analysis captures the long-term effects of institutional ownership type on the firm and is particularly relevant to other market participants investing alongside these institutions. In calculating risk-adjusted returns, we benchmark to the Pástor and Stambaugh (2003) 5-factor model. Table XIII reports the raw performance over each of the next four quarters in Columns (1) through (4) and the 5-factor abnormal performance in Columns (5) through (8).

We find that firms held by transient institutions have insignificant or negative raw returns over the next four quarters. Conversely, firms held by dedicated institutions have positive raw returns over the same period. The results become more compelling when we consider abnormal, rather than raw, performance. Transient institutional ownership results in highly significant and positive abnormal returns in the first quarter, consistent with the previously documented myopic objectives of transient institutions (Bushee, 1998, 2001). However, these firms have no abnormal performance in any subsequent period considered. On the other hand, firms held by dedicated institutions have significant abnormal performance in the second and third quarters, consistent with their long-term value objectives. Market participants may therefore be able to observe the type of institutional ownership and use it as a guide for the horizon of expected future performance.

Finally, we follow the monthly raw and risk-adjusted returns of firms over the next year in Figures 2 and 3. Figure 2 tracks the monthly returns and abnormal returns for firms with dedicated and transient institutional investors in Panels A and B, respectively. Consistent with the analysis in Table XIII, firms with more dedicated institutional investors realize raw returns of 17.7% over the following year, whereas firms with more transient institutional investors realize raw returns of 14.7%. That is, firms with more dedicated investors achieve 3.0% higher returns than those with more transient investors. However, when we turn to risk-adjusted or abnormal returns, firms with more dedicated (transient) institutional investors earn returns of 4.1% (3.8%), resulting in a difference of 0.3%.

Figure 3 repeats the previous figure by separating institutional investors based on portfolio turnover and holdings concentration. Panels A and B of Figure 3 present the raw and risk-adjusted returns for firms with more long-horizon or short-horizon institutional investors. Panels C and D present the raw and risk-adjusted returns for firms with more focused or diversified

institutional investors. We see that firms with more long-horizon institutional investors realize raw (abnormal) returns of 19.3% (5.7%) over the following year, whereas firms with more short-horizon institutional investors realize raw (abnormal) returns of 13.3% (2.9%) over the next year. This leaves firms with more long-horizon institutional investors with raw (abnormal) returns that are 6.0% (2.8%) higher than firms with more short-horizon investors. In contrast, firms with more focused institutional investors realize raw (abnormal) returns of 15.2% (2.7%) while firms with more diversified institutional investors realize raw (abnormal) returns of 16.1% (4.9%) over the next year. This results in firms with more focused institutional investors earning raw (abnormal) returns 0.9% (2.1%) lower than firms with more diversified institutional investors. The net negative effect of focused investors is offset by the net positive effect of long-horizon investors, resulting in the 0.3% abnormal returns observed for dedicated investors in Figure 2.

These figures support the earlier finding that the higher firm performance observed with dedicated institutional investors, which are defined by Bushee (1998) as focused, long-term investors, is driven by lower portfolio turnover rather than by higher holdings concentration. Furthermore, this superior long-horizon performance more broadly suggests that long-horizon investors are able to accomplish their investment objectives. In addition to providing insight about the causes of dedicated investor performance, these results have wider implications regarding the existence of portfolio manager ability. While we are able to demonstrate the ability of long-horizon managers to achieve long-horizon returns, our data may not be captured at a sufficiently high enough frequency to address the ability of short-horizon managers to achieve short-horizon returns. At any rate, we do not find any superior short-term performance by firms they hold in our sample.

6 Conclusion

Institutional ownership can have starkly different effects on firm valuation, depending on the type and objectives of the institutional investor. Dedicated institutional investor ownership reduces future misvaluation, while transient institutional investor ownership increases it. Using the Bushee (1998, 2001) classification of institutional investor types, we show these effects on the direction and magnitude of the firm-specific valuation error relative to fundamentals from Rhodes-Kropf, Robinson, and Viswanathan (2005). Specifically, dedicated institutional ownership is correlated

with lower future firm-specific misvaluation and long-run valuation multiples, whereas transient institutional ownership has the opposite relationship. We find similar effects for the absolute magnitude of misvaluation, with dedicated institutional ownership reducing the magnitude of firm-specific misvaluation and transient institutional ownership increasing it.

Furthermore, decomposing the level of institution ownership by type into the prior period's level and the change with respect to the current period, we find that changes in ownership type have the same effect as the level. This suggests that the effects of institutional ownership types become stronger as the degree of institutional ownership of that particular type becomes more pronounced. These results persist and become stronger in the presence of measures of information quality, suggesting a connection between ownership type and the ability to access firm-specific information. These results are robust to the inclusion of control variables, the use of alternative misvaluation measure, and the examination of alternative explanations.

We examine this relationship between firm misvaluation and institutional investor type further using the exogenous shock of the SEC's introduction of Regulation Fair Disclosure (RegFD) in 2000, which requires firms to disclose material information publicly. Prior to this regulation, firms could reveal information to preferred institutional owners, contributing to the informational advantage enjoyed by them. We find evidence consistent with an informational advantage enjoyed by dedicated institutional owners prior to the introduction of RegFD in 2000. The policy change reduces both future overvaluation and misvaluation experienced by firms with transient institutional owners.

We also consider more fundamental institutional investor types along the dimensions of portfolio turnover and portfolio concentration. We find that ownership by focused institutions is largely related to lower overvaluation and misvaluation, with the opposite being true for ownership by diversified institutions. That is, of the two portfolio characteristics underlying the transient and dedicated investor types, portfolio concentration drives more of the observed relationship between type and future overvaluation and misvaluation.

Finally, we demonstrate that institutional ownership types have effects on key firm characteristics that are related to corporate governance. Dedicated (transient) institutions hold firms with less (more) tail risk, historical volatility, and mean, median, and maximum executive compensation. Additionally, dedicated institutions hold firms with less earnings management,

higher payouts, and higher leverage increases. We find that these characteristics are stable over time and not sensitive to the information effects from RegFD. Furthermore, we find that they are largely due to the portfolio turnover dimension than the portfolio concentration dimension.

These differential institutional ownership effects also have real performance implications for investors. Over the subsequent year, firms held by transient institutions experience abnormal positive performance only in the first quarter, whereas those held by dedicated institutions have positive abnormal and raw returns in later quarters. This difference in performance appears to be also largely due to the portfolio turnover dimension, as firms held by long-horizon institutions outperform those held by short-horizon ones over subsequent year. This is consistent with the objectives of transient (short-term) and dedicated (long-term) institutions, but has profound implications on the expected effects of institutional ownership for other market participants. This also demonstrates that long-horizon institutional investors are able to achieve superior long-term performance, adding to our understanding of investment manager ability.

These results provide a new perspective on the multifaceted nature of institutional investors. We find that there are distinct roles that different types of institutional investors play in setting firm valuations. Institutional types also have distinct effects on corporate governance and future firm performance. Separating institutional ownership by type helps towards resolving standing arguments in the literature about the role of institutional investors in the financial markets.

References

Agrawal, A., and C. Knoeber, 1996, Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders. *Journal of Financial and Quantitative Analysis*, 31, 377-397.

Almeida, H., M. Campello, B. Laranjeira, and S. Weisbenner, 2011, Corporate Debt Maturity and the Real Effects of the 2007 Credit Crisis, *Critical Finance Review*, 1, 3-58.

Altman, E., 1968, Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy, *Journal of Finance*, 23, 589-609.

Anderson, R., D. Reeb, Y. Zhang, and W. Zhao, 2013, The Efficacy of Regulatory Intervention: Evidence from the Distribution of Informed Option Trading, *Journal of Banking and Finance*, 37, 4337-4352.

Asness, C.S., T.J. Moskowitz, and L.H. Pedersen, 2013, Value and Momentum Everywhere, *Journal of Finance*, 68, 929-985.

Barber, B., and T. Odean, 2008, All that Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors, *Review of Financial Studies*, 21, 785-818.

Barton, D., and M. Wiseman, 2014, Short-termism: Insights from business leaders, *Harvard Business Review*, 92, 44-77.

Blume, M.E. and D.B. Keim, 2014, The Changing Nature of Institutional Investors, *Critical Finance Review*, 6, *forthcoming.*

Boone, A.L. and J.T. White, 2015, The Effect of Institutional Ownership on Firm Transparency and Information Production, *Journal of Financial Economics*, 117, 508-533.

Borochin, P., and J. Yang, 2016, Options, Equity Risks, and the Value of Capital Structure Adjustments, *Journal of Corporate Finance*, *forthcoming.*

Brav, A., W. Jiang, F. Partnoy, and R. Thomas, 2008, Hedge Fund Activism, Corporate Governance, and Firm Performance, *Journal of Finance*, 63, 1729-1775.

Bushee, B., 1998, The Influence of Institutional Investors on Myopic R&D Investment Behavior, *The Accounting Review*, 73, 305-333.

Bushee, B., 2001, Do Institutional Investors Prefer Near-Term Earnings over Long-run Value?, *Contemporary Accounting Research*, 18, 207-246.

Bushee, B. and C.F. Noe, 2000, Corporate Disclosure Practices, Institutional Investors, and Stock Return Volatility, *Journal of Accounting Research*, 38, 171-202.

Carhart, M.M., 1997, On Persistence in Mutual Fund Performance, *Journal of Finance*, 52, 57-82.

Chaudhuri, S., and A. Lo, 2016, Spectral Portfolio Theory, *working paper*.

Chen, X., J. Harford, and K. Li, 2007, Monitoring: Which Institutions Matter?, *Journal of Financial Economics*, 86, 279-305.

Francis, J., D. Nanda, and X. Wang, 2006, Re-examining the Effects of Regulation Fair Disclosure using Foreign Listed Firms to Control for Concurrent Shocks, *Journal of Accounting and Economics*, 41, 271-292.

Gaspar, J., M. Massa, and P. Matos, 2005, Shareholder Investment Horizons and the Market for Corporate Control, *Journal of Financial Economics*, 76, 135-165.

Gillian, S.L., 1995, Shareholder Activism Through the Proxy Mechanism: An Empirical Investigation, *working paper*.

Gillian, S.L. and L.T. Starks, 2000, Corporate Governance Proposals and Shareholder Activism: The Role of Institutional Investors, *Journal of Financial Economics*, 57, 275-305.

Gompers, Paul A., and A. Metrick, 2001, Institutional Investors and Equity Prices, *Quarterly Journal of Economics*, 116, 229-259.

Hadlock, C.J., and J.R. Pierce, 2010, New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index, *Review of Financial Studies*, 23, 1909-1940.

Hartzell, J., and L. Starks, 2003, Institutional Investors and Executive Compensation. *Journal of Finance*, 58, 2351-2374.

Heflin, F., K.R. Subramanyam, and Y. Zhang, 2003, Regulation FD and the financial information environment: Early evidence, *The Accounting Review*, 78:1, 1-37.

Hirshleifer, D., P. Hsu, and D. Li, 2013, Innovative Efficiency and Stock Returns, *Journal of Financial Economics*, 107, 632-654.

Hirshleifer, D. and D. Jiang, 2010, A Financing-Based Misvaluation Factor and the Cross-Section of Expected Returns, *Review of Financial Studies*, 23, 3401-3436.

Kamara, A., R. Korajczyk, X. Lou, and R. Sadka, 2016, Horizon Pricing, *Journal of Financial and Quantitative Analysis*, forthcoming.

Karpoff, J., G. Lee, and R. Masulis, 2013, Contracting under asymmetric information: Evidence from lockup agreements in seasoned equity offerings. *Journal of Financial Economics*, 110, 607-626.

Karpoff, J., P. Malatesta, and R. Walkling, 1996, Corporate Governance and Shareholder Initiatives: Empirical Evidence, *Journal of Financial Economics*, 42, 365-395.

Lakonishok, J., A. Shleifer, and R. Vishny, 1992, The Impact of Institutional Trading on Stock Prices. *Journal of Financial Economics*, 32, 23-43.

Mahalanobis, P., 1936, On the generalised distance in statistics, *Proceedings of the National Institute of Sciences of India* 2:1, 49-55.

Nagel, S., 2005, Short Sales, Institutional Investors and the Cross-Section of Stock Returns, *Journal of Financial Economics*, 78, 277-309.

Nesbitt, S., 1994, Long Term Rewards from Shareholder Activism: A Study of the CalPERS Effect, *Journal of Applied Corporate Finance*, 6, 75-80.

Novy-Marx, R., 2012, Is Momentum Really Momentum? *Journal of Financial Economics*, 103, 429-453.

Pástor, L. and R.F. Stambaugh, 2003, Liquidity Risk and Expected Stock Returns, *Journal of Political Economy*, 111, 642-685.

Rhodes-Kropf, M., D.T. Robinson, and S. Viswanathan, 2005, Valuation Waves and Merger Activity: The Empirical Evidence, *Journal of Financial Economics*, 77, 561-603.

