Motivated Investors and Operational Efficiency

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Abstract

This study evaluates the role of motivated investors in enhancing firm performance through operational efficiency improvements, a necessary precursor to better operating results, stock returns, and firm value, using a sample of real estate investment trusts (REITs). Our results suggest that the mere presence of institutional owners is unrelated to firm-level operational efficiency, whereas a large concentration of motivated institutional owners significantly improves efficiency. This result is more substantial in larger, highly leveraged firms and is robust to endogeneity, self-selection, and reverse causality tests. We additionally find that increased motivated institutional ownership leads to significant efficiency gains, while reductions have no impact on efficiency. Our findings indicate that motivated institutional owners provide relevant oversight, resulting in managerial discipline, especially in terms of operating cost control. We advance the literature by highlighting the impact of specific institutional investor types on firm operations, performance, and returns and by linking motivated investors to efficiency gains as a channel to higher firm valuations.

Keywords: Real Estate Investment Trusts, institutional ownership, operational efficiency, motivated investors.

JEL Classifications: G30, G32, G34

Introduction

Extant literature documents institutional investors as an influential force that shapes managerial efficacy, operational performance, and firm value[1]. However, as U.S. Securities and Exchange Commissioner Luis A. Aguilar astutely states, institutional investors are not a homogeneous group.[2] The institutional investment universe is comprised of entities with distinct characteristics, governance frameworks, and operational paradigms. For example, one segment of institutional investors is passive index-oriented fund managers (Appel et al., 2016), whereas another subset adopts an active role that is expected to exercise managerial monitoring mechanisms which should influence firm operations that particularly emphasize operational efficiency as a channel to achieve greater financial performance and value. Interestingly, although active institutional owners still represent a sizable portion of institutional investors, research finds that institutional investors/funds following a generally passive index-based strategy have been some of the fastest-growing investment entities over the last two decades (Ben-David et al., 2023). Thus, the question of how much influence motivated institutional owners have on firm financial and operational performance remains relevant.

While institutional investors are regarded as key monitors of firm performance, the real estate literature often overlooks their heterogeneity, with exceptions like Hardin et al. (2017) and Huerta et al. (2022). Our study addresses this gap by focusing on motivated institutional investors—those with significant portfolio allocations who actively monitor management to drive efficiency gains, particularly through cost control. Unlike passive or general ownership, motivated investors have the influence and incentive to improve firm performance. This distinction highlights

[1] See Devos et al. (2013), Hartzell et al. (2014), Feng et al. (2023), and Ling et al. (2021, 2023) among others on Real Estate Investment Trust (REIT) literature.
[2] https://www.sec.gov/news/speech/2013-spch041913laahtm. Last accessed on August 31, 2023.

that institutional ownership alone is insufficient; the subset of motivated investors enhances operational efficiency, especially in REITs, where institutional ownership and oversight are prominent.

According to the National Association of Real Estate Investment Trusts (NAREIT), institutions invest in REITs due to their comparatively superior risk-adjusted performance, diversification benefits, high liquidity, and reliability of inflation-protected cash flows, among numerous other factors.[3] The attractiveness of REITs to institutional investors is evidenced by an average (median) aggregate REIT institutional ownership level of 75.9% (81.3%) in recent years. Given such levels of institutional ownership, it should be expected that institutions play a key role in firm oversight and performance. Moreover, institutional investors generally act as aggregators for smaller individual investors searching for real estate exposure, given the empirical evidence suggesting real estate should constitute a meaningful portion of a diversified portfolio (e.g., Hoesli et al., 2004; Feng et al., 2021; Milcheva et al., 2021).

In the present research, we investigate the relationship between institutional investors, especially those with a greater percentage of their investment portfolio at stake, and firm operational efficiency, using a sample of REITs, particularly given their high institutional ownership levels and their distinct characteristics.[4] More specifically, we investigate whether

[3] "Institutions Raising Strategic Allocations to REITs," National Association of Real Estate Investment Trusts (NAREIT), last accessed on February 24, 2023. https://www.reit.com/news/articles/institutions-raising-strategic-allocations-to-reits.

[4] REITs' distinct characteristics are an ideal setting to investigate the relationship between institutional ownership and efficiency. Since REITs heavily rely on external capital for growth, meeting institutional investor expectations is paramount. The necessity to cultivate institutional investor relationships, given recurring capital market operations and the cyclicality of the real estate market, render REITs a prime subject for investigating the dynamics related to institutional investors, operational efficiency, and managerial performance (Pringle,1974; Black & Gilson, 1998; Ferreira & Matos, 2008; Sufi, 2009; Niepmann & Schmidt-Eisenlohr, 2023). These include studies of bank relations such as Riddiough and Wu (2009), Hardin and Wu (2010), and Hardin and Hill (2011), and studies on REITs' needs for capital access such as Ooi et al. (2010), Conklin et al. (2018), Soyeh et al. (2021), Lantushenko and Nelling (2022), Feng and Wu (2022), and Huerta et al. (2022). In addition, the asset class's balance sheet composition, long-term asset holdings, and relative transparency afford a distinctive advantage in discerning managerial impact on

larger proportions of institutional owners are related to managerial performance, particularly in cost control efficiency associated with the operation of a property portfolio. We approach this empirical question by employing diverse methodologies that control for endogeneity, reverse causality, and sample selection bias to ensure robustness in our results. We contribute to the literature by providing a granular analysis of the direct impact of investor motivation on REIT operational tactics and firm performance, while enriching the general discussion on institutional investor heterogeneity and their effect on corporate governance and strategy. We expand the research by finance literature (e.g., Fich et al., 2015) and real estate literature (e.g., Hardin et al., 2017) on the essential role of motivated owners, a subset of institutional investors, on firm value by unveiling operational efficiency as a primary channel to achieve improved financial results and to create shareholder wealth.

Using a sample of 124 equity REITs from 2000 to 2020, we investigate the relationship between institutional owners, with a focus on motivated institutional investors, and firm operational efficiency. Results suggest that a substantial presence of institutional investors (measured as a percentage of total ownership) exerts no significant impact on operational efficiency. However, the presence of motivated institutional investors is a significant factor associated with operational efficiency improvements. Of additional interest, results show that other institutional investor types, such as long-term, short-term, active, and passive owners, do not display the significant impact shown by motivated investors. Moreover, we find that operational efficiency gains related to higher levels of motivated institutional investors are stronger for larger firms and for those that employ more financial leverage. This suggests that monitoring by motivated institutional investors is more effective in large, complex organizations and in those

REIT financial results (Ott et al., 2005; Boudry et al., 2010; Dogan et al., 2019; Letdin et al., 2019; Feng et al., 2022).

with higher default risk, which require enhanced oversight. Finally, results show that increases in motivated institutional ownership are significantly related to operational efficiency improvements, whereas reductions in motivated ownership have no significant impact on efficiency. These results align with the basic premise from Fich et al. (2015) that motivated institutional owners improve cost control efficiency through enhanced management monitoring and that since efficiency improvements persist even when motivated institutional ownership levels decrease (as such investors pursue other targets), the motivated owner impact on operational efficiency is important in the long term.

Understanding how the spectrum of institutional investors influences REIT operational efficiency and performance has important implications for investors, portfolio managers, real assets managers, and policymakers. We extend the findings of finance (e.g., Fich et al., 2015) and real estate (e.g., Hardin et al., 2017) literature by documenting a fundamental channel through which firm value gains are achieved. This adds to the understanding of the mechanism by which motivated institutional owners impact firm performance. In addition, we complement the existing real estate literature by further addressing the heterogeneity among institutional investors, acknowledging that not all institutions are sufficiently motivated to exercise monitoring of REIT managerial decisions in the same manner, with equal intensity, and with the same goals. Furthermore, we show how the influence of motivated institutional owners on REIT performance and efficiency is persistent even after REIT ownership structures experience decreases in motivated owners.

Our results provide added evidence that institutional investors with greater within-portfolio exposure to a given REIT are more motivated to monitor managers, thereby reducing agency costs by prompting cost-reduction strategies. This inquiry bears importance considering the role of

operational efficiency in optimizing real estate investment returns, the evolving nature of the commercial real estate market, and the changing regulatory landscape of REITs. The results are perhaps most important in tying the theoretical premise related to the motivated investor hypothesis: these investors push management to make changes that improve operating efficiency, which concurrently improves value, benefiting all investors.

Literature Review

Seminal work by Shleifer and Vishny (1986) establishes institutional ownership as a crucial oversight mechanism. This is a notion that is further supported by Admati et al. (1994), who explain that firms with substantial institutional ownership tend to outperform in the market due to effective monitoring. Research additionally finds that increased institutional ownership enhances information dissemination, analyst monitoring, liquidity, and reductions in transaction costs (Boone & White, 2015). In general, the finance literature presents the influence of institutional ownership as a positive factor that results in lower informational opacity, enhanced firm outputs, and increases in shareholder wealth. The areas of interest in this research stream have now evolved into assessing the types of institutional investors that are most impactful as the market recognizes the proliferation of investment strategies and the growth in index funds, which are generally passive price and return takers.

