Good Growth, Bad Growth by REITs: How Effective are the "Watchdogs"?

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Abstract

REITs have expanded rapidly in the recent decades. However, not all growths are beneficial to shareholders. Poor (good) growths are defined in our investigation as growths undertaken by REITs when facing decreasing (increasing) returns to scale. Specifically, we observed that 44.5% of the growths reported by REITs are not value enhancing to the shareholders. In this paper, we examine whether monitoring by institutional investors, independent directors, and creditors is effective to discipline REIT managers from undertaking poor investments. Unlike independent directors and external bankers, the empirical evidence suggests that institutional investors are effective "watchdogs" to discipline the managers from undertaking bad investments. Our results are robust to alternative definition of good and bad growths, and alternative identification strategies to control for possible endogeneity and reverse causality.

Key words: REITs, corporate growth, corporate governance

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1.0 Introduction

Why do managers like to pursue corporate growth? Numerous economic explanations have been offered in the corporate finance and management science literature. One credible reason is "scale efficiency" which prescribes that the operating efficiency of a firm increases with size. The argument goes that a lower average cost could be achieved because the firm's management and operating costs can be spread over a larger asset base. Likewise, large firms can also secure lower financing costs due to higher credit rating associated with firm size. From an asset pricing perspective, firms with high growth expectations are generally rewarded with high multiples; thus, creating a chain reaction of continued growth – as firms get larger, multiple rise thereby funding further growth and consolidation. In reality, firm expansion does not always lead to improved shareholders wealth. For example, the insignificant (or even negative) stock price reaction to mergers and acquisitions are inconsistent with the view that corporate growth is beneficial to shareholders wealth. Conversely, positive price impacts observed for corporate sell-offs suggest some benefits associated with firm size reduction. Other evidence against corporate growth includes studies that have consistently shown smaller firms earning higher risk-adjusted rates of return. Nevertheless, corporate managers continue to subject the firms under their management to a rapid growth trajectory.

To explain this puzzle, the agency cost paradigm prescribes that managers do not always act in the best interest of their shareholders (Jensen and Meckling, 1976). Prone to engaging in "empire building" projects, the self-serving managers may seek to expand the resources under their control to increase their own remuneration and power base as well as to enhance their reputation (Murphy, 1985; Jensen, 1986). The managers, motivated by their self-preservation instinct, may seek to entrench themselves by investing in pet projects that require their special knowledge; thereby, making themselves difficult to be replaced (Shleifer and Vishny, 1989).

The primary aim of the Sarbanes-Oxley Act, which was introduced in 2002, is to legislate internal corporate governance with the expectation that effective monitoring can prevent manipulations by management and improve firm performance. Although numerous studies have been carried out on the effectiveness of corporate governance, the verdict is still inconclusive. In general, the results vary depending on the corporate governance mechanism that is studied and the metrics used to measure corporate performance. Most of the studies employed cross-sectional or panel regressions to establish the relationship between corporate governance and performance. However, little attention is paid on identifying causality.

This research seeks to contribute to the literature by focusing on the monitoring role of three corporate "watchdogs", [1] namely the independent directors, institutional investors, and outside bankers of the firm, in preventing corporate managers from pursuing detrimental growth. The first objective of this research is to determine the extent to which the managers in our sampled firms engage in poor corporate expansion. Unlike prior studies that focus primarily on the influence of corporate governance on corporate performance (as measured by accounting returns, stock returns, or firm valuation), we choose the marginal expansion of firms as the setting for our empirical tests so as to establish a clearer channel of causality between corporate growth and close monitoring. Aside from being large and visible, acquisition decisions have the potential for wide disparity between shareholder and manager interests (Chen et al., 2007). Specifically, we analyze the growth records of 190 equity REITS from 1992 to 2012. The Data Envelopment Analysis (DEA), which is an established linear programming methodology to compare relative efficiency of peer groups, is employed to calculate the scale efficiency of the firms over the sample period. Examining the real-time expansion behavior of the firms and their return-to-scale status, corporate growth is deemed unfavorable (bad growth) if pursued by firms that are facing decreasing returns to scale. Conversely, growth is deemed favorable if pursued by firms that are not facing a decreasing return to scale (good growth). The data shows that 44.5% of the corporate growths were pursued by REITs facing decreasing returns to scale.