Sias, R.W., and L.T. Starks, 1997, Return Autocorrelation and Institutional Investors, *Journal of Financial Economics*, 46, 103-131.

Smith, D.G., 1996, Corporate Governance and Managerial Incompetence: Lessons from Kmart, *North Carolina Law Review*, 74, 1038-1139.

Wahal, S., 1996, Pension Fund Activism and Firm Performance, *Journal of Financial and Quantitative Analysis*, 31, 1-23.

Wermers, R., 1999, Mutual Fund Herding and the Impact on Stock Prices. *Journal of Finance*, 54, 581-622.

Williamson, R. and J. Yang, 2016, Financing Constraints and Acquisitions, *working paper*.

Yan, X. and Z. Zhang, 2009, Institutional Investors and Equity Returns: Are Short-term Institutions Better Informed, *Review of Financial Studies*, 22, 893-924.

Compustat, *Compustat Capital IQ/North America/Fundamentals Quarterly*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

CRSP, *CRSP/CRSP Monthly Stock*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

Thomson Reuters, *Thomson Reuters Institutional (13f) Holdings/s34 Master File*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

Thomson Reuters, *IBES/Unadjusted Summary History*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

Appendix A

This appendix details the construction of our control variables below. Summary statistics of these variables are reported in Table III. Calculations based on: *Compustat Capital IQ/North America/Fundamentals Quarterly*, *Thomson Reuters Institutional (13f) Holdings/s34 Master File*, and *IBES/Unadjusted Summary History*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

Total Assets
Assets - Total (ATQ) * Adjustment to 2000 Dollars

Ln Total Assets (LnTA)
ln{Assets - Total (ATQ) * Adjustment to 2000 Dollars}

Total Market Capitalization
Price-Close-Quarter (PRCCQ) * Common Shares Outstanding (CSHOQ) * Adjustment to 2000 Dollars

Market Value
Total Market Capitalization + Total Book Debt

% Owned by Institutional Investors
Total number of shares held by institutional investors / Shares outstanding

% Owned by Dedicated Institutional Investors
Number of shares held by institutional investors classified as "Dedicated" based on Bushee (2001) / Total number of shares held by institutional investors

% Owned by Transient Institutional Investors
Number of shares held by institutional investors classified as "Transient" based on Bushee (2001) / Total number of shares held by institutional investors

% Owned by Long (Short) Horizon Institutional Investors
Total # shares held by long (short) horizon institutional investors / Shares outstanding
where long (short) horizon is calculated based portfolio turnover, as defined in Yan and Zhang (2009)

% Owned by Focused (Diversified) Institutional Investors
Total # shares held by focused (diversified) institutional investors / Shares outstanding
where focused (diversified) is based on the HHI of portfolio weights for each institutional investor

HHI-Index of Institutional Investors
$\sum_i \left(\frac{\text{Number of shares held by investor } i}{\text{Total number of shares held by institutional investors}} \right)^2$

RKRV (Firm-specific) Overvaluation

Firm-specific error from the Rhodes-Kropf Robinson, and Viswanathan (2005) decomposition of the log of the market-to-book ratio into three components: firm-specific error, time-series sector error, and long-run market-to-book. A positive (negative) firm-specific error indicates an over- (under-) valued firm.

RKRV (Firm-specific) Misvaluation

Absolute value of RKRV (Firm-specific) Misvaluation. A larger absolute firm-specific error indicates a more misvalued firm.

RKRV Sector Overvaluation

Sector-wide error from the Rhodes-Kropf Robinson, and Viswanathan (2005) decomposition of the log of the market-to-book ratio into three components: firm-specific error, time-series sector error, and long-run market-to-book. A positive (negative) sector error indicates an over- (under-) valued sector.

RKRV Sector Misvaluation

Absolute value of RKRV Sector Misvaluation. A larger absolute sector error indicates a more misvalued sector.

RKRV Long-run MtB

Long-run market-to-book from the Rhodes-Kropf Robinson, and Viswanathan (2005) decomposition of the log of the market-to-book ratio into three components: firm-specific error, time-series sector error, and long-run market-to-book.

Altman's Zscore

$$\frac{\text{3.3*Pretax Income (PIQ) + 1.0*Net Sales (SALEQ) + 1.4*Retained Earnings (REQ) + 1.2*Working Capital}}{\text{Total Assets (ATQ)}}$$

where Working Capital = Current Assets-Total (ACTQ) - Current Liabilities-Total (LCTQ)

Long-term Debt / TA

Long-Term Debt-Total (DLTTQ) / Total Assets (ATQ)

Has Long-term Debt Credit Rating

1, if firm has a S&P Long-term credit rating, and 0, otherwise

Cash Flow Dispersion

Standard Deviation (Cash flow (OIBDPQ) over the past 20 quarters) / Average(Cash flow (OIBDPQ) over the past 20 quarters)

Number of Analyst Estimates

Number of analyst EPS estimates for the relevant quarter based on IBES data

Firm Opacity

First principal component of log firm age, log firm size, bid-ask spread, standard deviation of returns, Amihud ratio, and skewness of 3-factor residuals following Karpoff, Lee, and Masulis (2013) to create a single proxy variable increasing in firm opacity

Momentum Return

Cumulative monthly returns between R[t-7] to R[t-12], as based on Novy-Marx (2012)

R&D Intensity

Annual R&D Expense (XRD) / Annual Sales (SALE)

Firm Concentration

$\left(\frac{\text{Number of shares invested by institutional investor}}{\text{Shares outstanding}}\right)^2$

Following Bushee (1998), used as a measure for investor concentration within a firm.

Portfolio Turnover

$min\left(\frac{\Delta\text{portfolio value from buying}_i}{\sum_i \Delta\text{portfolio value from buying}_i}, \frac{\Delta\text{portfolio value from selling}_i}{\sum_i \Delta\text{portfolio value from selling}_i}\right)$

divided by average portfolio value between $t-1$ and t

Following Yan and Zhang (2009), used as a measure for portfolio turnover.

$IVspread_{mon}$

Spread between quarterly average implied volatility from short-term out-of-the-money put options and in-the-money put options.

Following Borochin and Yang (2016), used as a measure of cash flow tail risk.

Appendix B

This appendix contains additional robustness tests of our main findings. In particular, Section B.1 presents findings using an alternative measure of misvaluation based managerial issuance and repurchase behavior following Hirshleifer and Jiang (2010). Section B.2 presents matched-firm results by misvaluation to rule out self-selection of institutional investor types into misvalued firms.

Appendix B.1 Alternative Measure for Misvaluation

We test the robustness of our findings by repeating the analysis in Table VI using an alternative measure of overvaluation and misvaluation. Hirshleifer and Jiang (2010) hypothesize that managers who have insider information that their firm is overvalued will issue equity to take advantage of this. Conversely, managers will repurchase equity if they have private information about firm undervaluation. The authors propose an undervalued-minus-overvalued (UMO) factor as a portfolio that takes long positions in equity repurchasers and shorts equity issuers and finds that this factor is able to identify overvalued and undervalued firms by its explanatory power for the firm's returns. We take the negative of the beta on the UMO factor - that is the negative of the coefficient of the firm's exposure to the UMO factor - as our measure of HJ misvaluation to be consistent with the direction of the RKRV misvaluation measure (i.e., in the direction of overvaluation). This HJ measure is based on managerial repurchase and issuance behavior, rather than on fundamental multiples as with the RKRV measure. Since the HJ measure is derived with respect to a completely different set of information than the RKRV measure, we can expect the two to serve as robustness checks for one another.

To estimate the HJ measure for misvaluation, we estimate the firm's exposure to Hirshleifer and Jiang's (2010) UMO factor using rolling 60-month regressions:

$$r_{i,t} = \alpha_i + \beta_{1,i,t} MKTRF_t + \beta_{2,i,t} SMB_t + \beta_{3,i,t} HML_t + \beta_{4,i,t} UMD_t + \beta_{5,i,t} UMO_t + \varepsilon_{i,t}.$$

A positive coefficient on UMO proxies for undervaluation. However, for consistency with the direction of the RKRV measure, we define the HJ measure of misvaluation as $-\hat{\beta}_5$ such that it remains positive (negative) in the direction of overvaluation (undervaluation). As with the RKRV

measure, we take the absolute value of the HJ measure to proxy for the magnitude of misvaluation.

Table B.I displays the results of estimating equations (2), (3), and (4) for the HJ measure of overvaluation and its absolute value proxying for misvaluation. Column (1) finds results consistent with Column (1) of Table VI, with the lagged level of transient institutional ownership resulting in a positive and significant HJ coefficient, consistent with more overvaluation. Column (2) reports similar results for the absolute value of the factor loading as a proxy for the magnitude of misvaluation. A 100% increase in the level of transient ownership increases the loading on the overvaluation factor by 0.228 and the magnitude of misvaluation by 0.460. This is consistent with prior findings for the RKRV measure for transient institutional ownership. There are no statistically significant effects for dedicated institutional ownership, implying that dedicated institutional investor ownership does not significantly increase overvaluation or misvaluation in the subsequent quarter.

Columns (3) and (4) of Table B.I repeats the decomposition of the lagged level of ownership into the second lag of the level and the first lag of the change in the level of ownership to estimate the dynamic effect of institutional ownership on overvaluation and misvaluation. The positive coefficient on the overvaluation factor loading is consistent with prior findings in Column (3) of Table VI, though only the level of transient ownership has a significant effect. However, both the level and change in transient ownership have the expected positive relationship with the magnitude of misvaluation in Column (4), consistent with the results in Column (4) of Table VI.

Finally, columns (5) and (6) of Table B.I use the HJ valuation measures in the estimation of the full model with controls, as in equation (4). Column (5) of Table B.I finds the level of transient institutional ownership leading to a subsequent increase in overvaluation significant at the 5% level, consistent with prior results. Column (6) finds stronger results that both the level and change of transient institutional ownership increases the magnitude of misvaluation while the level of dedicated ownership reduces it in the subsequent quarter, all significant at the 1% level.

We therefore establish a robust relationship between institutional investor ownership by type, both in levels and changes of ownership, and both overvaluation and misvaluation at the firm level.

Table B.I: Estimation of misvaluation on types of institutional investors with control variables. Overvaluation and misvaluation are defined based on the Hirshleifer and Jiang (2010) UMO factor. Returns for each firm are regressed on a Carhart (1997) 4-factor along with the Hirshleifer and Jiang (2010) UMO factor. A positive (negative) beta on the UMO factor indicates an under- (over-) valued firm. The HJ firm-specific overvaluation takes the negative of the UMO beta such that a positive (negative) measure indicates an over- (under-) valued firm. The absolute value of the overvaluation captures the magnitude of the misvaluation. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	HJ Overval. (1)	HJ Misval. (2)	HJ Overval. (3)	HJ Misval. (4)	HJ Overval. (5)	HJ Misval. (6)
% Owned by Dedicated Inst. Investors$_{i,t-1}$	0.0644	0.1093				
	(0.1524)	(0.0938)				
% Owned by Dedicated Inst. Investors$_{i,t-2}$			0.0735	0.1079	0.1838	-0.3379 ***
			(0.1722)	(0.1056)	(0.1882)	(0.1089)
Δ % Owned by Dedicated Inst. Investors$_{i,t-1}$			0.0997	0.1286	0.0906	-0.1448
			(0.1262)	(0.1157)	(0.1260)	(0.0933)
% Owned by Transient Inst. Investors$_{i,t-1}$	0.2278 ***	0.4595 ***				
	(0.0826)	(0.0552)				
% Owned by Transient Inst. Investors$_{i,t-2}$			0.3079 ***	0.5387 ***	0.2718 **	0.6634 ***
			(0.0957)	(0.0653)	(0.1056)	(0.0598)
Δ % Owned by Transient Inst. Investors$_{i,t-1}$			0.0993	0.2742 ***	0.0763	0.3313 ***
			(0.0757)	(0.0527)	(0.0832)	(0.0469)
Log Total Assets$_{i,t-1}$					0.0040	-0.0876 ***
					(0.0101)	(0.0064)
% Owned by Institutional Investors$_{i,t-1}$					-0.0681	-0.2092 ***
					(0.0601)	(0.0325)
HHI-Index of Institutional Investors$_{i,t-1}$					-0.1731 **	0.0847 *
					(0.0768)	(0.0503)
Altman Z-score$_{i,t-1}$					-0.0075 ***	-0.0165 ***
					(0.0026)	(0.0017)
LT Debt / TA$_{i,t-1}$					-0.2088 **	0.2357 ***
					(0.0818)	(0.0471)
Have LT Credit Rating$_{i,t-1}$					0.0024	-0.0044
					(0.0307)	(0.0187)
Cash Flow Dispersion$_{i,t-1}$					-0.0116 *	0.0173 ***
					(0.0067)	(0.0039)
No. of Analyst Estimates$_{i,t-1}$					0.0476 ***	0.0262 ***
					(0.0168)	(0.0102)
Constant	0.2300	0.7606 ***	0.1894	0.7330 ***	0.3474	1.2211 ***
	(0.1938)	(0.1000)	(0.2133)	(0.1091)	(0.2307)	(0.1028)
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	167326	167326	162199	162199	136070	136070
Adjusted R^2	0.0476	0.1045	0.0484	0.1056	0.0573	0.1731

Appendix B.2 Matched-firm Analysis

In this section, we seek to disentangle two potential explanations for our results: either institutional investor types cause distinct value effects on the firms they own in the subsequent quarter, or they simply choose to own firms that are distinctly different to begin with (i.e., selection bias) and these differences persist. While our analysis is predictive and uses both lagged levels and changes of explanatory variables, we seek to further distinguish between these two potential explanations.