In the case of REITs, there is substantial research on the impact of institutional investor monitoring on various aspects of performance. Hardin et al. (2008), Boudry et al. (2010), and Feng et al. (2022) explain that REITs function as organizations managing real estate portfolios with a focus on long-term profitability that is obligated to distribute a significant portion of their taxable earnings as dividends. This factor profoundly influences their capital structure, management, and

trading behavior. Given significant internal capital constraints, REITs must constantly tap the capital markets to fuel asset growth, allowing investors to regularly monitor the firms' financial condition.[5] Since institutional investors hold a sizable portion of REIT equity, much of the scrutiny and monitoring is done by these sophisticated owners, who are expected to exercise monitoring mechanisms. This oversight should influence REIT managers to make the most value-maximizing decisions possible.

Numerous studies, including Below et al. (2000), Hartzell et al. (2006), Chung et al. (2012), Devos et al. (2013), Striewe et al. (2013), Cheung et al. (2015), Beracha et al. (2019a, b), Ling et al. (2021), Huerta-Sanchez et al. (2021), Gilstrap et al. (2021), and Feng and Wu (2023), show correlations between institutional ownership and improved REIT management. These investigations explore the relationship between institutional owners and factors such as REIT size, asset allocation strategies, CEO compensation, stock liquidity, and market reactions to security issuances, among others. For example, Brockman et al. (2014) argue that increased monitoring by institutional investors starting in 1993 led externally advised REITs to address issues associated with external advisors and improved management, supporting the idea that monitoring by institutional investors helped improve REIT industry performance. Ling et al. (2021) find that institutional investors indirectly exploit local market expertise by investing in REITs that heavily concentrate their assets near their headquarters, leading REITs to increase their portfolio geographical concentration. Huerta-Sanchez et al. (2021) find that REITs with higher levels of pre-event institutional ownership are more likely to engage in acquisitions and to achieve better operating performance post-acquisitions. Notwithstanding this existing research, the potential impact that institutional investors have on REIT operational efficiency remains an open question.

[5] See Ooi et al. (2010), Harrison et al. (2011), Ong et al. (2011), Gokkaya et al. (2013), Evans et al. (2016), Howton et al (2018), Soyeh et al. (2021), Gatchev et al. (2023), Cashman et al. (2023), Piao and Mei (2023), among others.

Concurrently, most of these existing studies generally do not differentiate institutional investors by type, strategy, and focus.

Extant literature explores REIT operational efficiency from various perspectives. For instance, Anderson and Springer (2003) introduce the concept of relative REIT efficiency as a metric for selecting high-performing REITs, finding that portfolios of high-efficiency REITs significantly outperform the industry. Beracha et al. (2019b) find that more operationally efficient REITs provide better operational results, higher cumulative stock returns, higher firm values, lower levels of credit risk, and less stock return volatility. The focus of these studies is the link between operational effectiveness and returns, whereas the present study investigates the type of institutional investor that might push for such improvements. Nicholson and Stevens (2021) find that historically underperforming externally advised REITs have shown improvement in recent years and that external management of properties still underperforms self-managed REITs; they also note that industry-wide operational efficiency was higher after the 2008-2009 crisis, suggesting significant post-crisis efficiency gains. Highfield et al. (2021) observe a transition in the REIT industry towards greater efficiency by larger REITs, suggesting a stronger benefit in economies of scale in recent years. Aroul et al. (2022) find a positive correlation between ESG performance and operational efficiency. Finally, Chacon (2023) associates higher tenant concentration with increased profitability driven by operational efficiency. Taken together, these studies highlight the relevance of operational efficiency on REIT operating performance, financial results, and shareholder wealth. Nonetheless, the evidence on the factors that contribute to operational efficiency is still under investigation. In our paper, we examine whether the monitoring exercised by institutional investors translates into operational efficiency gains, which have been shown to positively impact stock performance.

Voice and Exit: Institutional Investor Influence on Firm Performance

Institutional investors exert their influence through two primary channels: the 'voice' and the 'exit.' The 'voice' mechanism involves direct institutional investor engagement in corporate governance, including exercising voting rights, participating in board discussions, and advocating for changes (Edmans & Manso, 2008; McCahery et al., 2016). Institutional investors play a pivotal role in shaping corporate policies and procedures by actively participating in and voicing their concerns, thereby potentially enhancing operational efficiency. Empirical studies by Brav et al. (2008) and Brav et al. (2015) highlight the positive effects of shareholder activism through the 'voice' mechanism.[6] Similarly, Aggarwal et al. (2015) investigate the voting preferences of institutional investors and find that institutions value their voting rights, utilizing the proxy process to influence corporate governance. These studies demonstrate that activism leads to increased payout ratios, improved return on assets, and enhanced operating margins, which should directly contribute to operational efficiency. The voice mechanism is expected to be more often exercised by active and motivated owners than those with more passive stances.

Conversely, the 'exit' mechanism involves institutional investors selling their shares in response to perceived managerial deficiencies (Edmans, 2014). Chen et al. (2007) find that longer investment horizons among institutional investors are associated with more potent exit threats, resulting in increased governance benefits. Recent theoretical and empirical studies underscore the impact of institutional investors' exit actions. For example, Dou et al. (2018) provide evidence that firms exhibit higher financial reporting quality as the exit threat from blockholders increases. Similarly, Cvijanović et al. (2022) show that open-ended institutional investors, such as mutual

[6] The voice channel is easily affirmed in discussions with REIT senior executives and is a major part of *REITWeek* and other industry conferences.

funds, strongly react to the exit of informed blockholders, leading to correlated exits that enhance corporate discipline. The potential for institutional investors to exit their investments is also a powerful incentive for REIT management to uphold operational efficiency and value creation. It is also of particular concern for the industry as it is heavily dependent on secondary equity offerings (SEOs) and debt issuances, both of which are expected to be acquired primarily by institutions.

Taken together, the existent literature suggests that institutional investors with strong incentives can, should, and likely would significantly contribute to operational efficiency through monitoring mechanisms, including voice and exit. While the impact of institutional ownership on REIT efficiency was studied by Chung et al. (2012) and Stirewe et al. (2013) using a differing set of metrics and not controlling for motivated investor involvement, the complex relationship between investors and REIT managers, the interplay with REIT capital structure, and the REIT regulatory backdrop warrant further exploration to discern optimum strategies to improve operational efficiency in conjunction with fostering beneficial relations with institutional investors.

Data and Sample Description

We obtain annual U.S. equity REIT accounting data from S&P Global Market Intelligence, stock return data from the Center for Research in Security Prices (CRSP), and institutional ownership (13F) data from the Thomson Reuters Institutional Ownership database. We include only REITs with nonzero institutional ownership data and keep only observations for which all control variable data are available. The final sample consists of 1,541 REIT-year observations for 124 unique firms from 2000 to 2020.

Segmentation of Institutional Owners

To measure institutional ownership, we employ 13F data to classify institutions according to horizon, portfolio turnover, and the weight of their equity position. We first calculate total institutional ownership (*TotInstOwn*) by estimating the percentage of shares held by institutional investors in relation to total shares outstanding for every firm in each year. Next, to gauge motivated institutional ownership, from quarterly 13F filings, we compute the total market value of each institutional investor's portfolio and the portfolio weight of each REIT within the portfolio. This portfolio weight represents the proportion of the investor's holdings that a given REIT occupies. If a REIT's portfolio weight is within the uppermost decile of the institution's overall portfolio allocation, we classify that institution as a motivated investor for that REIT. Otherwise, we classify the institution as a non-motivated institutional owner. The sum of the percentages of REIT shares owned by these motivated institutions collectively constitutes the REIT's motivated institutional ownership. By applying this framework, we gain insight into the prevalence and influence of motivated institutional investors, whose strategic portfolio allocation aligns closely with specific REITs. This approach examines a perspective on institutional ownership beyond sheer financial stake and seeks to capture the motivation behind these holdings, which is expected to offer a richer understanding of their impact on REIT management.

Next, we categorize long-term and short-term institutional investors through the examination of the turnover of stock holdings for each institution in each REIT. As explained in Aguilar et al. (2018), given that information is distributed through active trading, then REIT managers should receive the signal about how the market is evaluating their managerial performance given the average horizon of their institutional owners. It should be expected that REITs held proportionally more by long-term investors to be more operationally efficient, and

REITs held more by short-term investors to display lower operational efficiency. To categorize investors by horizon, we consider the fraction of stock *i* held by investor *j* at both the focal quarter *t* and the quarter *t – 4*. This calculation is then compared to the fraction held at *t – 4* that was sold at *t*. If, during this interval, the investor is found to be a net buyer, stock turnover is recorded as zero. This turnover figure is subsequently weighted by the percentage of the investor *j*'s portfolio at time *t – 4* that comprises stock *i*. After the summation of all stocks in the investor's portfolio at *t – 4*, we compute the mean of this turnover metric for the four quarters spanning from time *t – 3* to time *t*. This approach mitigates the potential bias stemming from extreme quarters of turnover. The derived turnover measure, constrained between 0 and 1, encapsulates the fraction of the investor's portfolio that underwent turnover in the preceding three years. The classification follows Derrien et al.'s (2013) criteria, whereby investors showing a portfolio turnover of 35% or less are deemed long-term investors. This threshold is posited to approximately correspond to the lower tercile of investor turnover, a distribution that remains stable over time. Any portfolio turnover exceeding 35% is categorized as reflective of short-term investor behavior.

Finally, to discretize institutional owners into active and passive categories, we adopt the approach outlined by Almazan et al. (2005) and Hartzell et al. (2014). Active ownership implies a proactive role in corporate engagement, involving vigilant monitoring of the firm and endeavors to shape managerial and board decisions. This category includes investment companies like mutual funds, closed-end funds, and independent investment advisors, particularly those advising pension funds. Conversely, passive ownership pertains to entities less involved in corporate governance activities, such as banks, insurance companies, and endowment or pension funds.