[1] The term "watchdogs" was used by Bhagat and Black (1990). Questioning the independence of independent directors, they describe independent directors as "lapdogs" instead of "watchdogs".

The high proportion of bad growth incidents serves to highlight the importance of good corporate governance to monitor and discipline managerial behavior. This leads to our second research objective, which is to analyze the probability of managers engaging in detrimental expansions in the presence of close monitoring by three groups of corporate "watchdogs". In accordance with the agency theory, independent directors, external banks, and institutional investors, play a critical role through their close monitoring to deter self-serving managers from pursuing value-destroying growths. With regards to the role of independent directors, Fama (1980) argues that outside board members can monitor management on behalf of shareholders more effectively because of their independence. Fama and Jensen (1983) add that outside directors have incentive to watch over the management to protect their reputation. Second, the use of debt financing can also induce monitoring by lenders. By pre-committing the firm to pay out its free cash flows, debt acts as a disciplining device by constraining the amount of funds available for managerial opportunism (Jensen, 1986; Stulz, 1990). Maloney et al. (1993) argue that the necessity of making periodic, legally mandated, unalterable payments to creditors disciplines managers to take extra care in their decision making. Third, institutional investors are substantial shareholders in the company and they have been shown to be willing to engage in shareholder activism, either by voicing their dissatisfaction over bad firm performance, or by pressuring the ouster of poorly performing CEOs, or by selling their shares when they are dissatisfied (Gillian and Starks, 2003; McCahery, Sautner, and Starks, 2008).[2]

In summary, our paper connects two strands of literature: the first on scale efficiency in the context of corporate growth, and the second on effective monitoring in the context of corporate governance. Our empirical investigation involves tracking and analyzing the growth of 190 equity REITs in the U.S. from 1992 to 2012. There are several reasons why the REIT industry is a particularly interesting environment in which to examine these

[2] In a recent study, Aggarwal et al. (2011) find that changes in institutional ownership over time drive subsequent changes in firm-level governance, but the opposite does not hold true. Since the direction of the effect seems to be from institutional ownership to subsequent changes in governance, and not from governance to institutional ownership, they conclude that institutional investors, instead of simply picking good firms to invest, play an active role in firms' governance.

issues. Figure 1 shows that REITs have experienced rapid expansion in the last two decades with the average size of a REIT increasing from $300 million (inflation-adjusted) in 1993 to around $5.0 billion in 2012. The rapid expansion, which represents a compound annual growth rate of 14.0%, provides sufficient sampling of both good and bad growth incidents to test their relationships with the level of monitoring by the corporate "watchdogs". Although the exponential growth can be attributed to a series of innovations seen in the real estate capital markets[3], scale efficiency provided a credible reason at the firm level for the relentless trend towards larger REITs. If economies of scale exist in real estate, then REIT costs should increase at a decreasing rate and efficiency gains should be reflected in higher returns (Ambrose, Highfield and Linneman, 2005). Second, hostile takeovers of REITs, even poorly performing ones, are rare (Ghosh and Sirmans, 2003).[4] In the absence of capital market disciplining for poor corporate performance, the quality of monitoring by the "watchdogs" is essential to prevent managers from pursuing projects that are not beneficial to the firm.