To do this, we use a matching algorithm to find a control firm with a similar prior overvaluation at both the firm and sector levels, but different institutional ownership type for each (treatment) firm held by a particular institutional ownership type around the Regulation FD shock. This is similar to the approach taken by Almeida, Campello, Laranjeira and Wesibenner (2011) and Williamson and Yang (2016). Specifically, we use the Mahalanobis (1936) distance measure to match each firm prior to the enactment of Regulation FD in 2000 that *has* above-median dedicated or transient ownership with a contemporaneous control firm that does *not*, but is similarly misvalued both at the firm and sector levels and has similar size and book-to-market ratio. The advantage of using the Mahalanobis distance matching algorithm is that this algorithm ensures a match on each of the matching characteristics, rather than relying on a propensity score.[24] As summarized in Table B.II, the match quality is good: there are no significant differences between the sample and control firms for above-median dedicated ($isDED$), above-median transient ($isTRA$), or above-median transient and below-median dedicated institutional ownership ($isTvD$) across the characteristics being matched.

We examine differences in next-period misvaluation by ownership type ($isDED$, $isTRA$, TvD) before and after the implementation of Regulation FD. Similarly, we also test this difference for Mahalanobis-matched control firms that are similarly overvalued in the current period, but do not have above-median ownership by the same institutional owner type. Next, we test the difference-in-difference between the treatment and control firms. This difference-in-difference provides us with a cleaner measure of whether there is a significant misvaluation change around RegFD implementation due to each ownership type. Furthermore, our framework allows us to test the difference in

[24]For robustness, we also create propensity scores for each of these ownership types and identify control firms using propensity score matching. This, however, does not necessarily enforce the requirement that ex-ante firm misvaluation be similar across the sample and control firms, only that the propensity scores are similar. Nevertheless, the results are similar to the Mahalanobis approach and are therefore suppressed for brevity.

the difference-in-difference for $isDED$ against the difference-in-difference for $isTRA$, essentially providing us with a difference-in-difference-in-difference. This is the difference between firms with above-median dedicated ownership versus above-median transient ownership, taking into account both the time effect (i.e., pre- and post- RegFD) as well as the selection bias (i.e., relative to their matched control firms). This framework is thus robust against the explanation of institutional self-selection for our findings of the effect of ownership type on next quarter's overvaluation and misvaluation.

Table B.III summarizes the results of this difference analysis of next quarter's firm-specific overvaluation and misvaluation relative to control firms chosen using Mahalanobis distance matching based on contemporaneous RKRV firm- and sector-specific overvaluation, size, and book to market ratio. Panel A presents the results for next quarter's RKRV firm-specific overvaluation measure. We observe that the firms with high dedicated ownership (isDED=1), in Row (a), have no significant overvaluation one year prior to the implementation of RegFD in Column (1), and substantially higher overvaluation one year post in Column (2). The difference between the two, reported at 0.208 in Column (3), is also statistically significant indicative of an increase in overvaluation after the implementation of RegFD. This result may be due either to an increase in market efficiency as was the intention of RegFD,[25] or to the overall increase in overvaluation in the market. The matched control firms do demonstrate a similar increase in overvaluation between pre- and post- RegFD periods of 0.180 in Column (6). Notably, there are no significant difference-in-differences in the changes in overvaluation of firms held by dedicated investors relative to the controls around RegFD in Column (7), suggesting the absence of an informational effect due to Regulation FD on dedicated institutional investors.

We next consider the future overvaluation of firms with high transient ownership ($isTRA = 1$), in Row (b), which are significantly overvalued both pre- and post- RegFD in Columns (1) and (2) respectively. The difference of 0.083 is significant at the 5% level in Column (3). However, we see a much greater increase in overvaluation for the matched control firms in Columns (4) through (6) with a difference in control firm overvaluation around the implementation of RegFD of 0.306 significant at the 1% level. This larger change in the control firms implies that there is an

[25]By mandating the uniform disclosure of material information, RegFD removes the informational advantage in finding undervalued firms previously enjoyed by dedicated institutions.

overall reduction in the overvaluation of firms held by transients around RegFD in the difference-in-difference test in Column (7), with a magnitude of -0.223 significant at the 1% level. That is, when controlling for the self-selection of institutional types into firms using firm characteristics and contemporaneous firm- and sector-specific overvaluation, we find that the implementation of RegFD results in transient institutional ownership resulting in significantly less future firm-specific overvaluation, consistent with Table IX.

We further compare the difference-in-difference results in Column (7) for transient and dedicated institutions to obtain a difference-in-difference-in-difference between the two institutional investor types relative to matched controls around the implementation of RegFD in Column (8). We find a coefficient of -0.251 significant at the 1% level, implying that the decrease in future overvaluation of firms held by transients relative to matched controls, when compared to that of firms held by dedicated institutions relative to controls, itself decreased markedly around the implementation of the RegFD disclosure requirement. In other words, transient institutional ownership results in less overvaluation after RegFD than dedicated ownership, controlling for contemporaneous overvaluation.

Finally, we refine the sample to exclude firms that have both above-median dedicated and transient ownership, creating the indicator variable TvD which takes the value of 1 only when the firm has above-median transient ownership and below-median dedicated ownership and 0 only when the firm has above-median dedicated ownership and below-median transient ownership. This additional restriction removes potential confounding effects of observing the effects of both institutional investor types on the same firm. The results for TvD, in Row (c), in Columns (1) through (7) closely match those of $isTRA$ firms, with overvaluation falling relative to matched control firms after the implementation of RegFD. These findings for the transient-held firms suggest that transient institutional investors experienced an information effect on future overvaluation around the implementation of RegFD.

Panel B of Table B.III considers a similar matched-firm analysis for the next quarter's firm-specific RKRV misvaluation. We find that firms with above-median dedicated ownership in Row (a) do not experience a significant change in the absolute magnitude of misvaluation relative to control firms in the difference-in-difference analysis in Column (7) of Panel B. Firms with above-median

transient ownership in Row (b), on the other hand, experience a reduction of 0.175 in the magnitude of misvaluation relative to control firms significant at the 1% level in Column (7). Furthermore, the difference-in-difference-in-difference test in Column (8) also finds a reduction of 0.121 in the absolute magnitude of future firm-specific misvaluation between the transient-held firms and their controls relative to dedicated-held firms and their controls around RegFD. When we exclude firms with both above-median transient and dedicated ownership in the TvD analysis in Row (c) in Panel B, we also observe a 0.164 reduction in the magnitude of misvaluation with a 5% significance level.

The matched-firm tests show that these overvaluation and misvaluation effects are not merely due to institutional self-selection into firms based on current valuation since we select control firms using contemporaneous firm- and sector-specific overvaluation. The overvaluation and misvaluation of firms owned by transient institutions falls relative to that of matched control firms around the implementation of the regulation in the difference-in-difference analysis, and this decrease is significantly greater than that for firms owned by dedicated institutions in the difference-in-difference-in-difference.

Table B.II: Mahalanobis distance matching algorithm. Using Mahalanobis distance matching, the single nearest neighbor is identified as a control firm for each treatment firm. Columns (1), (4), and (7) report the means of matching characteristics for the actual DED, TRA, or TvD firms, respectively. Columns (2), (5), and (8) report the means of matching characteristics for the matched nearest neighbor to the actual DED, TRA, or TvD firms, respectively. Columns (3), (6), and (9) reports the p-values of the t-test of difference in means of matching characteristics for DED, TRA, or TvD matching, respectively. isDED is equal to 1 if the percentage of dedicated institutional investors within a firm falls into the upper tercile and 0 otherwise. isTRA is equal to 1 if the percentage of transient institutional investors within a firm falls into the upper tercile and 0 otherwise. isTvD contrasts isTRA=1 firms against isDED=1 firms and is equal to 1 if the percentage of transient institutional investors within a firm falls into the upper tercile and the percentage of dedicated institutional investors within a firm falls into the bottom tercile and 0 if the percentage of transient institutional investors within a firm falls into the bottom tercile and the percentage of dedicated institutional investors within a firm falls into the upper tercile.

	isDED= 1			isTRA= 1			isTvD= 1		
	Actual (1)	Matched (2)	p-val (3)	Actual (4)	Matched (5)	p-val (6)	Actual (7)	Matched (8)	p-val (9)
RKRV (Firm) Overval$_{i,t-1}$	0.062	0.066	0.609	0.155	0.151	0.574	0.177	0.167	0.399
RKRV Sector Overval$_{i,t-1}$	0.137	0.138	0.927	0.152	0.150	0.464	0.150	0.147	0.528
Log Total Assets$_{i,t-1}$	5.236	5.217	0.254	5.242	5.230	0.532	5.183	5.184	0.986
Book-to-Market Ratio$_{i,t-1}$	0.556	0.551	0.258	0.502	0.504	0.681	0.497	0.499	0.698

Table B.III: Difference-in-difference estimation under Mahalanobis distance matching using Regulation FD enacted in 2000. Using Mahalanobis distance matching algorithm, the single nearest neighbor is identified as a control firm for each treatment firm. Controls are found for treatment firms based on isDED=1, isTRA= 1, and isTvD= 1, respectively. Standard errors are reported in the parentheses and clustered by both firm and year-quarter as in Petersen (2009). Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	Panel A: RKRV Overvaluation							
	Treatment			Control			Treatment-Control	TRA-DED
	1-yr Pre-RegFD	1-yr Post-RegFD	1-yr Post-Pre	1-yr Pre-RegFD	1-yr Post-RegFD	1-yr Post-Pre	Diff-in-diff	Diff-in-diff-in-diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) Treatment: isDED=1	0.054	0.262 ***	0.208 ***	0.088 **	0.268 ***	0.180 ***	0.028	
	(0.036)	(0.033)	(0.033)	(0.037)	(0.036)	(0.034)	(0.047)	
(b) Treatment: isTRA=1	0.229 ***	0.312 ***	0.083 **	0.169 ***	0.474 ***	0.306 ***	-0.223 ***	-0.251 ***
	(0.041)	(0.034)	(0.039)	(0.037)	(0.037)	(0.031)	(0.049)	(0.075)
(c) Treatment: isTvD=1	0.308 ***	0.286 ***	-0.022	0.167 ***	0.444 ***	0.277 ***	-0.299 ***	
	(0.062)	(0.056)	(0.054)	(0.051)	(0.053)	(0.042)	(0.068)	
	Panel B: RKRV Misvaluation							
	Treatment			Control			Treatment-Control	TRA-DED
	1-yr Pre-RegFD	1-yr Post-RegFD	1-yr Post-Pre	1-yr Pre-RegFD	1-yr Post-RegFD	1-yr Post-Pre	Diff-in-diff	Diff-in-diff-in-diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) Treatment: isDED=1	0.625 ***	0.629 ***	0.004	0.616 ***	0.675 ***	0.058 **	-0.054	
	(0.022)	(0.020)	(0.026)	(0.021)	(0.024)	(0.026)	(0.037)	
(b) Treatment: isTRA=1	0.653 ***	0.599 ***	-0.055 *	0.639 ***	0.760 ***	0.121 ***	-0.175 ***	-0.121 **
	(0.026)	(0.023)	(0.029)	(0.022)	(0.024)	(0.027)	(0.040)	(0.059)
(c) Treatment: isTvD=1	0.697 ***	0.641 ***	-0.055	0.629 ***	0.738 ***	0.109 ***	-0.164 ***	
	(0.042)	(0.037)	(0.041)	(0.030)	(0.035)	(0.036)	(0.055)	

Table I: List of top ten dedicated and transient institutional investors by average portfolio size. Panel A lists the top ten dedicated institutional investors and panel B lists the top ten transient institutional investors. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Investors are sorted based on their average portfolio size. Calculations based on: Thomson Reuters, Thomson Reuters Institutional (13f) Holdings s34 Master File, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

Panel A: Top 10 Dedicated (DED) Institutional Investors By Average Portfolio Size

Name	Average Portfolio Size ($)
Fidelity Management & Research	366B
Capital Research & Management	130B
Wellington Management	121B
Jennison Associates	31B
Berkshire Hathaway	27B
State Farm Musual Automobile Insurance	27B
Harris Associates	16B
Sanford Bernstein & Co	14B
Bank of New York Asset Management	12B
Southeastern Asset Management	12B

Panel B: Top 10 Transient (TRA) Institutional Investors By Average Portfolio Size

Name	Average Portfolio Size ($)
Blackrock	190B
Morgan Stanley	84B
Janus Capital	60B
Putnam Management	58B
Pacific Investment Management Co.	42B
Oppenheimerfunds	39B
UBS Warburg	37B
Investors Research Corp	36B
Marsico Capital Management	34B
AIM Management	31B

Table II: Comparison of means for portfolio characteristics of dedicated institutional investors versus transient institutional investors. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***. Calculations based on: Thomson Reuters, Thomson Reuters Institutional (13f) Holdings s34 Master File, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

	DED Investors	TRA Investors	Sig
Total Portfolio Value ($M)	9431.6	2581.5	***
Number of Stocks in Portfolio	182.0	247.2	***
Average Firm Holdings (%)	5.250	2.460	***
Median Firm Holdings (%)	3.114	1.756	***
Std. Dev. Firm Holdings (%)	6.847	2.413	***
Average Firm Size ($M)	8784.8	17376.6	***
Median Firm Size ($M)	3023.5	5631.8	***
Std. Dev. Firm Size ($M)	15899.0	32817.8	***
Number of SIC3 Industries in Portfolio	34.5	47.1	***
HHI of Portfolio	0.142	0.035	***
Average Firm Holdings Concentration	0.052	0.007	***
Average Portfolio Turnover	0.041	0.122	***

Table III: Sample statistics of institutional investor and firm characteristics. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Firm characteristics are defined in Appendix A.