It should be noted that these classifications do not create discrete groups of institutional investors in every instance. As an example, an institution can possibly be both motivated and hold

long-term positions, highlighting two separate characteristics of the same institution. Nonetheless, we believe that the various segmentations in types of institutional investors provide a deeper understanding of how the nature of institutional investors can result in a degree of oversight that impacts managerial efficiency and financial results. Given that institutional investors' monitoring resources are limited regardless of their size, institutions' monitoring incentives and resource allocation will vary across their portfolios.

Operational Efficiency

Following Beracha et al. (2019a, b), we construct two operational efficiency ratios (*OERs*) broadly defined as the proportion of operational expenses to revenue. These OERs measure the efficiency of REIT managers in controlling operating costs in relation to the revenue by the property portfolio. Concretely, the two distinct OER variations are constructed as: (a) *OER1*, computed as the division of total expenses (excluding real estate depreciation and amortization) by total revenue, and (b) *OER2*, calculated by dividing the difference between total expenses (excluding real estate depreciation and amortization and rental operating expenses) and expense reimbursements by the difference between total revenue and expense reimbursements. Given the framework of these *OERs,* lower (higher) values connotate enhanced (diminished) operational efficiency. These OER variations capture REITs' proficiency in managing cash flow-associated expenditures while accounting for real estate depreciation, amortization, and rental operating expense reimbursements. As explained by Beracha et al. (2019a, b), operational efficiency substantially diverges depending on property-type specialization. To address this inherent variation, we standardize the *OERs* by dividing each ratio by the average *OER* of REITs specializing in the same property type in the same year. This results in adjusted *OERs* (*Adj.OER1*

and *Adj.OER2*), which provide a contextualized measure of operational efficiency by accounting for the distinct property-type dynamics.

Descriptive Statistics

Table 1 presents a comprehensive overview of our sample distribution and descriptive statistics. Panel A of Table 1 outlines the sample distribution by year,[7] while Panel B shows the distribution by REIT property-type specialization. Office REITs appear as the dominant asset class, representing 18.62% of our sample. Shopping Center REITs are closely behind, constituting 12.85%, followed by Healthcare REITs at 11.75% and Multifamily REITs at 12.85% of the sample. Casino REITs are our smallest property type, representing merely 0.58% of the sample.

In Panel C, we provide descriptive statistics for the variables employed in our analysis. The average total institutional ownership (*TotInstOwn*) in our sample is 70.8%, with a standard deviation of 30.1%. Long-term (*LongInstOwn*) and short-term (*ShortInstOwn*) institutional ownership are, on average, 24.9% and 46.1% of total institutional ownership, respectively. On the other hand, active (ActInstOwn) and passive (PasInstOwn) ownership accounts for 18.7% and 52.4% of total institutional ownership, respectively.[8] Ownership by motivated investors (*MovtInstOwn*) is, on average, 16%, and non-motivated institutional owners (*NonMovtInstOwn*) is 54.8% on average. Our REIT sample exhibits an average asset holding of $4.62 billion and an average market capitalization of $3.87 billion. The property-type-adjusted operating efficiency ratios (*Adj.OER1* and *Adj.OER2*) have a mean slightly greater than 1, with a median of 1. *Age*,

[7] Even though we report the sample distribution from 2000 to 2019 in Table 1, we obtain data up to the year 2020 because the dependent variable AJOER is calculated for time t+1.

[8] The sum of *LongInstOwn* and *ShortInstOwn* is not *TotInstOwn* because they represent the top and bottom 35% of total institutional ownership, respectively. Similarly, *ActInstOwn* and *PasInstOwn* do not add *TotInstOwn* because of missing data on the identification of the owners.

measured as the logarithm of one plus the years since REIT status was adopted, has a mean value of 3.11 and a standard deviation of 3.33. The average Book-to-Market ratio (*B/M)*, the ratio of the book value of equity to the market value of equity, is 0.71. The average *EBITDA/Debt* (EBITDA divided by total debt), a measure of risk, is 0.19. *Leverage*, the ratio of total book assets to total book equity, is, on average, 2.70.

[INSERT TABLE 1 ABOUT HERE]

In Table 2, we report the correlations between our dependent variables of interest, *Adj.OER1* and *Adj.OER2*, and the other variables employed in our study. Consistent with our initial hypothesis, we observe a negative and statistically significant association between the institutional ownership variables and firm operating efficiency (*Adj.OER1* and *Adj.OER2*). This substantiates our anticipation that companies with greater total institutional ownership (*TotInstOwn*), regardless of the type, exhibit higher operational efficiency.

[INSERT TABLE 2 ABOUT HERE]

Multivariate Analysis

We explore the influence of institutional ownership on operational efficiency using a multivariate ordinary least squares (OLS) model accounting for heteroscedasticity-robust standard errors clustered at the firm level. Our model is of the following form:

$$
\begin{aligned}
Efficiency_{i,t+1} &= \beta_0 + \beta_1 InstOwn_{i,t} + \beta_2 PropTypeDivers_{i,t} + \beta_3 GeogDivers_{i,t} \\
&+ \beta_4 LnAssets_{i,t} + \beta_5 Age_{i,t} + \beta_6 B/M_{i,t} + \beta_7 EBITDA/Debt_{i,t} \\
&+ \beta_8 Leverage_{i,t} + \tau_i + \theta_t + \varepsilon_{it}
\end{aligned} \tag{1}
$$

The dependent variable is, alternatively, the variations of the property-type-adjusted operational efficiency ratios, *Adj.OER1* and *Adj.OER2*, for REIT *i* at time *t+1*. The variable *InstOwn* corresponds to the total institutional ownership (*TotInstOwn*) ratio in REIT *i* at time *t*. *PropTypeDivers* is the negative of the Herfindahl Index of REITs, calculated based on book values, depicting the diversification of assets across different real estate property types. *GeogDivers* is the negative of the Herfindahl Index, calculated based on book values, measuring the diversification across different NCREIF Regions. *LnAssets* is the natural log of assets. *B/M* is the book-to-market ratio. *Age* is the log of one plus firm age. *EBITDA/Debt* and *Leverage* are the ratios of EBITDA to total debt and total book assets to total book equity, respectively. The model employs lagged explanatory variables at time *t* (relative to the dependent variable at time *t+1*) to reflect the beginning REIT portfolio characteristics in each year; Beracha et al. (2019b) explain that employing lagged firm characteristics controls for beginning-of-the-period portfolio compositions, which is relevant for REITs where asset holding periods are long-term, and any portfolio change will significantly impact firm performance and efficiency in the period after portfolio changes happen. All models include year fixed effects θ_t and firm fixed effects τ_i.

Table 3 shows the results for Equation 1 when total institutional ownership serves as the variable of interest. The insignificant coefficient on the *TotInstOwn* variable in both Columns 1 and 2 suggests that operational efficiency is largely unaffected by overall institutional ownership.

That is, the mere level of institutional investors in a firm's ownership base does not translate to improved operational efficiency. Ancillary findings show that increased property-type specialization (*PropTypeDivers*) is significantly related to efficiency improvements (*Adj.OER1*). Additionally, higher *EBITDA/Debt* ratios align with improved operational efficiency, pointing to the role of risk in shaping REIT performance.

[INSERT TABLE 3 ABOUT HERE]

Differentiating Institutional Investors

Although results in Table 3 suggest no significant relationship between total institutional ownership and operational efficiency, we explore whether levels in specific types of institutional investors with varying investment goals and strategies may be associated with efficiency gains. That is, we empirically examine whether the type of institutional investor matters in terms of managerial oversight and if certain types of institutions are more apt to influence operational efficiency. The differentiation involves a separate assessment of long-term institutional ownership (*LongInstOwn*), short-term ownership (*ShortInstOwn*), active ownership (*ActInstOwn*), passive ownership (*PasInstOwn*), and motivated institutional ownership (*MovInstOwn*) on operational efficiency.

Results for Equation (1) employing the various types of institutional owners are shown in Table 4. Columns 1 through 4 in Panels A and B of Table 4 indicate no evidence of a significant impact stemming from long-term ownership (*LongInstOwn*), short-term ownership (*ShortInstOwn*), active ownership (*ActInstOwn*), passive ownership (*PasInstOwn*), and non-motivated ownership (*NonMovtInstOwn*) on operating efficiency. In fact, Column 1 of Panel B in

Table 4 shows weak evidence that levels of long-term institutional owners are associated with operational inefficiency. More importantly, our results show that the presence of motivated institutional investors yields a substantial and statistically significant positive influence on both *Adj.OER1* and *Adj.OER2*, as shown in Column 5. This relation is further highlighted later in Panels A and B of Table 9, which are discussed later.

The results focused on the motivated investor group suggest that investors holding a significant proportion of their portfolio in a particular REIT are motivated to exercise effective oversight mechanisms, which will lead to improved operational efficiency. These findings align with Hardin et al. (2017), who found a positive correlation between motivated institutional owners and Tobin's Q through the improvement in FFO, which is a stock or value impact. The results imply that the channel through which enhanced value is achieved in the presence of motivated institutional investors is greater efficiency in cost and expense management by REIT managers. This is postulated and perhaps not thoroughly tested in Fich et al. (2015) and Beracha et al. (2019a, b), where efficiency was not assessed and the focus was primarily on stock performance.

Our results provide direct evidence that the impact on efficiency by institutional investors is driven by motivated institutions who are significantly vested in a REIT's performance.

[INSERT TABLE 4 ABOUT HERE]

Robustness Tests

Addressing Potential Endogeneity and Reverse Causality

Although results suggest motivated institutional investors drive operational efficiency, motivated institutional investors may be inclined to either choose to invest in more operationally

efficient REITs in the first place or may seek inefficient REITs with the goal of exercising proper oversight to improve managerial performance. In any case, there is the potential for endogeneity issues in our tests. Therefore, we perform a battery of robustness tests to control for endogeneity and to establish causality in the relationship between motivated institutional owners and efficiency.

Heckman Self-Selection Correction Two-Step Model

In this two-step process, we aim to account for the potential bias stemming from the self-selection of motivated institutional investors into REITs based on their operational efficiency. In the initial stage, we execute a logistic regression where the binary dependent variable indicates whether the percentage of firm shares held by motivated investors falls within the highest quartile. This step helps identify the determinants influencing the likelihood of a REIT attracting significant interest from motivated institutional investors. From this first stage, we derive the predicted probability of a firm appealing to motivated institutional investors and compute an inverse Mills ratio. In the second stage, we extend Equation 1 by including the calculated inverse Mills ratio to control for the potential self-selection bias arising from motivated institutional investors' preferences for operationally efficient REITs. By incorporating this correction, we can obtain more accurate estimates of the relationship between motivated institutional ownership and operational efficiency.

The results stemming from the Heckman self-selection correction two-step model are presented in Table 5. Our findings reveal a significant negative correlation between the degree of ownership by motivated investors and property-type adjusted operational efficiency ratios (*Adj.OER1* and *Adj.OER2*). That is, higher levels of motivated institutional ownership are associated with improved operational efficiency. These results align closely with those presented

in Table 4. We interpret this consistency as evidence of robustness in our findings on the relationship between motivated institutional ownership and operational efficiency.

[INSERT TABLE 5 ABOUT HERE]

Propensity Score Matching

Next, we employ propensity score matching to alleviate the concern that firms with higher levels of motivated institutional owners fundamentally differ from other firms. This approach ensures that the treatment and control groups are comparable in terms of their underlying characteristics, thereby enhancing the reliability of our findings. To do so, we first divide our sample into groups with high and low levels of motivated institutional ownership in quartiles. Then, we establish a matched sample using propensity scores for the subset characterized by the highest motivated institutional ownership quartile. These scores are derived from a set of factors, including *PropTypeDivers, GeogDivers, LnAssets, Age, B/M, EBITDA/Debt,* and *Leverage*; our propensity score matching results are displayed in Table 6.

[INSERT TABLE 6 ABOUT HERE]

Panel A of Table 6 presents the results of the first-stage logistic regressions. These regressions evaluate the probability of a firm securing the highest quartile of motivated institutional ownership, both prior to and post propensity score matching. In this case, the dependent variable is a binary indicator set to 1 if a firm falls within the highest quartile of motivated institutional ownership and 0 otherwise. Following the implementation of propensity

score matching, none of the control variables retain statistical significance, and the Pseudo R-squared statistic notably decreases from 0.285 (prior to propensity score matching) to 0.00971, indicating a successful matching process. Panel B compares the characteristics of firms with the highest motivated institutional ownership (treated firms) and those in the propensity-matched control group (control firms). The results show that, apart from operational efficiency (as measured by *Adj.OER1* and *Adj.OER2*), the treated and control firms exhibit insignificant differences across variables such as *PropTypeDivers, GeogDivers, LnAssets, Age, B/M, EBITDA/Debt* and *Leverage*. Finally, Panel C presents the final propensity score matching regression results. After accounting for potential endogeneity through propensity score matching, we find that our findings support the significant impact of motivated institutional ownership on operational efficiency, supporting our Table 4 results.

Entropy Balancing

An alternative approach employed to address the possibility that unobserved heterogeneity between the high and low levels of motivated institutional investor groups affect operational efficiency differently is entropy balancing (Hainmueller, 2012; Chapman et al., 2019; McMullin et al., 2019; Peng et al., 2022). This quasi-matching technique ensures a covariate balance between treatment (high levels of motivated institutional investors) and control (low levels of motivated institutional investors) observations. Unlike propensity score matching, entropy balancing preserves the entire sample size and directly addresses second and third moments in covariate imbalances. We report the results from the entropy balancing analysis in Table 7.

[INSERT TABLE 7 ABOUT HERE]

We first establish the balance conditions, including the mean and variance of the treatment observations, which then serve as targets for the post-weighting control sample. By utilizing the entropy balancing algorithm, we derive weights for control observations, effectively adjusting their distributional properties to match those of the treatment group. Panel A of Table 7 provides a comparative overview of pre- and post-weighting mean values for the factors incorporated in the entropy balancing algorithm. As anticipated, the mean values for both treatment (high levels of motivated institutional investors) and control (low levels of motivated institutional investors) observations align closely, with standardized differences not exceeding an absolute value of 0.001. Next, we run the weighted regressions of operating efficiency with the pooled sample of treatment and control observations. The results of these weighted regressions are presented in Panel B of Table 7. Consistent with the findings from our baseline model, the Heckman self-selection correction two-step model, and the propensity score sample model, we observe a statistically significant relationship between motivated institutional ownership and operational efficiency. Specifically, our findings indicate that higher levels of motivated institutional investors significantly enhance operational efficiency.

Reverse Causality

Thus far, we have documented strong and consistent evidence that higher motivated institutional ownership is associated with higher property-type adjusted operating efficiency (i.e., lower *Adj.OER1* and *Adj.OER2* values). However, we examine the possibility of reverse causality in the relationship between operational efficiency and motivated institutional ownership. That is, we examine whether motivated institutional investors are drawn to firms with higher operating

efficiency in the first place. To do so, we perform a reverse causality test following Ravid and Serkerci (2020). Our approach reverses the roles of the dependent variable, operational efficiency, and the independent variable of interest, motivated institutional ownership, lagging them by one period. Subsequently, we regress the level of motivated institutional ownership of REIT *i* at time *t+1* on firm operating efficiency at time *t*, alongside other pertinent control variables. If the causality established in our prior results is accurate, we anticipate that the coefficients for the operational efficiency variables would be statistically insignificant in this reverse causality test. The results of this test are presented in Table 8. As anticipated, the coefficients corresponding to the operational efficiency ratios (*Adj.OER1* and *Adj.OER2*) are found to be statistically insignificant across both specifications. This result aligns with our expectations and offers evidence against the possibility of reverse causality.

[INSERT TABLE 8 ABOUT HERE]

Difference-in-Difference Regressions

To further refine the analysis, we employ difference-in-difference regressions to investigate the relationship between firm operating efficiency and motivated institutional ownership. Table 9 presents the outcomes of these analyses, focusing on the changes in *Adj.OER1* (Panel A) and *Adj.OER2* (Panel B) at time *t+1* as the dependent variables. To ensure robustness, we calculate the first differences of all control variables.

Columns 1 and 4 in the table highlight that changes in motivated institutional ownership do not seem to significantly impact firm operating efficiency. This is not surprising given prior studies that indicate that two conditions are essential, motivated investors (heavily allocated to an

investment position) and the percentage of shares controlled by institutional investors. It is a two-condition state. Hence, we take the analysis further by introducing two dummy variables, namely *MovtInstOwn_Chg_5*$_t$ and *MovtInstOwn_Chg_10*$_t$. These variables are assigned a value of 1 for firms experiencing changes in motivated institutional ownership exceeding 5% and 10%, respectively. The subsequent regression results demonstrate a noteworthy finding when considering these additional variables. Changes in motivated institutional ownership exceeding the 5% or 10% threshold are associated with a statistically significant enhancement in firm operating efficiency. This outcome underscores the complex and potentially prolonged impact of motivated institutional ownership on firm operational efficiency, suggesting that even substantial changes in ownership over a period can continue positively influencing efficiency. It also highlights that there needs to be sufficient "voice" to impact the firm. In practice, a blockholder needs to be of a certain size to have influence.

[INSERT TABLE 9 ABOUT HERE]

Motivated Institutional Investors' Characteristics on Operational Efficiency

To further assess the nuanced impact of motivated institutional owners on operational efficiency, we employ a comprehensive stratification of our sample based on relevant firm characteristics, namely firm size and financial leverage. By applying a non-parametric analytical approach, we segment REITs into terciles, sorting them based on *LnAssets* and *Leverage* for each year. We then evaluate the Chi-squared statistics, quantifying the differences in the motivated ownership variable coefficient across subgroups.

Table 10 shows that the relationship between heightened operational efficiency and motivated owners retains statistical significance for large REITs. However, this significance disappears for both small and medium-sized REITs. The Chi-squared statistics show the differences in coefficients in the motivated ownership variable within these subcategories. Notably, these differences are statistically significant between small and large REITs and between medium and large REITs. However, the same statistics denote insignificance when comparing small and medium REITs.

Such findings suggest operational efficiency improvements resulting from motivated institutional investor monitoring are stronger for larger, more complex REITs. Results imply motivated institutional owners adeptly oversee REIT management decisions, thereby decreasing agency costs and enhancing the managerial efficacy in operations and expenses.