	No. Obs	Mean	Std Dev	1%	25%	50%	75%	99%
Total Assets ($M)	236025	2582.6	12839.5	11.6	63.4	214.6	963.0	41117.0
Market Value ($M)	209482	3023.1	15107.5	9.4	73.2	260.7	1129.6	53706.2
No. of Institutional Investors	234969	92.3	142.5	1.0	15.0	43.0	112.0	727.0
% Owned by Institutional Investors	230250	0.415	0.278	0.002	0.169	0.384	0.646	0.966
% Owned by Dedicated Inst. Investors	236025	0.046	0.066	0.000	0.008	0.029	0.061	0.286
% Owned by Transient Inst. Investors	236025	0.273	0.146	0.000	0.182	0.273	0.361	0.667
% Owned by Long Horizon Inst. Investors	234969	0.273	0.144	0.000	0.191	0.250	0.325	0.857
% Owned by Short Horizon Inst. Investors	234969	0.388	0.149	0.000	0.313	0.400	0.478	0.750
% Owned by Focused Inst. Investors	234969	0.436	0.217	0.147	0.261	0.379	0.571	1.000
% Owned by Diversified Inst. Investors	234969	0.162	0.121	0.000	0.053	0.162	0.265	0.386
HHI-Index of Institutional Investors	232496	0.126	0.147	0.015	0.041	0.072	0.146	0.809
RKRV Overvaluation	236025	0.087	0.789	-2.151	-0.346	0.117	0.570	1.855
RKRV Sector Overvaluation	236025	0.018	0.325	-0.876	-0.168	0.041	0.222	0.791
RKRV Long-Run MtB	236025	0.531	0.434	-0.661	0.288	0.535	0.807	1.570
Altman's Z-score	218482	1.107	5.665	-25.238	0.468	2.454	4.052	7.427
Long-term Debt / TA	232735	0.159	0.167	0.000	0.002	0.114	0.266	0.640
Has LT Debt Credit Rating	236025	0.235	0.424	0.000	0.000	0.000	0.000	1.000
Cash Flow Dispersion	220816	0.450	1.411	-4.791	0.208	0.390	0.695	5.625
No. of Analyst Estimates	236025	4.432	5.561	0.000	0.000	2.000	6.000	25.000
Opacity Measure	198016	-0.156	0.441	-0.562	-0.431	-0.292	-0.052	1.699
Momentum Return	222731	0.081	0.495	-0.693	-0.160	0.030	0.234	1.664
R&D Intensity	230381	0.097	0.373	0.000	0.000	0.004	0.065	1.927
$IVspread_{mon}$	59600	0.052	0.145	-0.418	-0.002	0.063	0.121	0.381
Realized Volatility	81411	0.526	0.257	0.172	0.347	0.468	0.647	1.377
Average Executive Compensation ($M)	75079	29.4	262.1	0.0	3.1	7.6	19.6	212.3
Maximum Executive Compensation ($M)	75079	114.1	1180.3	0.0	8.7	22.9	64.0	872.0
Median Executive Compensation ($M)	75079	9.0	38.4	0.0	1.5	3.6	8.6	79.5
Accruals Quality	223249	-0.009	0.276	-0.926	-0.085	-0.008	0.062	0.973
Payout Ratio	228561	-0.003	0.049	-0.225	-0.009	-0.001	0.005	0.140
Net Leverage Increase	205873	0.117	0.255	0.000	0.000	0.000	0.121	1.324

Table IV: Pairwise correlation matrix of institutional investor and firm characteristics. Institutional investor types are defined in Section 2.1. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Firm characteristics are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Total Assets ($M)							
(2) Market Value ($M)	0.8525						
(3) No. of Institutional Investors	0.5612	0.7070					
(4) % Owned by Institutional Investors	0.0665	0.0879	0.4728				
(5) % Owned by Dedicated Inst. Investors	-0.0685	-0.0715	-0.1651	-0.1305			
(6) % Owned by Transient Inst. Investors	-0.0157	-0.0199	0.0359	0.1958	-0.2288		
(7) % Owned by Long Horizon Inst. Investors	-0.0053	0.0032	-0.0831	-0.3022	0.0498	-0.4702	
(8) % Owned by Short Horizon Inst. Investors	-0.0394	-0.0465	0.0132	0.2457	-0.0530	0.6165	-0.6475
(9) % Owned by Focused Inst. Investors	-0.1351	-0.1388	-0.4282	-0.6035	0.2811	-0.3261	0.4049
(10) % Owned by Diversified Inst. Investors	0.2235	0.2470	0.6227	0.6798	-0.2283	0.1933	-0.2502
(11) HHI-Index of Institutional Investors	-0.0869	-0.1029	-0.3217	-0.4685	0.1021	-0.1229	0.2206
(12) RKRV Overvaluation	0.0162	0.0850	0.3028	0.3125	-0.0687	0.0636	-0.1199
(13) RKRV Sector Overvaluation	-0.0464	-0.0274	0.0212	0.0711	0.0009	0.0143	-0.0570
(14) RKRV Long-Run MtB	-0.1951	-0.1113	-0.1275	-0.1565	0.0298	0.0434	0.0443
(15) Altman's Z-score	0.0549	0.0698	0.1434	0.1507	0.0291	-0.1390	0.0378
(16) Long-term Debt / TA	0.0600	0.0311	0.0560	0.0616	0.0035	-0.0528	0.0198
(17) Has LT Debt Credit Rating	0.2850	0.2788	0.5016	0.3452	-0.0953	0.0167	-0.0819
(18) Cash Flow Dispersion	-0.0111	-0.0128	-0.0247	-0.0067	0.0130	-0.0307	0.0392
(19) No. of Analyst Estimates	0.2623	0.3401	0.7202	0.5678	-0.1700	0.1472	-0.1917
(20) Opacity Measure	-0.1333	-0.1401	-0.3579	-0.5021	0.1751	-0.2727	0.3500
(21) Momentum Return	-0.0075	0.0039	0.0195	0.0408	-0.0202	0.1198	-0.0756
(22) R&D Intensity	-0.0333	-0.0268	-0.0428	-0.0319	0.0109	0.0655	-0.0338

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(9) % Owned by Focused Inst. Investors	-0.3213						
(10) % Owned by Diversified Inst. Investors	0.2056	-0.7601					
(11) HHI-Index of Institutional Investors	-0.2125	0.4284	-0.4776				
(12) RKRV Overvaluation	0.1123	-0.2767	0.3457	-0.2617			
(13) RKRV Sector Overvaluation	0.0408	-0.0188	0.0061	-0.0502	-0.0779		
(14) RKRV Long-Run MtB	0.0136	0.1601	-0.1929	0.1153	-0.1094	-0.0225	
(15) Altman's Z-score	-0.0595	-0.0214	0.1746	-0.1433	0.0354	0.0512	-0.2858
(16) Long-term Debt / TA	-0.0228	-0.0305	0.0823	-0.0278	-0.0194	0.0226	-0.1149
(17) Has LT Debt Credit Rating	0.0341	-0.3317	0.4600	-0.2270	0.1267	0.0338	-0.2219
(18) Cash Flow Dispersion	-0.0298	0.0521	-0.0181	0.0083	-0.0427	-0.0025	-0.0856
(19) No. of Analyst Estimates	0.1464	-0.5045	0.6442	-0.3675	0.3359	0.0176	-0.1137
(20) Opacity Measure	-0.3026	0.5842	-0.5517	0.4409	-0.2699	-0.1117	0.1709
(21) Momentum Return	0.0989	-0.0429	0.0434	-0.0523	0.1208	0.0851	0.0417
(22) R&D Intensity	0.0510	-0.0127	-0.0432	0.0088	0.0090	-0.0265	0.2292

	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(16) Long-term Debt / TA	0.0557						
(17) Has LT Debt Credit Rating	0.1190	0.3987					
(18) Cash Flow Dispersion	0.1931	0.0326	0.0002				
(19) No. of Analyst Estimates	0.1075	0.0587	0.4300	-0.0174			
(20) Opacity Measure	-0.1227	-0.0123	-0.2662	0.0395	-0.4013		
(21) Momentum Return	0.0388	-0.0203	-0.0002	0.0059	0.0049	-0.0655	
(22) R&D Intensity	-0.3792	-0.1439	-0.1067	-0.1132	-0.0115	0.0073	-0.0157

Table V: Comparison of means for firms with dedicated institutional investors versus firms with transient institutional investors. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Sorting by firm based on its percentage of dedicated institutional investors, isDED is equal to 1 if the percentage of dedicated institutional investors within a firm falls into the upper tercile and 0 otherwise. Similarly, sorting by firm based on its percentage of transient institutional investors, isTRA is equal to 1 if the percentage of transient institutional investors within a firm falls into the upper tercile and 0 otherwise. Firm characteristics are defined in Appendix A. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	isDED=1	isTRA=1	Sig
Total Assets ($M)	1763.4	1434.2	***
Market Value ($M)	1632.5	1741.9	**
No. of Institutional Investors	66.9	83.8	***
% Owned by Institutional Investors	0.418	0.412	***
% Owned by Dedicated Inst. Investors	0.088	0.015	***
% Owned by Transient Inst. Investors	0.187	0.378	***
% Owned by Long Horizon Inst. Investors	0.296	0.230	***
% Owned by Short Horizon Inst. Investors	0.333	0.466	***
% Owned by Focused Inst. Investors	0.458	0.418	***
% Owned by Diversified Inst. Investors	0.147	0.170	***
HHI-Index of Institutional Investors	0.130	0.124	***
RKRV Overvaluation	0.004	0.140	***
RKRV Sector Overvaluation	0.016	0.018	
RKRV Long-Run MtB	0.479	0.578	***
Altman's Z-score	1.376	0.987	***
Long-term Debt / TA	0.162	0.154	***
Has LT Debt Credit Rating	0.201	0.228	***
Cash Flow Dispersion	0.460	0.480	**
No. of Analyst Estimates	3.3	4.9	***
Opacity Measure	-0.142	-0.168	***
Momentum Return	0.018	0.150	***
R&D Intensity	0.098	0.091	***
$IVspread_{mon}$	0.039	0.061	***
Realized Volatility	0.497	0.577	***
Average Executive Compensation ($M)	13.8	25.7	***
Maximum Executive Compensation ($M)	51.1	100.1	***
Median Executive Compensation ($M)	5.2	8.7	***
Accruals Quality	-0.012	-0.002	***
Payout Ratio	0.131	0.090	***
Net Leverage Increase	-0.001	-0.005	***