[INSERT TABLE 10 ABOUT HERE]

Similarly, the results in Table 11 offer an interesting perspective. Here, the relationship between motivated owners and operational efficiency is significant for firms with high leverage. Yet, this significant association dissipates for medium and low-leverage firms. The Chi-squared statistics examining the differences in coefficients of the motivated ownership variable across these leverage-based groups show significant differences between the high and low-leverage subsamples and between high- and medium-leverage firms. However, these significant differences disappear when assessing the low- and medium-leverage groups. This implies that firms with a higher likelihood of default seem to reap efficiency benefits when a substantial proportion of

motivated investors actively monitor operations. Again, motivated investors invest in situations where influence can have an impact.

[INSERT TABLE 11 ABOUT HERE]

In unreported findings, we find no significant differences among subsamples based on book-to-market and EBITDA-to-debt ratios. In sum, our subsample analyses suggest that the influence of motivated institutional investors on operational efficiency is notably more substantial for larger firms (namely, complex firms with potential agency issues) and those with more debt (that is, firms with higher default risk).

Asymmetric changes in motivated institutional ownership

Finally, we test whether there is an asymmetric impact of changes in motivated institutional investors on efficiency. The findings of this test are in Table 12. Results show that increases in motivated institutional investors are significantly related to efficiency gains. However, decreases in motivated institutional investors have no significant impact on efficiency. This aligns with the theory. As the proportion of motivated investors increases, there is an increase in manager monitoring that results in improved operational efficiency; however, subsequent to such an event, the proportion of motivated owners likely decreases as such investors move to other targets. Most importantly, efficiency improvements do not revert with decreases in motivated institutional ownership. We infer, therefore, that changes in operational efficiency that are related to increases in the level of motivated institutional owners are significant and persistent.

[INSERT TABLE 12 ABOUT HERE]

Conclusion

Institutional investors are pivotal stakeholders. Such investors, however, are not a homogenous group. While much of the existing research finds that institutional owners influence managerial decisions, operational performance, and firm value through various monitoring mechanisms, the present analysis highlights differences in institutional owner types and their significant role in operational efficiency, which translates into improved operational performance, higher valuations, and better market returns, in the mature but evolving REIT industry. More specifically, our research shows, as initially postulated by Fich et al. (2015), that motivated institutional owners, in particular, are the significant drivers of improved operational efficiency. The results of our study suggest that the impact of motivated institutional owners on operational efficiency derives from the active exercising of corporate oversight through which they closely monitor managerial decisions and help mitigate agency costs. Our results support the theoretical benefits derived from institutional investor ownership while more fully developing how all stakeholders benefit collectively from the presence of a particular type of active investor.

The unique financial and structural nuances of REITs render these firms especially receptive to the preferences and strategies of their institutional owners. The REIT reliance on external capital accentuates the need to understand and engage institutional investors effectively and consistently. Our findings resonate with a call to action for REIT managers to align with motivated institutional owners proactively and strategically. Motivated institutional investors will push REIT managers to successfully achieve improved efficiency and, in turn, create value. This will benefit all investors and make the asset class even more efficient, which should allow for

continued access to capital markets, perhaps under better terms than in the past. The insights from our research are relevant as the commercial real estate industry undergoes continuous transformation and as market conditions fluctuate.

In a more general context, our study highlights the need to address heterogeneity in institutional investors and control for such in future REIT studies; that is, researchers should not default to a simple percentage of institutional ownership when investigating or controlling for the influence of institutional investors. While it is unarguable that institutional owners improve accountability and transparency, the growth in various investment strategies requires better refinement when investigating how institutional investment impacts firms and performance.

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Table 1 – Sample Distribution and Descriptive Statistics

This table provides the sample distribution by year (in Panel A) and by property type (in Panel B) and summary statistics of the variables in the study (in Panel C). Refer to the Appendix for variable definitions.

Panel A - Distribution by year

Year	N	Percent
2000	52	3.37
2001	53	3.44
2002	52	3.37
2003	54	3.5
2004	58	3.76
2005	60	3.89
2006	59	3.83
2007	60	3.89
2008	62	4.02
2009	63	4.09
2010	73	4.74
2011	75	4.87
2012	78	5.06
2013	88	5.71
2014	96	6.23
2015	103	6.68
2016	105	6.81
2017	110	7.14
2018	119	7.72
2019	121	7.85
Total	1,541	100

Panel B - Distribution by property type

Property	N	Percent
Casino	9	0.58
Diversified	148	9.6
Health Care	181	11.75
Hotel	165	10.71
Industrial	99	6.42
Multifamily	198	12.85
Office	287	18.62
Other Retail	111	7.2
Regional Mall	60	3.89
Self-Storage	65	4.22
Shopping Center	198	12.85
Specialty	20	1.3

Panel C – Summary statistics

Variables	N	Mean	Median	P25	P75	Stdev
Assets ($B)	1,541	4.615	2.639	1.125	5.619	5.643
Market Cap. ($B)	1,541	3.870	1.773	0.683	4.064	6.259
Adj.OER1	1,541	1.054	1.000	0.899	1.140	0.327
Adj.OER2	1,541	1.089	1.000	0.864	1.184	0.480
TotInstOwn	1,541	0.708	0.803	0.494	0.937	0.301
LongInstOwn	1,541	0.249	0.246	0.131	0.358	0.150
ShortInstOwn	1,541	0.461	0.482	0.296	0.626	0.225
ActInstOwn	1,523	0.187	0.169	0.078	0.292	0.128
PasInstOwn	1,523	0.524	0.590	0.362	0.698	0.244
MovtInstOwn	1,541	0.160	0.047	0.000	0.217	0.231
NonMovtInstOwn	1,541	0.548	0.587	0.308	0.779	0.289
PropTypeDivers	1,541	0.813	0.952	0.640	1.000	0.232
GeogDivers	1,541	0.416	0.292	0.194	0.529	0.290
LnAssets	1,541	14.694	14.786	13.934	15.542	1.238
Age	1,541	3.110	3.332	2.639	3.761	0.911
B/M	1,541	0.710	0.638	0.450	0.856	0.425
EBITDA/Debt	1,541	0.197	0.163	0.126	0.207	0.212
Leverage	1,541	2.703	2.269	1.895	2.944	1.536

Table 2 – Correlation Matrix and Univariate Comparisons

In this table, we report the correlation matrix for the primary variables employed in our empirical analyses. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

	Variables	***[1]***	***[2]***	***[3]***	***[4]***	***[5]***	***[6]***	***[7]***	***[8]***
[1]	*Adj.OER1*	1							
[2]	*Adj.OER2*	0.80***	1						
[3]	*TotInstOwn*	-0.14***	-0.11***	1					
[4]	*LongInstOwn*	-0.10***	-0.09***	0.66***	1				
[5]	*ShortInstOwn*	-0.13***	-0.12***	0.86***	0.37***	1			
[6]	*ActInstOwn*	-0.10***	-0.07***	0.68***	0.42***	0.63***	1		
[7]	*PasInstOwn*	-0.12***	-0.11***	0.75***	0.56***	0.69***	0.44***	1	
[8]	*MovtInstOwn*	-0.13***	-0.15***	0.44***	0.34***	0.39***	0.28***	0.39***	1
[9]	*NonMovtInstOwn*	-0.04	0.01	0.69***	0.42***	0.58***	0.47***	0.46***	-0.34***
[10]	*PropTypeDivers*	-0.08***	-0.12***	0.19***	0.11***	0.17***	0.07***	0.19***	0.13***
[11]	*GeogDivers*	0.03	0.01	0.04*	0	0.07***	0.05*	0.03	-0.04*
[12]	*LnAssets*	-0.12***	-0.12***	0.52***	0.49***	0.42***	0.34***	0.47***	0.63***
[13]	*Age*	0.03	-0.06**	0.01	0.14***	0.02	0.04*	0.05**	0.25***
[14]	*B/M*	0.15***	0.18***	-0.21***	-0.17***	-0.19***	-0.08***	-0.19***	-0.29***
[15]	*EBITDA/Debt*	-0.23***	-0.20***	-0.10***	-0.05*	-0.08***	-0.10***	-0.07***	-0.03
[16]	*Leverage*	0.21***	0.09***	-0.16***	-0.16***	-0.13***	-0.11***	-0.11***	-0.01

	Variables	***[9]***	***[10]***	***[11]***	***[12]***	***[13]***	***[14]***	***[15]***	***[16]***
[9]	*NonMovtInstOwn*	1							
[10]	*PropTypeDivers*	0.09***	1						
[11]	*GeogDivers*	0.08***	-0.17***	1					
[12]	*LnAssets*	0.04	0.04	-0.06**	1				
[13]	*Age*	-0.19***	-0.21***	0.13***	0.28***	1			
[14]	*B/M*	0.01	0.02	-0.02	-0.16***	-0.23***	1		
[15]	*EBITDA/Debt*	-0.08***	0.11***	-0.02	-0.10***	0.07***	-0.06**	1	
[16]	*Leverage*	-0.16***	-0.10***	0.09***	-0.08***	0.08***	-0.14***	-0.23***	1

Table 3 – Baseline Regressions of Operating Efficiency on Institutional Ownership