Table VI: Estimation of misvaluation on types of institutional investors. Misvaluation is defined based on the Rhodes-Kropf, Robinson, and Viswanathan (2005) decomposition of the market-to-book ratio into three types of components: firm-specific error, time-series sector error, and long-run market-to-book. RKRV Overvaluation refers to the firm-specific error from the RKRV decomposition. Columns (1), (3), and (5) use the firm-specific overvaluation as the dependant variable. A negative (positive) firm-specific error indicates a under- (over-) valued firm. Columns (2), (4), and (6) use the absolute value of the firm-specific overvaluation as the dependant variable. This captures the magnitude of the misvaluation. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
% Owned by Dedicated Inst. Investors$_{i,t-1}$	-0.7668 ***	-0.0245				
	(0.1077)	(0.0505)				
% Owned by Dedicated Inst. Investors$_{i,t-2}$			-0.8708 ***	-0.0343	-0.5676 ***	-0.0049
			(0.1226)	(0.0511)	(0.0969)	(0.0568)
Δ % Owned by Dedicated Inst. Investors$_{i,t-1}$			-0.5162 ***	-0.1022	-0.3620 ***	-0.1030
			(0.1256)	(0.0864)	(0.0971)	(0.0747)
% Owned by Transient Inst. Investors$_{i,t-1}$	0.3877 ***	0.0726 ***				
	(0.0691)	(0.0278)				
% Owned by Transient Inst. Investors$_{i,t-2}$			0.4525 ***	0.0547 *	0.1495 **	0.1348 ***
			(0.0773)	(0.0301)	(0.0628)	(0.0324)
Δ % Owned by Transient Inst. Investors$_{i,t-1}$			0.4095 ***	0.0303	0.2846 ***	0.0956 ***
			(0.0774)	(0.0315)	(0.0500)	(0.0295)
Log Total Assets$_{i,t-1}$					-0.0741 ***	0.0644 ***
					(0.0115)	(0.0090)
% Owned by Institutional Investors$_{i,t-1}$					0.4511 ***	-0.3497 ***
					(0.0532)	(0.0342)
HHI-Index of Institutional Investors$_{i,t-1}$					-0.4559 ***	0.2158 ***
					(0.0445)	(0.0337)
Altman Z-score$_{i,t-1}$					-0.0015	-0.0042 ***
					(0.0013)	(0.0007)
LT Debt / TA$_{i,t-1}$					-0.2170 ***	-0.1040 ***
					(0.0460)	(0.0270)
Have LT Credit Rating$_{i,t-1}$					0.0848 ***	-0.0036
					(0.0201)	(0.0167)
Cash Flow Dispersion$_{i,t-1}$					-0.0168 ***	0.0064 ***
					(0.0024)	(0.0016)
No. of Analyst Estimates$_{i,t-1}$					0.2771 ***	-0.0091
					(0.0131)	(0.0087)
Constant	0.3468	0.5754 ***	0.3478	0.5663 ***	0.7252 **	0.2667
	(0.2526)	(0.1734)	(0.2675)	(0.1823)	(0.2993)	(0.2065)
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	236025	236025	223006	223006	185367	185367
Adjusted R^2	0.0615	0.0586	0.0661	0.0588	0.2358	0.0943

Table VII: Estimation of misvaluation on types of institutional investors with alternative control variables. Misvaluation is defined based on the Rhodes-Kropf, Robinson, and Viswanathan (2005) decomposition of the market-to-book ratio into three types of components: firm-specific error, time-series sector error, and long-run market-to-book. RKRV Overvaluation refers to the firm-specific error from the RKRV decomposition. Columns (1) and (3) use the firm-specific overvaluation as the dependant variable. A negative (positive) firm-specific error indicates a under- (over-) valued firm. Columns (2) and (4) use the absolute value of the firm-specific overvaluation as the dependant variable. This captures the magnitude of the misvaluation. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
% Owned by Dedicated Inst. Investors$_{i,t-2}$	-0.6083 ***	-0.0065	-0.7319 ***	0.0192	-0.5813 ***	-0.0041
	(0.1029)	(0.0613)	(0.1086)	(0.0662)	(0.0983)	(0.0577)
Δ % Owned by Dedicated Inst. Investors$_{i,t-1}$	-0.3341 ***	-0.1166	-0.4156 ***	-0.0907	-0.3608 ***	-0.1060
	(0.1072)	(0.0822)	(0.1110)	(0.0884)	(0.0978)	(0.0762)
% Owned by Transient Inst. Investors$_{i,t-2}$	-0.0336	0.1226 ***	-0.0240	0.1910 ***	0.1506 **	0.1313 ***
	(0.0681)	(0.0361)	(0.0677)	(0.0368)	(0.0640)	(0.0330)
Δ % Owned by Transient Inst. Investors$_{i,t-1}$	0.2428 ***	0.0859 ***	0.2474 ***	0.1298 ***	0.2912 ***	0.0898 ***
	(0.0491)	(0.0318)	(0.0518)	(0.0328)	(0.0504)	(0.0304)
Log Total Assets$_{i,t-1}$	-0.0719 ***	0.0660 ***	-0.0997 ***	0.0835 ***	-0.0741 ***	0.0646 ***
	(0.0117)	(0.0091)	(0.0125)	(0.0093)	(0.0116)	(0.0091)
% Owned by Institutional Investors$_{i,t-1}$	0.4668 ***	-0.3566 ***	0.4547 ***	-0.3368 ***	0.4517 ***	-0.3549 ***
	(0.0543)	(0.0349)	(0.0555)	(0.0364)	(0.0532)	(0.0346)
HHI-Index of Institutional Investors$_{i,t-1}$	-0.4483 ***	0.2299 ***	-0.2895 ***	0.1714 ***	-0.4593 ***	0.2234 ***
	(0.0462)	(0.0350)	(0.0494)	(0.0387)	(0.0452)	(0.0346)
Altman Z-score$_{i,t-1}$	-0.0026 **	-0.0041 ***	-0.0035 **	-0.0042 ***	-0.0024 *	-0.0044 ***
	(0.0013)	(0.0007)	(0.0014)	(0.0007)	(0.0014)	(0.0008)
LT Debt / TA$_{i,t-1}$	-0.2158 ***	-0.0948 ***	-0.2034 ***	-0.1436 ***	-0.2105 ***	-0.1061 ***
	(0.0473)	(0.0276)	(0.0491)	(0.0282)	(0.0462)	(0.0273)
Have LT Credit Rating$_{i,t-1}$	0.0819 ***	-0.0046	0.1264 ***	-0.0275	0.0814 ***	-0.0028
	(0.0205)	(0.0169)	(0.0221)	(0.0185)	(0.0201)	(0.0167)
Cash Flow Dispersion$_{i,t-1}$	-0.0167 ***	0.0069 ***	-0.0136 ***	0.0048 ***	-0.0160 ***	0.0067 ***
	(0.0025)	(0.0017)	(0.0024)	(0.0017)	(0.0024)	(0.0016)
No. of Analyst Estimates$_{i,t-1}$	0.2803 ***	-0.0095	0.2699 ***	-0.0069	0.2814 ***	-0.0073
	(0.0133)	(0.0090)	(0.0138)	(0.0093)	(0.0133)	(0.0088)
Momentum Returns$_{i,t-1}$	0.1559 ***	0.0026				
	(0.0272)	(0.0042)				
Firm Opacity$_{i,t-1}$			-0.2875 ***	0.1106 ***		
			(0.0180)	(0.0111)		
R&D Intensity$_{i,t-1}$					-0.0200	-0.0109
					(0.0148)	(0.0088)
Constant	0.7332 **	0.2720	0.9313 ***	0.2584	0.6313 ***	0.2025
	(0.3157)	(0.2192)	(0.2876)	(0.2174)	(0.2431)	(0.1669)
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	175070	175070	156723	156723	181299	181299
Adjusted R^2	0.2563	0.0974	0.2609	0.1002	0.2422	0.0960

Table VIII: Estimation of misvaluation on types of institutional investors. Misvaluation is defined based on the Rhodes-Kropf, Robinson, and Viswanathan (2005) decomposition of the market-to-book ratio into three types of components: firm-specific error, time-series sector error, and long-run market-to-book. Columns (1) and (4) use the time-series sector overvaluation as the dependant variable. A negative (positive) sector error indicates an under- (over-) valued industry. Columns (2) and (5) use the absolute value of the sector-specific overvaluation as the dependant variable. This captures the magnitude of the misvaluation. Columns (3) and (6) use the long-run market-to-book value as the dependant variable. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	RKRV Sector Overval. (1)	RKRV Sector Misval. (2)	RKRV Long-Run Value (3)	RKRV Sector Overval. (4)	RKRV Sector Misval. (5)	RKRV Long-Run Value (6)
% Owned by Dedicated Inst. Investors$_{i,t-2}$	0.0136	0.0063	0.1048 ***	0.0175	0.0088	-0.1066 ***
	(0.0251)	(0.0162)	(0.0315)	(0.0242)	(0.0159)	(0.0348)
Δ % Owned by Dedicated Inst. Investors$_{i,t-1}$	-0.0355	-0.0107	0.0261	-0.0480	-0.0059	-0.0945 ***
	(0.0428)	(0.0213)	(0.0393)	(0.0511)	(0.0229)	(0.0322)
% Owned by Transient Inst. Investors$_{i,t-2}$	0.0384 **	-0.0317 ***	0.0641 ***	0.0378 **	-0.0137	0.0829 ***
	(0.0167)	(0.0110)	(0.0184)	(0.0184)	(0.0114)	(0.0201)
Δ % Owned by Transient Inst. Investors$_{i,t-1}$	0.0529 **	-0.0175	0.0717 ***	0.0596 **	-0.0077	0.1094 ***
	(0.0211)	(0.0145)	(0.0189)	(0.0244)	(0.0166)	(0.0154)
Log Total Assets$_{i,t-1}$				-0.0133 ***	0.0009	-0.0778 ***
				(0.0042)	(0.0025)	(0.0036)
% Owned by Institutional Investors$_{i,t-1}$				0.0294 ***	-0.0551 ***	-0.0144
				(0.0097)	(0.0065)	(0.0148)
HHI-Index of Institutional Investors$_{i,t-1}$				-0.0376 ***	0.0380 ***	0.0622 ***
				(0.0124)	(0.0091)	(0.0158)
Altman Z-score$_{i,t-1}$				0.0015 **	-0.0026 ***	-0.0052 ***
				(0.0007)	(0.0005)	(0.0006)
LT Debt / TA$_{i,t-1}$				0.0634 **	0.0472 **	0.3069 ***
				(0.0315)	(0.0187)	(0.0214)
Have LT Credit Rating$_{i,t-1}$				0.0175 ***	0.0159 ***	0.0361 ***
				(0.0057)	(0.0036)	(0.0082)
Cash Flow Dispersion$_{i,t-1}$				-0.0014	-0.0006	-0.0083 ***
				(0.0009)	(0.0006)	(0.0011)
No. of Analyst Estimates$_{i,t-1}$				0.0060 *	0.0019	0.0315 ***
				(0.0033)	(0.0020)	(0.0043)
Constant	-0.0284	0.1718 ***	0.2511 ***	0.0213	0.1467 ***	0.6108 ***
	(0.0545)	(0.0231)	(0.0660)	(0.0581)	(0.0250)	(0.0637)
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	223006	223006	223006	185367	185367	185367
Adjusted R^2	0.3206	0.1530	0.3397	0.3252	0.1631	0.4235

Table IX: Difference-in-difference estimation using Regulation FD enacted in 2000. Panel A presents the main results using Regulation FD. This SEC regulation reduced the informational advantage enjoyed by important institutions by mandating that all firm disclosures be made public. Overvaluation and misvaluation use the firm-specific error from the Rhodes-Kropf, Robinson, and Viswanathan (2005) decomposition of the market-to-book ratio. isRegFD is defined as 0 for years 1995 to 1999 and 1 for years 2001 to 2005. We remove 2000 from the analysis to account for any anticipation or delays in the application of Regulation FD. Institutional investor types are defined in Section 2.1. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Percentage of dedicated institutional investors is relative to the total number of institutional investors within a firm. Sorting by firm based on its percentage of dedicated institutional investors, isDED is equal to 1 for those with above-median dedicated ownership. Columns (1) and (2) examine the impact of RegFD on misvaluation among firms owned by large percentage of dedicated institutional investors (isDED=1). Columns (3) and (4) examine the impact of RegFD on misvaluation among firms owned by an above-median share of transient institutional investors (isTRA=1). Columns (5) and (6) contrast the impact of RegFD among isTRA=1 firms against isDED=1 firms. Panel B presents the placebo results that centers around 1995, rather than 2000, as a robustness check for our exogenous shock. Here isRegFD is defined as 0 for years 1992 to 1994 and 1 for years 1996 to 1998. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	Panel A: Main Regulation FD Results					
	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
isRegFD	0.0990 ***	0.1544 ***	0.1295 ***	0.1454 ***	-0.1230 ***	0.0444
	(0.0252)	(0.0151)	(0.0249)	(0.0152)	(0.0303)	(0.0460)
isDED	-0.0656 ***	-0.0609 ***				
	(0.0135)	(0.0109)				
isRegFDxisDED	0.0165	-0.0189				
	(0.0190)	(0.0165)				
isTRA			0.0825 ***	0.0238 **		
			(0.0149)	(0.0109)		
isRegFDxisTRA			-0.0440 **	-0.0147		
			(0.0212)	(0.0149)		
isTvD					0.1535 ***	0.0207 ***
					(0.0210)	(0.0073)
isRegFDxisTvD					-0.0504 *	-0.0308 ***
					(0.0299)	(0.0102)
% Dedicated Inst. $\text{Inv.}_{i,t-2}$	-0.3836 ***	0.3275 ***	-0.6257 ***	0.0527	-0.3817 **	0.0328
	(0.1314)	(0.0862)	(0.1285)	(0.0828)	(0.1583)	(0.0262)
Δ % Dedicated Inst. $\text{Inv.}_{i,t-1,t}$	-0.1602	0.1676	-0.3503 **	-0.0583	-0.0236	-0.0290
	(0.1430)	(0.1260)	(0.1387)	(0.1319)	(0.1659)	(0.0418)
% Transient Inst. $\text{Inv.}_{i,t-2}$	0.2723 ***	0.1125 ***	0.1335 **	0.0752 **	0.1773 ***	-0.0318 *
	(0.0598)	(0.0378)	(0.0601)	(0.0381)	(0.0684)	(0.0191)
Δ % Transient Inst. $\text{Inv.}_{i,t-1,t}$	0.3574 ***	0.0792 *	0.2498 ***	0.0505	0.1579 ***	0.0102
	(0.0607)	(0.0426)	(0.0582)	(0.0459)	(0.0152)	(0.0215)
Constant	0.3318	0.3593	0.2909	0.3237	0.7614	0.1911 ***
	(0.3957)	(0.2803)	(0.3969)	(0.2791)	(0.4861)	(0.0632)
Other Controls?	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	76512	76512	76512	76512	39899	39899
Adjusted R^2	0.2543	0.0968	0.2544	0.0934	0.2406	0.1974

Table IX continued.