In this table, we report the results from baseline regressions of operating efficiency on institutional ownership. The dependent variables are *Adj.OER1* and *Adj.OER2*. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Variables	***Adj.OER1*** ***(1)***	***Adj.OER2*** ***(2)***
$TotInstOwn_t$	-0.019	0.006
	(-0.501)	(0.159)
$PropTypeDivers_t$	-0.226**	-0.248
	(-2.057)	(-1.486)
$GeogDivers_t$	0.146	0.133
	(1.572)	(1.256)
$LnAssets_t$	-0.017	-0.303**
	(-0.102)	(-2.386)
Age_t	-0.050	0.094
	(-0.376)	(0.802)
B/M_t	0.117*	0.071
	(1.938)	(1.444)
$EBITDA/Debt_t$	-0.137**	-0.137**
	(-2.522)	(-2.297)
$Leverage_t$	0.080	0.072
	(1.302)	(1.116)
Constant	1.183**	2.471***
	(2.376)	(4.210)
Observations	1,541	1,541
Adj. R-squared	0.470	0.466
Year fixed effect	Yes	Yes
Firm fixed effect	Yes	Yes
Clustered std err by firm	Yes	Yes

Table 4 - Alternative Classification of Institutional Ownership

In this table, we report the results from the regressions of operating efficiency on long-term (*LongInstOwn*), short-term (*ShortInstOwn*), active (*ActInstOwn*), passive ownership (*PasInstOwn*), motivated ownership (*MovtInstOwn*) and non-motivated ownership (*NonMovtInstOwn*). The dependent variables are *Adj.OER1* (in Panel A) and *Adj.OER2* (in Panel B). Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Panel A - Dependent var = Adj.OER1$_{t+1}$

Variables	(1)	(2)	(3)	(4)	(5)	(6)
LongInstOwn$_t$	0.017					
	(0.362)					
ShortInstOwn$_t$		-0.019				
		(-0.500)				
ActInstOwn$_t$			-0.040			
			(-1.041)			
PasInstOwn$_t$				0.009		
				(0.258)		
MovtInstOwn$_t$					-0.154**	
					(-2.041)	
NonMovtInstOwn$_t$						0.043
						(1.110)
PropTypeDivers$_t$	-0.229**	-0.226**	-0.225**	-0.226**	-0.216*	-0.230**
	(-2.065)	(-2.066)	(-2.002)	(-2.017)	(-1.900)	(-2.071)
GeogDivers$_t$	0.147	0.146	0.144	0.145	0.143	0.151
	(1.584)	(1.565)	(1.517)	(1.525)	(1.644)	(1.648)
LnAssets$_t$	-0.024	-0.019	-0.004	-0.004	0.065	-0.007
	(-0.140)	(-0.115)	(-0.024)	(-0.024)	(0.388)	(-0.042)
Age$_t$	-0.058	-0.049	-0.045	-0.049	-0.118	-0.077
	(-0.428)	(-0.361)	(-0.343)	(-0.369)	(-0.895)	(-0.572)
B/M$_t$	0.121**	0.117*	0.123**	0.124**	0.102*	0.121**
	(1.986)	(1.964)	(2.034)	(2.075)	(1.669)	(2.019)
EBITDA/Debt$_t$	-0.137**	-0.137**	-0.135**	-0.134**	-0.128**	-0.135**
	(-2.550)	(-2.525)	(-2.424)	(-2.445)	(-2.372)	(-2.530)
Leverage$_t$	0.083	0.079	0.081	0.080	0.075	0.082
	(1.354)	(1.280)	(1.327)	(1.321)	(1.239)	(1.344)
Constant	1.201**	1.191**	1.128**	1.121**	0.976*	1.147**
	(2.398)	(2.388)	(2.288)	(2.257)	(1.950)	(2.274)
Observations	1,541	1,541	1,523	1,523	1,541	1,541
Adj. R-squared	0.470	0.470	0.469	0.469	0.475	0.470
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes

Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes
Panel B - Dependent var = Adj.OER2$_{t+1}$						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
LongInstOwn$_t$	0.079*					
	(1.705)					
ShortInstOwn$_t$		-0.002				
		(-0.050)				
ActInstOwn$_t$			0.007			
			(0.152)			
PasInstOwn$_t$				0.000		
				(0.011)		
MovtInstOwn$_t$					-0.186***	
					(-2.836)	
NonMovtInstOwn$_t$						0.075**
						(2.146)
PropTypeDivers$_t$	-0.251	-0.247	-0.253	-0.253	-0.234	-0.251
	(-1.503)	(-1.483)	(-1.437)	(-1.453)	(-1.338)	(-1.484)
GeogDivers$_t$	0.129	0.132	0.130	0.130	0.128	0.137
	(1.242)	(1.255)	(1.199)	(1.203)	(1.243)	(1.321)
LnAssets$_t$	-0.316**	-0.301**	-0.292**	-0.292**	-0.197	-0.279**
	(-2.475)	(-2.381)	(-2.303)	(-2.297)	(-1.582)	(-2.252)
Age$_t$	0.077	0.095	0.100	0.101	0.018	0.055
	(0.656)	(0.807)	(0.845)	(0.858)	(0.146)	(0.455)
B/M$_t$	0.076	0.070	0.080	0.080	0.049	0.074
	(1.530)	(1.427)	(1.571)	(1.558)	(1.017)	(1.512)
EBITDA/Debt$_t$	-0.135**	-0.137**	-0.136**	-0.136**	-0.126**	-0.133**
	(-2.293)	(-2.290)	(-2.237)	(-2.233)	(-2.102)	(-2.290)
Leverage$_t$	0.080	0.072	0.077	0.077	0.064	0.074
	(1.239)	(1.100)	(1.188)	(1.186)	(0.995)	(1.155)
Constant	2.537***	2.468***	2.409***	2.411***	2.108***	2.372***
	(4.295)	(4.202)	(4.130)	(4.138)	(3.536)	(4.014)
Observations	1,541	1,541	1,523	1,523	1,541	1,541
Adj. R-squared	0.468	0.466	0.463	0.463	0.473	0.469
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 – Heckman Two-Stage Self-Selection Regressions

In this table, we report the results from the Heckman two-stage self-selection regressions. In column (1), we perform the logistic regression of a firm being in the highest quartile of motivated institutional ownership. In columns (2) and (3), we regress *Adj.OER1* and *Adj.OER2*, alternatively, on *MovtInstOwn*, the Inverse Mills Ratio (*Inverse Mills*) derived from Model 1 and other control variables. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Variables	***(1)*** ***HI_MovtInstOwn$_{t+1}$***	***(2)*** ***Adj.OER1$_{t+1}$***	***(3)*** ***Adj.OER2$_{t+1}$***
MovtInstOwn$_t$		-0.182***	-0.188***
		(-4.049)	(-2.638)
Inverse Mills$_t$		0.261*	0.030
		(1.850)	(0.215)
PropTypeDivers$_t$	0.765***	-0.127	-0.215
	(5.751)	(-1.630)	(-1.165)
GeogDivers$_t$	0.353***	0.188***	0.152
	(3.203)	(2.733)	(1.458)
LnAssets$_t$	2.870***	0.283*	-0.168
	(13.342)	(1.881)	(-1.043)
Age$_t$	-0.296*	-0.131*	0.014
	(-1.935)	(-1.646)	(0.111)
B/M$_t$	-1.755***	-0.035	0.038
	(-8.054)	(-0.382)	(0.389)
EBITDA/Debt$_t$	0.014	-0.123**	-0.126**
	(0.092)	(-2.473)	(-2.048)
Leverage$_t$	-0.219	0.078*	0.085
	(-1.525)	(1.732)	(1.332)
Constant	-14.500***	0.123	1.910**
	(-12.764)	(0.236)	(2.386)
Observations	1,526	1,526	1,526
Pseudo R-squared	0.488		
Chi-squared stats	608.8		
Percent correct classification	85.50%		
Adj. R-squared		0.453	0.460
Year fixed effect	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes

Table 6 – Propensity Score Matching Analyses

In this table, we report the results from the propensity-score matching analyses. In Panel A, we present the first-stage logistic regressions of the probability of a firm being in the highest quartile of motivated institutional ownership before and after propensity score matching. The dependent variable in Panel A is the dummy variable equal to 1 if a firm is in the highest quartile of motivated institutional ownership and 0 otherwise. In Panel B, we report the univariate comparisons of firm characteristics between the treated firms (e.g., firms in the highest quartile of motivated institutional ownership) and control firms (e.g., propensity-matched firms). In Panel C, we report the regression results of operating efficiency on firm characteristics using the treated firms and the propensity-matched firms only. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Panel A - Logistic regressions

Variables	(1) Before PSM	(2) After PSM
$PropTypeDivers_t$	0.919***	-0.009
	(2.60)	(-0.02)
$GeogDivers_t$	0.446	-0.015
	(1.07)	(-0.03)
$LnAssets_t$	3.035***	0.025
	(5.27)	(0.06)
Age_t	-0.463	0.064
	(-1.57)	(0.18)
B/M_t	-1.574***	0.045
	(-4.39)	(0.13)
$EBITDA/Debt_t$	0.034	0.138
	(0.26)	(0.84)
$Leverage_t$	-0.200	0.339
	(-0.81)	(1.29)
Constant	-17.717***	-1.904
	(-5.27)	(-0.29)
Observations	1,541	518
Pseudo R2	0.285	0.00971

Panel B - Univariate comparisons after PSM

	Low motivated	High motivated	Difference	(p-value)
$Adj.OER1_{t+1}$	1.119	0.954	0.165	0.000
$Adj.OER2_{t+1}$	1.123	0.958	0.165	0.027
$PropTypeDivers_t$	0.810	0.852	-0.042	0.190
$GeogDivers_t$	0.435	0.429	0.005	0.919
$LnAssets_t$	15.516	15.474	0.042	0.786
Age_t	3.311	3.260	0.051	0.683
B/M_t	0.630	0.631	-0.001	0.983
$EBITDA/Debt_t$	0.171	0.184	-0.013	0.277
$Leverage_t$	2.559	2.603	-0.044	0.842

Panel C - Regressions of operating efficiency

Variables	(1) *Adj.OER1*	(2) *Adj.OER2*
MovtInstOwn $_t$	-0.163**	-0.146*
	(-2.225)	(-1.919)
PropTypeDivers $_t$	-0.384***	-0.333***
	(-3.468)	(-2.742)
GeogDivers $_t$	0.268***	0.295***
	(2.614)	(2.638)
LnAssets $_t$	0.001	-0.228*
	(0.004)	(-1.716)
Age $_t$	-0.362**	-0.198
	(-2.156)	(-1.116)
B/M $_t$	0.168**	0.060
	(2.382)	(0.914)
EBITDA/Debt $_t$	-0.044	-0.071
	(-0.645)	(-0.918)
Leverage $_t$	0.097	0.111**
	(1.622)	(2.148)
Constant	1.387***	2.679***
	(2.712)	(3.896)
Observations	518	518
Adj. R-squared	0.510	0.482
Year fixed effect	Yes	Yes
Firm fixed effect	Yes	Yes
Clustered std err by firm	Yes	Yes

Table 7 - Entropy Balancing Analyses

In this table, we report the results from the entropy balancing analyses. In Panel A, we report the comparisons of firm characteristics after implementing the entropy balancing procedure between the treated firms (e.g., firms in the highest quartile of motivated institutional ownership) and control firms (e.g., propensity-matched firms). In Panel B, we report the weighted regression results of operating efficiency on firm characteristics. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Panel A – Univariate comparisons after entropy balancing

	High MovtInstOwn			Low MovtInstOwn			
Variables	Mean	Variance	Skewness	Mean	Variance	Skewness	Standardized difference
PropTypeDivers $_t$	0.853	0.043	-1.319	0.853	0.043	-1.319	0.000
GeogDivers $_t$	0.419	0.088	1.052	0.419	0.088	1.052	0.000
LnAssets $_t$	15.300	0.915	-0.244	15.300	0.916	-0.247	0.000
Age $_t$	3.215	0.738	-1.120	3.215	0.738	-1.120	0.000
B/M $_t$	0.606	0.099	1.979	0.606	0.099	1.980	0.000
EBITDA/Debt $_t$	0.192	0.039	9.152	0.192	0.039	9.151	0.000
Leverage $_t$	2.636	1.826	3.422	2.636	1.827	3.422	0.000

Panel B – Regressions of operating efficiency after entropy balancing

	(1)	(2)
Variables	*Adj.OER1*	*Adj.OER2*
MovtInstOwn $_t$	-0.202**	-0.243**
	(-2.083)	(-2.321)
PropTypeDivers $_t$	-0.118	-0.164
	(-0.853)	(-0.885)
GeogDivers $_t$	0.080	0.110
	(0.648)	(0.965)
LnAssets $_t$	0.037	-0.234
	(0.263)	(-1.244)
Age $_t$	-0.116	0.050
	(-0.858)	(0.294)
B/M $_t$	0.144**	0.105*
	(2.524)	(1.748)
EBITDA/Debt $_t$	-0.069*	-0.115*
	(-1.681)	(-1.827)
Leverage $_t$	0.096	0.096
	(1.289)	(1.565)
Constant	0.897	2.152**
	(1.556)	(2.132)
Observations	1,541	1,541
Adj. R-squared	0.550	0.466
Year fixed effect	Yes	Yes
Firm fixed effect	Yes	Yes
Clustered std err by firm	Yes	Yes

Table 8 – Reverse Causality

In this table, we report the regressions of motivated institutional ownership on firm operating efficiency to examine the possibility of reverse causality. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

Variables	(1) $MovtInstOwn_{t+1}$	(2) $MovtInstOwn_{t+1}$
$Adj.OER1_t$	-0.029	
	(-0.878)	
$Adj.OER2_t$		-0.031
		(-0.975)
$PropTypeDivers_t$	0.089	0.089
	(0.729)	(0.727)
$GeogDivers_t$	-0.073	-0.074
	(-0.701)	(-0.692)
$LnAssets_t$	0.790***	0.783***
	(5.664)	(5.586)
Age_t	-0.488***	-0.483***
	(-3.487)	(-3.443)
B/M_t	-0.112***	-0.113***
	(-2.773)	(-2.818)
$EBITDA/Debt_t$	0.064***	0.064***
	(3.024)	(2.951)
$Leverage_t$	-0.056	-0.054
	(-1.004)	(-0.965)
Constant	-1.838***	-1.826***
	(-5.146)	(-5.147)
Observations	1,149	1,149
Adj. R-squared	0.842	0.842
Year fixed effect	Yes	Yes
Firm fixed effect	Yes	Yes
Clustered std err by firm	Yes	Yes

Table 9 - Difference-in-Difference Regressions

In this table, we report the results from the difference-in-difference regressions of firm operating efficiency on motivated institutional ownership. The dependent variables are the changes in Adj.OER1 (in Panel A) and Adj.OER2 (in Panel B) at time *t+1*. We calculate the first differences of all control variables. In addition, we create 2 dummy variables, *MovtInstOwn_Chg_5*$_t$ and *MovtInstOwn_Chg_10*$_t$, which are equal to 1 for firms experiencing more than 5% or 10% change in motivated institutional ownership. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

	Panel A - Adj.OER1_Chg $_{t+1}$			***Panel B - Adj.OER2_Chg*** $_{t+1}$		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
MovtInstOwn_Chg $_t$	-0.025			-0.031		
	(-1.080)			(-1.228)		
MovtInstOwn_Chg_5$_t$		-0.040*			-0.038*	
		(-1.714)			(-1.751)	
MovtInstOwn_Chg_10 $_t$			-0.039*			-0.048**
			(-1.802)			(-2.066)
PropTypeDivers_Chg $_t$	-0.027	-0.027	-0.026	-0.024	-0.024	-0.023
	(-0.686)	(-0.693)	(-0.676)	(-0.686)	(-0.686)	(-0.671)
GeogDivers_Chg $_t$	-0.001	-0.003	-0.002	-0.023	-0.024	-0.024
	(-0.043)	(-0.081)	(-0.066)	(-0.734)	(-0.771)	(-0.769)
LnAssets_Chg $_t$	0.085**	0.085**	0.086**	0.092**	0.091**	0.093**
	(2.064)	(2.094)	(2.100)	(2.006)	(2.009)	(2.050)
Age_Chg $_t$	0.050	0.047	0.054	0.018	0.013	0.022
	(0.407)	(0.382)	(0.431)	(0.161)	(0.110)	(0.193)
B/M_Chg $_t$	0.004	0.004	0.005	-0.020	-0.020	-0.019
	(0.113)	(0.089)	(0.128)	(-0.524)	(-0.523)	(-0.510)
EBITDA/Debt_Chg $_t$	0.038	0.038	0.038	0.019	0.019	0.019
	(0.711)	(0.711)	(0.714)	(0.312)	(0.311)	(0.315)
Leverage_Chg $_t$	-0.011	-0.011	-0.011	0.011	0.011	0.011
	(-0.477)	(-0.478)	(-0.472)	(0.500)	(0.522)	(0.500)
Constant	-0.060	-0.055	-0.062	-0.061	-0.050	-0.063
	(-0.626)	(-0.576)	(-0.640)	(-0.471)	(-0.390)	(-0.487)
Observations	1,409	1,409	1,409	1,409	1,409	1,409
Adj. R-squared	-0.0733	-0.0725	-0.0725	-0.0724	-0.0720	-0.0712
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes

Table 10 – Impact of Motivated Institutional Ownership on Operating Efficiency – Results by Firm Size Terciles

In this table, we report the results from the regressions of operating efficiency on motivated institutional ownership and other control variables separately for terciles of firms based upon assets. The Chi-squared statistics are obtained from the tests of the differences in the coefficient estimates on the *MovtInstOwn* variable between the subsamples. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

	Panel A - Adj.OER1			***Panel B - Adj.OER2***		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Small	Medium	Large	Small	Medium	Large
MovtInstOwnt	0.017	-0.034	-0.405**	0.011	-0.033	-0.496***
	(0.414)	(-0.504)	(-2.659)	(0.299)	(-0.447)	(-3.616)
PropTypeDiverst	-0.169	-0.637***	0.083	-0.154	-0.851***	0.081
	(-1.553)	(-3.627)	(0.938)	(-1.179)	(-2.653)	(0.616)
GeogDiverst	-0.028	0.355*	0.129	-0.086	0.470	0.176
	(-0.311)	(1.676)	(0.678)	(-0.870)	(1.576)	(1.075)
LnAssetst	-0.207	-0.050	0.301*	-0.241	-0.121	0.104
	(-1.160)	(-0.355)	(1.951)	(-1.217)	(-0.733)	(0.633)
Aget	-0.010	-0.170	-0.201	0.090	-0.160	0.005
	(-0.049)	(-0.802)	(-0.415)	(0.484)	(-0.798)	(0.010)
B/Mt	0.060	0.170	0.155	-0.023	0.126	0.110
	(1.022)	(1.248)	(1.214)	(-0.419)	(1.405)	(0.792)
EBITDA/Debtt	-0.303***	-0.039	-0.022	-0.279***	-0.041	0.015
	(-3.377)	(-0.659)	(-0.234)	(-4.529)	(-0.627)	(0.182)
Leveraget	0.040	0.097	0.115	-0.013	0.100	0.105
	(0.416)	(1.304)	(0.740)	(-0.127)	(1.282)	(0.659)
Constant	2.249****	1.831	-0.737	3.139****	3.348**	-0.155
	(2.296)	(1.657)	(-0.745)	(2.084)	(1.728)	(-0.118)
Chi-squared stats - Small vs. Large	4.63**			4.39**		
Chi-squared stats - Small vs. Medium	1.68			3.33*		
Chi-squared stats - Medium vs. Large	0.39			2.15		
Observations	483	521	537	483	521	537
Adj. R-squared	0.575	0.518	0.537	0.607	0.506	0.453
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes

Table 11 – Impact of Motivated Institutional Ownership on Operating Efficiency – Results by Leverage Terciles

In this table, we report the results from the regressions of operating efficiency on motivated institutional ownership and other control variables separately for terciles of firms based upon leverage. The Chi-squared statistics are obtained from the tests of the differences in the coefficient estimates on the *MovtInstOwn* variable between the subsamples. Refer to the Appendix for variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

	Panel A - Adj.OER1			***Panel B - Adj.OER2***		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Low	Medium	High	Low	Medium	High
MovtInstOwnt	0.054	-0.082	-0.326**	0.044	-0.076	-0.288**
	(0.456)	(-0.735)	(-2.607)	(0.278)	(-0.844)	(-2.256)
PropTypeDiverst	-0.287*	0.038	-0.064	-0.347	0.021	-0.140
	(-1.785)	(0.265)	(-0.271)	(-1.169)	(0.122)	(-0.578)
GeogDiverst	0.117	0.002	0.206	0.193	0.043	0.063
	(0.718)	(0.014)	(1.105)	(0.929)	(0.335)	(0.318)
LnAssetst	0.074	0.101	-0.077	-0.507	0.038	-0.284
	(0.160)	(0.498)	(-0.226)	(-1.193)	(0.229)	(-0.857)
Aget	0.146	-0.278	-0.130	0.480	-0.154	-0.061
	(0.518)	(-1.206)	(-0.533)	(1.462)	(-0.849)	(-0.246)
B/Mt	0.237***	0.120	0.034	0.133*	0.073	0.031
	(3.625)	(1.344)	(0.416)	(1.909)	(0.863)	(0.439)
EBITDA/Debtt	-0.171	-0.116**	-0.131	-0.183	-0.161***	-0.066
	(-1.053)	(-2.458)	(-1.215)	(-1.365)	(-2.845)	(-0.569)
Leveraget	-0.004	0.144**	0.025	0.037	0.118*	0.069
	(-0.028)	(2.073)	(0.245)	(0.326)	(1.760)	(0.606)
Constant	0.737	0.573	1.427	3.139**	0.690	2.439
	(0.601)	(0.908)	(1.353)	(1.818)	(0.868)	(1.574)
Chi-squared stats - Low vs. High	5.45**			2.81*		
Chi-squared stats - Low vs. Medium	0.71			0.48		
Chi-squared stats - Medium vs. High	3.56**			2.69*		
Observations	471	558	512	471	558	512
Adj. R-squared	0.371	0.573	0.591	0.369	0.583	0.563
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes

Table 12 – Asymmetric impact of changes in motivated institutional ownership of REIT operational efficiency

In this table, we report the results from the regressions segregating positive and negative changes in motivated institutional ownership on operational efficiency. *MovtInstOwn_Chg >10%* and *MovtInstOwn_Chg >-10%* represent changes in motivated institutional ownership that are greater than 10% and -10%, respectively. Refer to the Appendix for other variable definitions. *, ** and *** indicate significance levels of 10%, 5% and 1%, respectively.

	Panel A - Increases in institutional ownership				**Panel b -Decreases in institutional ownership**			
	Adj.OER1_Chg t+1		**Adj.OER2_Chg t+1**		**Adj.OER1_Chg t+1**		**Adj.OER2_Chg t+1**	
Variables	**(1)**	**(3)**	**(4)**	**(6)**	**(7)**	**(9)**	**(10)**	**(12)**
MovtInstOwn_Chg $_t$	-0.097**		-0.123**		-0.039		-0.071	
	(-2.293)		(-2.427)		(-0.551)		(-0.824)	
MovtInstOwn_Chg >10%		-0.099**		-0.133**				
		(-2.297)		(-2.586)				
MovtInstOwn_Chg >-10%						-0.043		-0.027
						(-0.702)		(-0.394)
PropTypeDivers_Chg $_t$	-0.077	-0.073	-0.054	-0.048	-0.098	-0.094	-0.113	-0.107
	(-1.016)	(-0.962)	(-0.770)	(-0.699)	(-1.514)	(-1.419)	(-1.627)	(-1.483)
GeogDivers_Chg $_t$	0.011	0.008	-0.005	-0.010	0.040	0.039	0.010	0.009
	(0.146)	(0.101)	(-0.070)	(-0.139)	(0.506)	(0.495)	(0.131)	(0.115)
LnAssets_Chg $_t$	0.076	0.071	0.057	0.051	-0.030	-0.035	-0.004	-0.009
	(1.155)	(1.086)	(0.671)	(0.614)	(-0.364)	(-0.429)	(-0.059)	(-0.131)
Age_Chg $_t$	0.328	0.331	0.363	0.372	-0.313	-0.328	-0.486	-0.509*
	(1.268)	(1.282)	(1.261)	(1.289)	(-0.982)	(-1.029)	(-1.616)	(-1.658)
B/M_Chg $_t$	0.063	0.069	0.045	0.051	0.084	0.094	0.111	0.124
	(0.940)	(1.037)	(0.711)	(0.823)	(0.762)	(0.838)	(0.972)	(1.057)
EBITDA/Debt_Chg $_t$	0.085	0.084	0.109	0.108	0.081	0.082	0.055	0.057
	(1.087)	(1.075)	(1.371)	(1.356)	(1.154)	(1.145)	(0.691)	(0.687)
Leverage_Chg $_t$	0.027	0.029	0.037	0.040	-0.043	-0.044	-0.038	-0.037
	(0.666)	(0.712)	(0.883)	(0.928)	(-0.704)	(-0.727)	(-0.644)	(-0.647)
Constant	-0.259	-0.268	-0.387	-0.407	0.249	0.272	0.454*	0.501*
	(-1.492)	(-1.545)	(-1.432)	(-1.502)	(1.295)	(1.429)	(1.822)	(1.961)
Observations	545	545	545	545	442	442	442	442
R-squared	0.201	0.202	0.183	0.186	0.231	0.232	0.227	0.224
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix: Definitions of Variables

Variables	***Definition***
OER1	Total expenses minus real estate depreciation and amortization divided by total revenue.
OER2	Total expenses minus real estate depreciation and amortization minus rental operating expenses divided by total revenue less expense reimbursements.
Adj.OER1	OER1 divided by mean OER1 of all REITs in the same property type classification.
Adj.OER2	OER2 divided by mean OER2 of all REITs in the same property type classification.
TotInstOwn	Percent of REIT shares held by all institutional investors.
MovtInstOwn	We compute the total market value of each institutional investor's portfolio and the
NonMovtInstOwn	portfolio weight of each REIT within the portfolio. If a REIT's portfolio weight is within the uppermost decile of the institution's overall portfolio allocation, we classify that institution as a motivated investor for that REIT. If not, we classify the institution as a non-motivated institutional owner.
LongInstOwn	To categorize investors by horizon, we consider the fraction of stock *i* held by investor *j* at both the focal quarter *t* and the quarter *t – 4*. This calculation is then compared to the
ShortInstOwn	fraction held at *t – 4* that was sold at *t*. If, during this interval, the investor is found to be a net buyer, stock turnover is recorded as zero. This turnover figure is subsequently weighted by the percentage of the investor *j*'s portfolio at time *t – 4* that comprises stock *i*. After the summation of all stocks in the investor's portfolio at *t – 4*, we compute the mean of this turnover metric for the four quarters spanning from time *t – 3* to time *t*. The turnover measure, constrained between 0 and 1, encapsulates the fraction of the investor's portfolio that underwent turnover in the preceding three years. Investors showing a portfolio turnover of 35% or less are deemed long-term investors. Portfolio turnover exceeding 35% is categorized as reflective of short-term investor behavior (Derrien et al., 2013).
ActInstOwn	This category includes investment companies like mutual funds, closed-end funds, and independent investment advisors, particularly those advising pension funds (Almazan et al., 2005 and Hartzell et al., 2014).
PasInstOwn	Passive ownership pertains to entities less involved in corporate governance activities, such as banks, insurance companies, and endowment or pension funds (Almazan et al., 2005 and Hartzell et al., 2014).
PropTypeDivers	The negative of the Herfindahl Index of REITs, calculated using their assets invested in different real estate property types, based on book values.
GeogDivers	The negative of the Herfindahl Index of REITs, calculated using their assets invested in different NCREIF Region locations, based on book values.
LnAssets	The natural logarithm of firm asset.
Age	The natural logarithm of firm age.
B/M	The ratio of the book value of equity to the market value of equity.
EBITDA/Debt	The ratio of EBITDA to total debt.
Leverage	The ratio of total book assets to total book equity.