	Panel B: Placebo Regulation FD Results					
	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
isRegFD	-0.0096	-0.0114	-0.0010	-0.0279 **	-0.0121	0.0220
	(0.0201)	(0.0140)	(0.0197)	(0.0139)	(0.0250)	(0.0215)
isDED	-0.0311 **	-0.0595 ***				
	(0.0152)	(0.0103)				
isRegFDxisDED	-0.0197	-0.0081				
	(0.0191)	(0.0152)				
isTRA			0.0960 ***	-0.0040		
			(0.0189)	(0.0102)		
isRegFDxisTRA			-0.0412 *	0.0229		
			(0.0212)	(0.0146)		
isTvD					0.1379 ***	0.0579 ***
					(0.0258)	(0.0150)
isRegFDxisTvD					-0.0174	0.0306
					(0.0295)	(0.0205)
% Dedicated Inst. $\text{Inv.}_{i,t-2}$	-0.2850 **	0.1574 **	-0.4464 ***	-0.0770	-0.3089 **	0.2717 ***
	(0.1144)	(0.0623)	(0.1077)	(0.0670)	(0.1551)	(0.0693)
Δ % Dedicated Inst. $\text{Inv.}_{i,t-1,t}$	-0.2582 ***	0.1377 ***	-0.3940 ***	-0.0681	-0.3017 ***	0.2233 ***
	(0.0637)	(0.0474)	(0.0681)	(0.0494)	(0.0858)	(0.0754)
% Transient Inst. $\text{Inv.}_{i,t-2}$	0.4565 ***	0.0188	0.2894 ***	-0.0044	0.2126 ***	0.0001
	(0.0645)	(0.0333)	(0.0669)	(0.0324)	(0.0697)	(0.0402)
Δ % Transient Inst. $\text{Inv.}_{i,t-1,t}$	0.4032 ***	0.0315	0.2694 ***	0.0169	0.2035 ***	0.0469
	(0.0578)	(0.0298)	(0.0550)	(0.0296)	(0.0107)	(0.0497)
Constant	0.2606	0.6322 ***	0.2400	0.6114 ***	0.4351	0.6256 ***
	(0.2873)	(0.1612)	(0.2912)	(0.1632)	(0.3205)	(0.2102)
Other Controls?	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	40031	40031	40031	40031	20620	20620
Adjusted R^2	0.2459	0.0714	0.2471	0.0678	0.2353	0.0784

Table X: Estimation of misvaluation on types of institutional investors with control variables. Overvaluation and misvaluation use the firm-specific error from the Rhodes-Kropf, Robinson, and Viswanathan (2005) decomposition of the market-to-book ratio. Long- (short-) horizon institutional investors, as defined in Yan and Zhang (2009), are characterized by having low (high) portfolio turnover. Focused (diversified) institutional investors, as defined in Bushee (1998, 2001), are characterized by having high (low) average holdings in invested firms. Percentage of institutional investor type is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Panel A reports the results using observations across all years. Panels B and C report the resulting using observations prior to and post 2000, respectively, to sub-sample into pre and post Regulation FD periods. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	Panel A: All Years					
	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
% Long-term Inst. Inv.$_{i,t-2}$	0.3403 ***	-0.0199				
	(0.0635)	(0.0415)				
Δ % Long-term Inst. Inv.$_{i,t-1}$	0.0910 *	-0.0244				
	(0.0544)	(0.0319)				
% Short-term Inst. Inv.$_{i,t-2}$	0.0273	0.0871 **				
	(0.0682)	(0.0339)				
Δ % Short-term Inst. Inv.$_{i,t-1}$	0.1423 ***	0.0623 **				
	(0.0504)	(0.0262)				
% Focused Inst. Inv.$_{i,t-2}$			-0.1013 *	0.0458		
			(0.0536)	(0.0363)		
Δ % Focused Inst. Inv.$_{i,t-1}$			-0.2325 ***	0.0383		
			(0.0462)	(0.0279)		
% Diversified Inst. Inv.$_{i,t-2}$			1.9342 ***	-0.1865 **		
			(0.0972)	(0.0791)		
Δ % Diversified Inst. Inv.$_{i,t-1}$			1.5232 ***	-0.1007 *		
			(0.0813)	(0.0519)		
% Long and Foc. Inst. Inv.$_{i,t-2}$					-0.0022	0.0157
					(0.0583)	(0.0425)
Δ % Long and Foc. Inst. Inv.$_{i,t-1}$					-0.2364 ***	0.0076
					(0.0580)	(0.0356)
% Long and Div. Inst. Inv.$_{i,t-2}$					3.4606 ***	-0.2753 *
					(0.2091)	(0.1459)
Δ % Long and Div. Inst. Inv.$_{i,t-1}$					2.1724 ***	-0.1407
					(0.1643)	(0.0917)
% Short and Foc. Inst. Inv.$_{i,t-2}$					-0.1479 **	0.1186 ***
					(0.0685)	(0.0442)
Δ % Short and Foc. Inst. Inv.$_{i,t-2}$					-0.1067 *	0.0768 **
					(0.0548)	(0.0369)
% Short and Div. Inst. Inv.$_{i,t-2}$					1.2900 ***	-0.2857 ***
					(0.1467)	(0.0969)
Δ % Short and Div. Inst. Inv.$_{i,t-1}$					1.2652 ***	-0.1277 *
					(0.1132)	(0.0684)
Constant	0.7178 **	0.2673	0.9773 ***	0.2606	0.9333 ***	0.2538
	(0.2864)	(0.2172)	(0.2715)	(0.2188)	(0.2678)	(0.2192)
Other Controls?	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	156723	156723	156723	156723	156723	156723
Adjusted R^2	0.2603	0.0992	0.2831	0.0994	0.2807	0.0999

Table X continued.

	Panel B: Prior to 2000					
	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
% Long-term Inst. Inv.$_{i,t-2}$	0.1103 *	0.0736 *				
	(0.0602)	(0.0382)				
Δ % Long-term Inst. Inv.$_{i,t-1}$	-0.0557	0.0322				
	(0.0542)	(0.0270)				
% Short-term Inst. Inv.$_{i,t-2}$	0.2030 ***	0.0416				
	(0.0547)	(0.0334)				
Δ % Short-term Inst. Inv.$_{i,t-1}$	0.2561 ***	0.0258				
	(0.0511)	(0.0241)				
% Focused Inst. Inv.$_{i,t-2}$			-0.3774 ***	-0.0393		
			(0.0546)	(0.0324)		
Δ % Focused Inst. Inv.$_{i,t-1}$			-0.3776 ***	-0.0322		
			(0.0410)	(0.0271)		
% Diversified Inst. Inv.$_{i,t-2}$			1.3256 ***	0.1626 **		
			(0.1080)	(0.0725)		
Δ % Diversified Inst. Inv.$_{i,t-1}$			1.1059 ***	0.1307 **		
			(0.0856)	(0.0510)		
% Long and Foc. Inst. Inv.$_{i,t-2}$					-0.2531 ***	-0.0002
					(0.0609)	(0.0412)
Δ % Long and Foc. Inst. Inv.$_{i,t-1}$					-0.3639 ***	0.0005
					(0.0541)	(0.0323)
% Long and Div. Inst. Inv.$_{i,t-2}$					2.4602 ***	0.5233 ***
					(0.2173)	(0.1379)
Δ % Long and Div. Inst. Inv.$_{i,t-1}$					1.5762 ***	0.3054 ***
					(0.1545)	(0.0876)
% Short and Foc. Inst. Inv.$_{i,t-2}$					-0.0768	-0.0634 *
					(0.0689)	(0.0345)
Δ % Short and Foc. Inst. Inv.$_{i,t-2}$					-0.0263	-0.0677 **
					(0.0525)	(0.0307)
% Short and Div. Inst. Inv.$_{i,t-2}$					1.3002 ***	0.0848
					(0.1563)	(0.0989)
Δ % Short and Div. Inst. Inv.$_{i,t-1}$					1.1361 ***	0.1000
					(0.1216)	(0.0778)
Constant	0.6985 ***	0.5650 ***	1.2141 ***	0.6447 ***	0.9957 ***	0.6442 ***
	(0.1723)	(0.1443)	(0.1645)	(0.1446)	(0.1661)	(0.1424)
Other Controls?	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	58929	58929	58929	58929	58929	58929
Adjusted R^2	0.2522	0.0743	0.2731	0.0748	0.2690	0.0756

Table X continued.

	Panel C: Post 2000					
	RKRV Overval. (1)	RKRV Misval. (2)	RKRV Overval. (3)	RKRV Misval. (4)	RKRV Overval. (5)	RKRV Misval. (6)
% Long-term Inst. Inv.$_{i,t-2}$	0.3911 ***	0.0126				
	(0.1029)	(0.0730)				
Δ % Long-term Inst. Inv.$_{i,t-1}$	0.1166	-0.0183				
	(0.0926)	(0.0606)				
% Short-term Inst. Inv.$_{i,t-2}$	-0.1507	0.1200 **				
	(0.1037)	(0.0569)				
Δ % Short-term Inst. Inv.$_{i,t-1}$	0.0264	0.0900 **				
	(0.0744)	(0.0458)				
% Focused Inst. Inv.$_{i,t-2}$			-0.0439	0.0808		
			(0.0799)	(0.0583)		
Δ % Focused Inst. Inv.$_{i,t-1}$			-0.2296 ***	0.0921 *		
			(0.0735)	(0.0478)		
% Diversified Inst. Inv.$_{i,t-2}$			2.0162 ***	-0.2928 ***		
			(0.1358)	(0.1098)		
Δ % Diversified Inst. Inv.$_{i,t-1}$			1.6246 ***	-0.2200 ***		
			(0.1207)	(0.0710)		
% Long and Foc. Inst. Inv.$_{i,t-2}$					-0.0181	0.0376
					(0.1054)	(0.0766)
Δ % Long and Foc. Inst. Inv.$_{i,t-1}$					-0.2869 **	0.0109
					(0.1154)	(0.0714)
% Long and Div. Inst. Inv.$_{i,t-2}$					3.9262 ***	-0.4268 **
					(0.2798)	(0.2058)
Δ % Long and Div. Inst. Inv.$_{i,t-1}$					2.4976 ***	-0.2585 *
					(0.2520)	(0.1390)
% Short and Foc. Inst. Inv.$_{i,t-2}$					-0.3483 ***	0.2963 ***
					(0.1237)	(0.0890)
Δ % Short and Foc. Inst. Inv.$_{i,t-2}$					-0.2853 ***	0.2451 ***
					(0.0980)	(0.0673)
% Short and Div. Inst. Inv.$_{i,t-2}$					0.8518 ***	-0.4357 ***
					(0.2126)	(0.1431)
Δ % Short and Div. Inst. Inv.$_{i,t-1}$					1.1159 ***	-0.2689 ***
					(0.1765)	(0.1018)
Constant	0.1674	0.3036	0.3249	0.3064	0.3806	0.2918
	(0.3863)	(0.2891)	(0.3693)	(0.2887)	(0.3550)	(0.2902)
Other Controls?	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y
No. Obs.	91213	91213	91213	91213	91213	91213
Adjusted R^2	0.3026	0.1361	0.3218	0.1373	0.3219	0.1386

Table XI: Estimation of firm characteristics on types of institutional investors with control variables. Column (1) uses $IVspread_{mon}$ as the dependant variable. This measure proxies for tail risk and crash events. Column (2) uses realized volatility over the past year as the dependent variable. This measure captures the overall historical risk of the firm. Columns (3) through (5) use the natural log of the average, maximum, and median managerial compensation as the dependent variable, respectively. Column (6) uses the accruals quality as the dependant variable. This measure is decreasing in accruals quality. Column (7) uses the payout ratio, which includes both dividends and share repurchases, as the dependent variable. Column (8) uses net leverage increases to total assets as the dependent variable. This measure captures capital structure dynamics in the direction of increasing leverage. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having large average investment in firms in their portfolios and extremely low turnover. In contrast, transient institutional investors are institutional investors characterized as having high portfolio turnover and highly diversified portfolio holdings. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. Panel A reports the results using observations from all years. Panels B and C report the resuls using observations prior to post 2000, respectively, to sub-sample into pre- and post- Regulation FD periods. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	Panel A: All Years							
	$IVspread_{mon}$ (1)	Realized Volatility (2)	Average Executive Compensation (3)	Maximum Executive Compensation (4)	Median Executive Compensation (5)	Accruals Quality (6)	Payout Ratio (7)	Net Leverage Increase (8)
% Dedicated Inst. $Inv._{i,t-2}$	0.0609	-0.2810 ***	-1.1831	-1.3259	-1.7321 **	-0.0195	-0.1026 ***	-0.0024
	(0.0594)	(0.0819)	(0.7710)	(0.8576)	(0.7535)	(0.0212)	(0.0222)	(0.0028)
Δ % Dedicated Inst. $Inv._{i,t-1}$	-0.0074	-0.2047 **	-1.2481 **	-1.1633 *	-2.0463 ***	-0.0150	-0.0637 ***	0.0018
	(0.0634)	(0.0876)	(0.6210)	(0.6649)	(0.6638)	(0.0206)	(0.0200)	(0.0048)
% Transient Inst. $Inv._{i,t-2}$	0.0529 ***	0.3732 ***	2.0044 ***	2.2166 ***	1.6686 ***	0.0257 *	-0.2219 ***	-0.0114 ***
	(0.0135)	(0.0229)	(0.2289)	(0.2526)	(0.2187)	(0.0149)	(0.0150)	(0.0016)
Δ % Transient Inst. $Inv._{i,t-1}$	0.1152 ***	0.1534 ***	1.5938 ***	1.6925 ***	1.4399 ***	0.0161	-0.1430 ***	-0.0211 ***
	(0.0162)	(0.0252)	(0.1960)	(0.2121)	(0.1786)	(0.0124)	(0.0106)	(0.0022)
Constant	-0.0793 ***	0.7968 ***	-1.5838	-0.0834	-2.8198 ***	0.0067	-0.0084	-0.0159 ***
	(0.0155)	(0.0278)	(0.5200)	(0.4942)	(0.3531)	(0.0146)	(0.0273)	(0.0046)
Other Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
No. Obs.	45686	62463	57897	57897	57490	152638	143355	153340
Adjusted R^2	0.0873	0.7703	0.4511	0.4223	0.4564	0.0241	0.1295	0.0322

Table XI continued.

	Panel B: Prior to 2000							
	$IVspread_{mon}$ (1)	Realized Volatility (2)	Average Executive Compensation (3)	Maximum Executive Compensation (4)	Median Executive Compensation (5)	Accruals Quality (6)	Payout Ratio (7)	Net Leverage Increase (8)
% Dedicated Inst. Inv.$_{i,t-2}$	0.0100	-0.2377 **	-1.3551	-1.4742	-1.6765 *	0.0056	-0.0601 ***	-0.0022
	(0.0821)	(0.1029)	(0.9766)	(1.0898)	(0.9332)	(0.0202)	(0.0228)	(0.0037)
Δ % Dedicated Inst. Inv.$_{i,t-1}$	-0.0364	-0.1953 **	-1.0160	-0.8695	-1.9109 **	-0.0217	-0.0353 *	-0.0043
	(0.0944)	(0.0904)	(0.7749)	(0.8047)	(0.8286)	(0.0187)	(0.0208)	(0.0058)
% Transient Inst. Inv.$_{i,t-2}$	0.0273	0.3684 ***	2.6580 ***	2.9080 ***	2.1082 ***	0.0497 ***	-0.1627 ***	-0.0128 ***
	(0.0229)	(0.0360)	(0.3527)	(0.3968)	(0.3347)	(0.0123)	(0.0152)	(0.0024)
Δ % Transient Inst. Inv.$_{i,t-1}$	0.1295 ***	0.1091 **	2.1562 ***	2.2814 ***	1.7970 ***	0.0314 **	-0.1028 ***	-0.0257 ***
	(0.0325)	(0.0491)	(0.2522)	(0.2834)	(0.2617)	(0.0142)	(0.0114)	(0.0033)
Constant	-0.3353 ***	0.6746 ***	-1.4612 **	-0.5505	-1.4020 ***	0.0400 **	0.0004	-0.0095
	(0.0185)	(0.0321)	(0.7384)	(0.7460)	(0.0736)	(0.0198)	(0.0183)	(0.0084)
Other Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
No. Obs.	7171	11734	17268	17268	17052	57857	53170	57694
Adjusted R^2	0.0500	0.7546	0.4345	0.4162	0.4420	0.0499	0.1322	0.0217

Table XI continued.

	Panel C: Prior to 2000							
	$IVspread_{mon}$ (1)	Realized Volatility (2)	Average Executive Compensation (3)	Maximum Executive Compensation (4)	Median Executive Compensation (5)	Accruals Quality (6)	Payout Ratio (7)	Net Leverage Increase (8)
% Dedicated Inst. Inv.$_{i,t-2}$	0.1257	-0.0373	-1.7653	-2.0486	-2.7581 **	-0.0933 *	-0.2036 ***	-0.0050
	(0.0830)	(0.0962)	(1.1250)	(1.2658)	(1.2495)	(0.0510)	(0.0427)	(0.0046)
Δ % Dedicated Inst. Inv.$_{i,t-1}$	0.0483	0.0537	-2.0688 *	-2.1188 *	-2.9619 **	-0.0307	-0.1234 ***	0.0077
	(0.0889)	(0.1067)	(1.0695)	(1.1623)	(1.2356)	(0.0526)	(0.0397)	(0.0081)
% Transient Inst. Inv.$_{i,t-2}$	0.0676 ***	0.2848 ***	1.3162 ***	1.4988 ***	1.0474 ***	0.0040	-0.2557 ***	-0.0103 ***
	(0.0159)	(0.0214)	(0.2662)	(0.2992)	(0.2465)	(0.0244)	(0.0195)	(0.0022)
Δ % Transient Inst. Inv.$_{i,t-1}$	0.1088 ***	0.1162 ***	1.0168 ***	1.0778 ***	0.9730 ***	-0.0007	-0.1707 ***	-0.0173 ***
	(0.0191)	(0.0242)	(0.2402)	(0.2670)	(0.2061)	(0.0188)	(0.0153)	(0.0032)
Constant	0.0185	1.0417 ***	-1.6801 **	-0.2657	-2.8484 ***	-0.0687 ***	-0.0032	-0.0171 ***
	(0.0181)	(0.0208)	(0.7027)	(0.6986)	(0.4578)	(0.0204)	(0.0468)	(0.0041)
Other Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
No. Obs.	36453	48147	38163	38163	37979	88271	84230	89189
Adjusted R^2	0.0456	0.8420	0.4901	0.4567	0.4868	0.0273	0.1426	0.0429

Table XII: Estimation of firm characteristics on types of institutional investors with control variables. Column (1) uses $IVspread_{mon}$ as the dependant variable. This measure proxies for tail risk and crash events. Column (2) uses realized volatility over the past year as the dependent variable. This measure captures the overall historical risk of the firm. Columns (3) through (5) use the natural log of the average, maximum, and median managerial compensation as the dependent variable, respectively. Column (6) uses the accruals quality as the dependant variable. This measure is decreasing in accruals quality. Column (7) uses the payout ratio, which includes both dividends and share repurchases, as the dependent variable. Column (8) uses net leverage increases to total assets as the dependent variable. This measure captures capital structure dynamics in the direction of increasing leverage. Long- (short-) horizon institutional investors, as defined in Yan and Zhang (2009), are characterized by having low (high) portfolio turnover. Focused (diversified) institutional investors, as defined in Bushee (1998, 2001), are characterized by having high (low) average holdings in invested firms. Percentage of institutional investor type is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	$IVspread_{mon}$ (1)	Realized Volatility (2)	Average Executive Compensation (3)	Maximum Executive Compensation (4)	Median Executive Compensation (5)	Accruals Quality (6)	Payout Ratio (7)	Net Leverage Increase (8)
% Long-term and Focused Inst. Inv.$_{i,t-2}$	0.0558	-0.5958 ***	-0.1072	-0.8524	1.2042 **	-0.0081	0.0897 ***	0.0051 ***
	(0.0411)	(0.0751)	(0.4888)	(0.5401)	(0.4761)	(0.0143)	(0.0178)	(0.0019)
Δ % Long-term and Focused Inst. Inv.$_{i,t-1}$	-0.0139	-0.3726 ***	-0.7231 *	-1.2107 ***	0.0336	-0.0079	0.0621 ***	0.0109 ***
	(0.0408)	(0.0711)	(0.3904)	(0.4228)	(0.3725)	(0.0114)	(0.0141)	(0.0024)
% Long-term and Diversified Inst. Inv.$_{i,t-2}$	0.0455	-0.3328 ***	-0.3179	-0.1712	-0.7641	-0.0570	0.7273 ***	0.0174 ***
	(0.0382)	(0.0683)	(0.6152)	(0.6966)	(0.5607)	(0.0492)	(0.0662)	(0.0049)
Δ % Long-term and Diversified Inst. Inv.$_{i,t-1}$	-0.0147	-0.0212	-0.0304	0.0007	-0.1640	-0.0274	0.3312 ***	0.0006
	(0.0470)	(0.0728)	(0.4130)	(0.4509)	(0.4168)	(0.0332)	(0.0482)	(0.0060)
% Short-term and Focused Inst. Inv.$_{i,t-2}$	0.1521 ***	0.0299	1.8769 ***	1.9433 ***	2.0014 ***	0.0178	-0.0776 ***	-0.0032
	(0.0282)	(0.0404)	(0.3543)	(0.3956)	(0.3308)	(0.0149)	(0.0135)	(0.0022)
Δ % Short-term and Focused Inst. Inv.$_{i,t-2}$	0.0704 ***	0.0063	1.0461 ***	1.0960 ***	1.1074 ***	0.0167	-0.0467 ***	-0.0053
	(0.0256)	(0.0380)	(0.2675)	(0.2892)	(0.2453)	(0.0125)	(0.0117)	(0.0040)
% Short-term and Diversified Inst. Inv.$_{i,t-2}$	0.0816 **	0.0109	3.1375 ***	3.3952 ***	2.3757 ***	0.0272	-0.0940 ***	0.0022
	(0.0332)	(0.0479)	(0.4243)	(0.4577)	(0.3999)	(0.0328)	(0.0361)	(0.0040)
Δ % Short-term and Diversified Inst. Inv.$_{i,t-1}$	0.1311 ***	-0.1329 **	2.3837 ***	2.4449 ***	2.2075 ***	0.0558 **	-0.0612 **	-0.0161 ***
	(0.0260)	(0.0535)	(0.2796)	(0.2961)	(0.2621)	(0.0247)	(0.0299)	(0.0048)
Constant	-0.0965 ***	0.9708 ***	-1.6165 ***	0.0385 ***	-3.2513 ***	0.0037	-0.0496	-0.0183 ***
	(0.0188)	(0.0273)	(0.3233)	(0.0077)	(0.3462)	(0.0176)	(0.0316)	(0.0049)
Other Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
No. Obs.	45686	62463	57897	57897	57490	152638	143355	153340
Adjusted R^2	0.0874	0.7642	0.4478	0.4191	0.4544	0.0241	0.1307	0.0316

Table XIII: Estimation of future firm performance on types of institutional investors with control variables. Columns (1) through (4) use the buy-and-hold realized returns for 1-qtr, 2-qtr, 3-qtr, and 4-qtr post, respectively. Realized returns are calculated by compounding monthly returns over the relevant quarter. Columns (5) through (8) use the buy-and-hold abnormal returns for 1-qtr, 2-qtr, 3-qtr, and 4-qtr post, respectively. Abnormal returns are calculated relative to the Pastor and Stambaugh 5-factor model. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having large average investment in firms in their portfolios and extremely low turnover. In contrast, transient institutional investors are institutional investors characterized as having high portfolio turnover and highly diversified portfolio holdings. Percentage of dedicated or transient institutional investors is relative to the total number of institutional investors within a firm. All controls are defined in Appendix A. Standard errors are reported in the parentheses and clustered by both firm and year-quarter. Significance at the 10% level is indicated by *, 5% level by **, and 1% level by ***.

	Forward 1-Qtr Returns (1)	Forward 2-Qtr Returns (2)	Forward 3-Qtr Returns (3)	Forward 4-Qtr Returns (4)	Forward 1-Qtr Ab. Returns (5)	Forward 2-Qtr Ab. Returns (6)	Forward 3-Qtr Ab. Returns (7)	Forward 4-Qtr Ab. Returns (8)
% Dedicated Inst. Inv.$_{i,t-2}$	0.0210 *	0.0220 *	0.0202	0.0268 *	0.0195	0.0383 ***	0.0211	0.0137
	(0.0114)	(0.0129)	(0.0156)	(0.0143)	(0.0119)	(0.0139)	(0.0146)	(0.0139)
Δ % Dedicated Inst. Inv.$_{i,t-1}$	-0.0296	0.1214 ***	0.0109	0.0362	0.0006	0.0413 *	0.0575 **	0.0143
	(0.0300)	(0.0368)	(0.0365)	(0.0494)	(0.0181)	(0.0232)	(0.0234)	(0.0231)
% Transient Inst. Inv.$_{i,t-2}$	-0.0133	-0.0194 *	-0.0301 **	-0.0103	0.0008	-0.0121	-0.0077	-0.0167
	(0.0092)	(0.0109)	(0.0119)	(0.0135)	(0.0071)	(0.0092)	(0.0101)	(0.0102)
Δ % Transient Inst. Inv.$_{i,t-1}$	0.0010	0.0042	-0.0532 **	-0.0164	0.0257 ***	-0.0104	0.0049	-0.0143
	(0.0151)	(0.0194)	(0.0212)	(0.0235)	(0.0076)	(0.0095)	(0.0113)	(0.0133)
Constant	0.0152	-0.0020	0.0041	-0.0317	-0.0281 ***	-0.0244 **	-0.0398 ***	-0.0116
	(0.0293)	(0.0349)	(0.0511)	(0.0400)	(0.0074)	(0.0095)	(0.0121)	(0.0123)
Other Controls?	Y	Y	Y	Y	Y	Y	Y	Y
Quarter Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects?	Y	Y	Y	Y	Y	Y	Y	Y
No. Obs.	142866	150053	150684	153421	108424	113454	113855	112824
Adjusted R^2	0.0529	0.0274	0.0364	0.0034	0.0053	0.0056	0.0057	0.0069

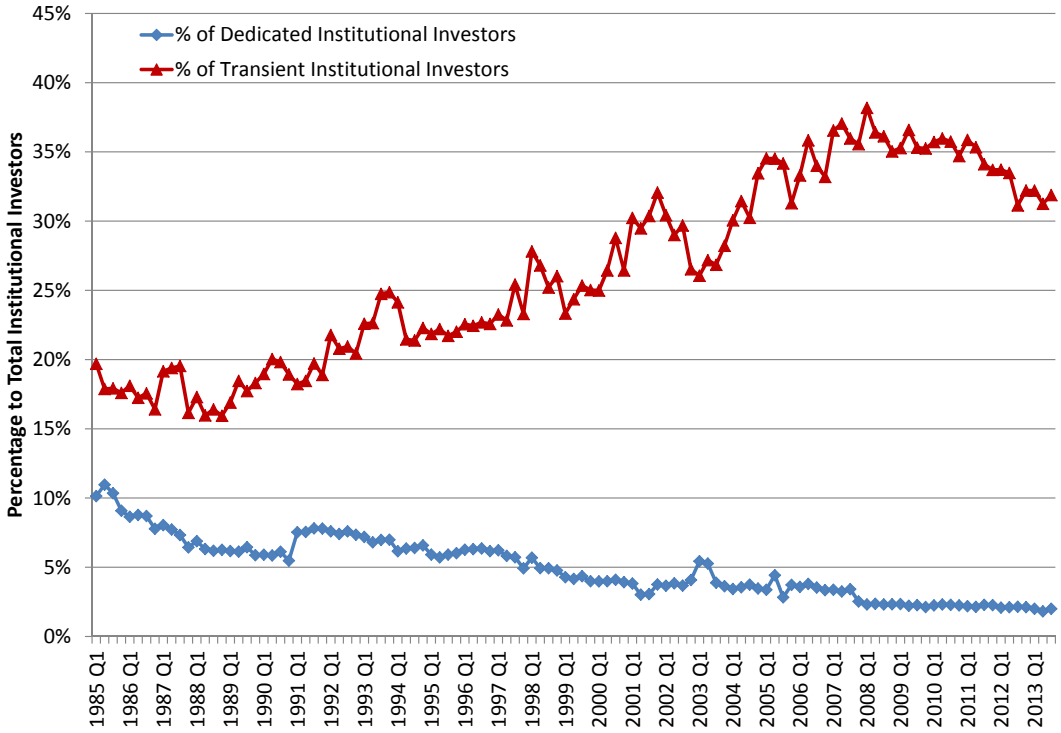

Figure 1: Percentage of transient or dedicated institutional ownership to total institutional ownership over time. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having concentrated holdings in the firms in their portfolios with low turnover. In contrast, transient institutional investors are characterized as having diversified holdings in the firms in their portfolios with high turnover. Calculations based on: Thomson Reuters, *Thomson Reuters Institutional (13f) Holdings/s34 Master File*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

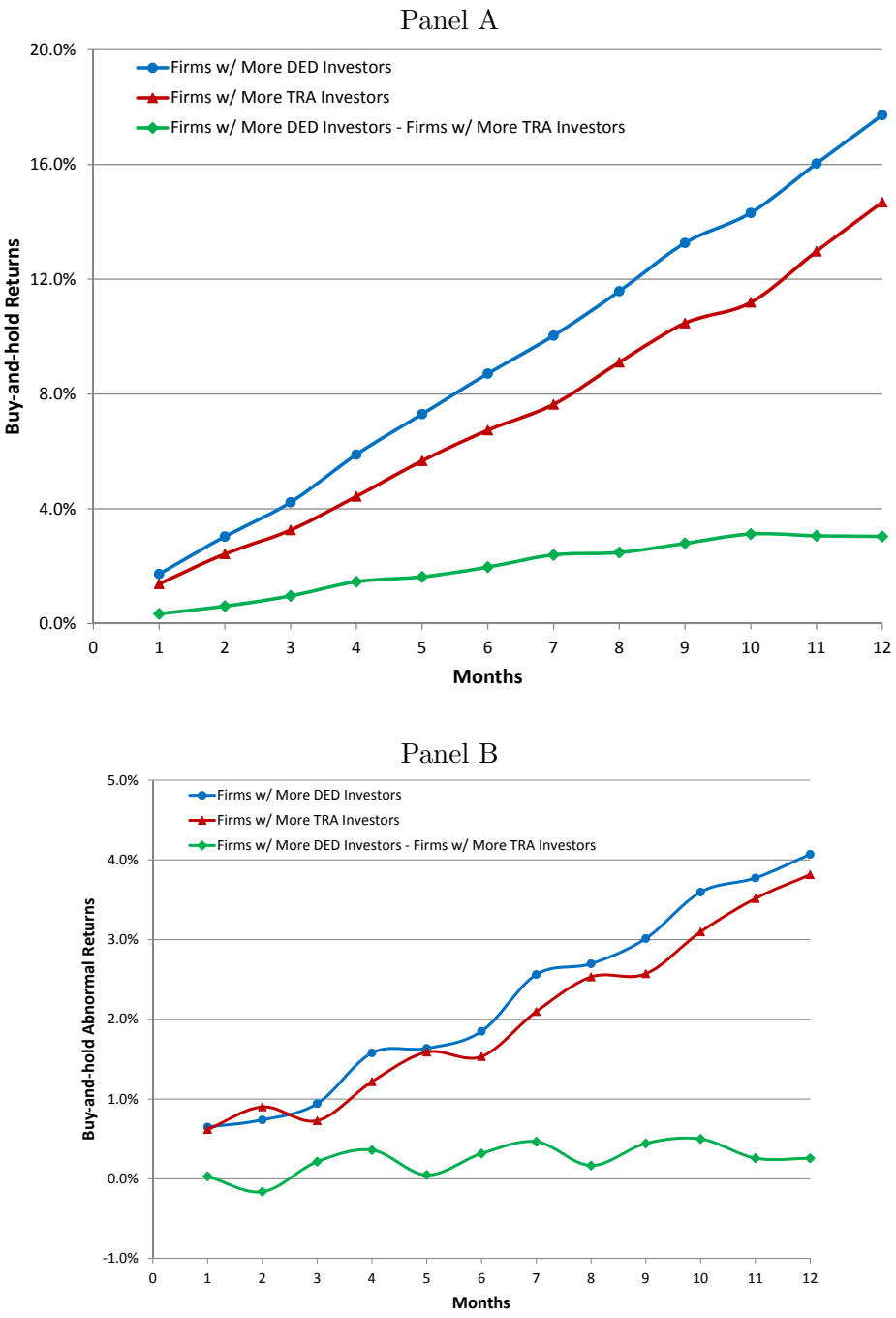

Figure 2: Monthly returns of firms with more transient or dedicated institutional investors. Panel A shows the buy-and-hold monthly returns for firms with more transient institutional investors than the median firm and firms with more dedicated institutional investors than the median firm. Panel B shows the buy-and-hold abnormal returns based on the Pastor and Stambaugh (2005) 5-factor model. Dedicated institutional investors, as defined in Bushee (1998, 2001), are characterized as having large average investment in firms in their portfolios and extremely low turnover. In contrast, transient institutional investors are institutional investors characterized as having high portfolio turnover and highly diversified portfolio holdings. Calculations based on: CRSP, *CRSP/CRSP Monthly Stock*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm

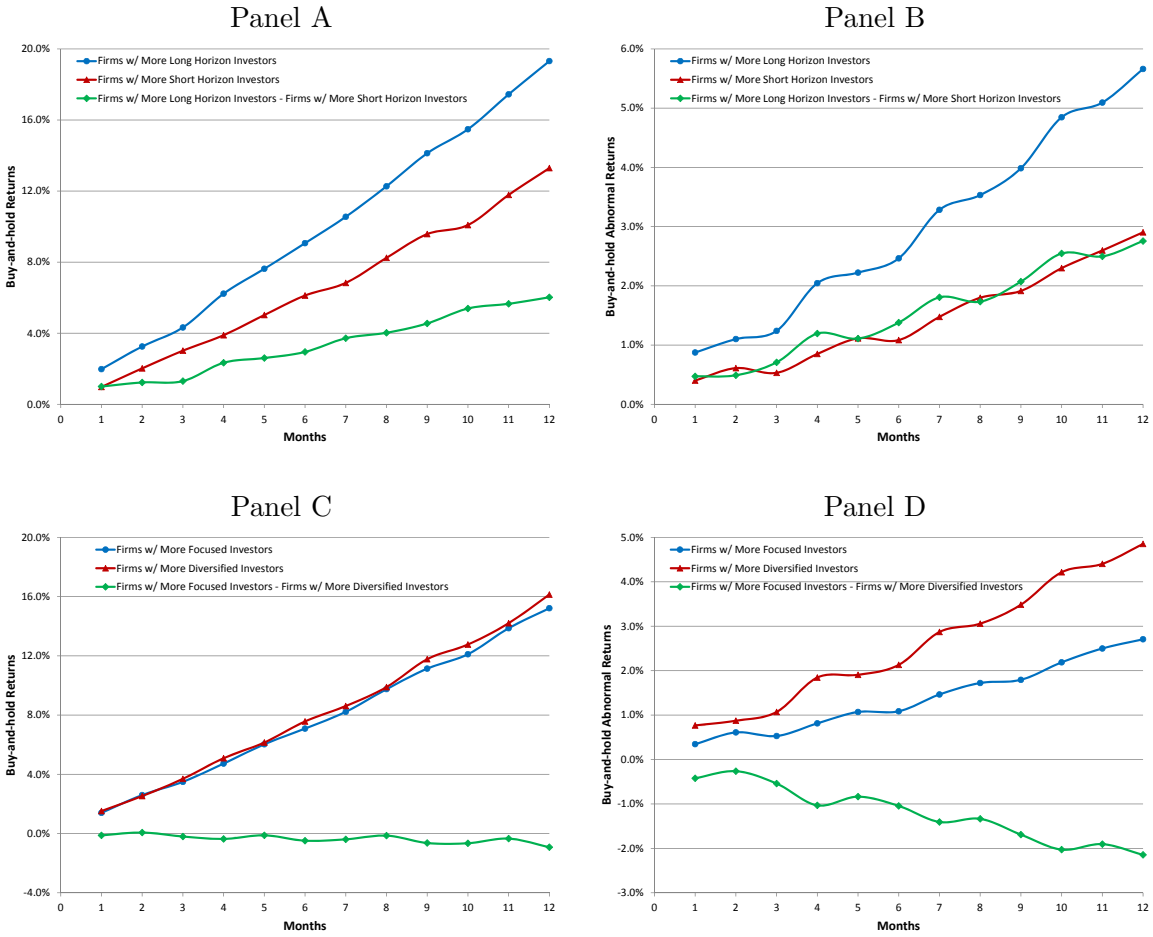

Figure 3: Monthly returns of firms across different institutional investor characteristics. Panels A and B show the buy-and-hold monthly returns and abnormal returns, respectively, for firms with more long-horizon institutional investors than the median firm and firms with more short-horizon institutional investors than the median firm. Panels C and D show the buy-and-hold monthly returns and abnormal returns, respectively, for firms with more focused institutional investors than the median firm and firms with more diversified institutional investors than the median firm. Abnormal returns are calculated relative to the Pastor and Stambaugh (2005) 5-factor model. Calculations based on: CRSP, *CRSP/CRSP Monthly Stock*, Wharton Research Data Services (WRDS), wrds-web.wharton.upenn.edu/wrds/about/databaselist.cfm