Insert Figure 1 here

The third reason is that institutional investors hold large ownership stakes in REITs. On average, institutional investors control more than 60 per cent of the outstanding shares of REITs.[5] Figure 2 shows that institutional ownership of publicly traded REITs

[3] First, the credit crunch in the early 1990s forced heavily leveraged real estate firms to turn to the equity market for survival and to reconstruct their impaired balance sheet. Aided by the 1993 Revenue Reconciliation Act, which removed the 5/50 rule that had prevented institutional investors from actively participating in real estate, the IPO boom in 1993 and 1994 saw REITs gaining popularity among large investors. On the supply side, the UPREIT structure introduced in 1992 provided another impetus for REITs rapid expansion by offering the benefits of deferred capital gain tax for real estate owners who were previously reluctant to sell-off their assets. Innovations in the debt securitization market provided further fuel through the financing channel to feed the insatiable appetite of REITs to grow through mergers and acquisitions. Finally, the inclusion of Equity Residential REIT into the S&P 500 index in 2001 provided the formal recognition of REIT as an established investment vehicle.

[4] In the past, the "five or fewer rules" of REITs pose great difficulty for hostile takeovers.

[5] Chan et al. (1998) document that institutional ownership of REIT securities ranged from 12% to 14% in the period of 1986 to 1992, and increased to 30% in 1995. Other studies that have documented the dramatic increase in institutional holdings for REITs include Below et al. (2000), Ling and Ryngaert (1997) and Ghosh et al. (1997). Devos et al. (2013) find the following REIT characteristics are the most influential in determining institutional ownership: standard deviation of returns (positive), firm-specific risk (negative), age (negative), price (positive), and

has increased from around 50% between 1994 and 2001, to around 80% in the recent years as REIT becomes a more widely acceptable investment vehicle (see Devos et al., 2013).[6] By virtue of their large shareholdings and expertise, institutional investors may serve as an effective watchdog to monitor managerial actions.

Insert Figure 2 here

To examine the effectiveness of monitoring by independent director, institutional investors and external bankers, we construct a multivariate probit regression model on the probability of REITs pursuing good growths. To determine the causality, the key right-hand-side variables in the regression model are expressed in differences and lagged by one year. In other words, we measure the relationship between the change in the level of monitoring by the "watchdogs" in the current period and the likelihood of the company engaging in good growth in the next year. The degree of monitoring by independent directors and outside bankers are proxied by the number of outside directors (over the total number of directors) and the debt-equity ratio of the individual firms. The degree of monitoring by institutional investors is represented by the percentage of shares owned by institutional investors. In the regression model, we also control for the effects of other corporate governance variables, such as board compositions and compensation structure, and a set of firm attributes to address concern of omitted-variables bias. We also include fixed effects for time to address the concern that the likelihood of engaging in good

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turnover (positive). Interestingly, they observe that during the financial crisis, institutional investors tended to gravitate towards REITs with higher turnover, whereas after the crisis, institutional investors seem to be attracted to larger REITs with lower beta, lower individual risk, and lower turnover.

[6] Before 1993, companies were required to meet two basic ownership rules in order to qualify for REIT designation, namely the "100 Shareholder Rule" and the "5/50 Rule". The "100 Shareholder Rule" stipulated that a REIT company must be owned by 100 or more shareholders, while the "5/50 Rule" maintained that 5 or fewer individuals cannot own more than 50 percent of the stocks of a REIT company. The 5/50 rule, in particular, made REIT securities unattractive to institutional investors, such as pension funds. Prior to the enactment of the 1993 Revenue Reconciliation Act, a pension fund was treated as an individual investor relative to the 5/50 rule. To encourage the participation of institutional investors in the REIT markets, the 1993 Revenue Reconciliation Act altered the 5/50 rule. With the passage of the Act, beneficiaries of a pension fund are counted as individual investors instead of counting the pension fund itself as a single investor. The relaxation of the 5/50 rule translated into substantial growth for the REIT market as institutional ownership of their securities soared (Anoruo and Braha, 2010).

growths might be related to market-wide changes.

The estimation results show a positive relation between changes in the level of institutional ownership and the likelihood of REIT managers engaging in good growths. This implies that REIT managers are less likely to undertake value-destroying growth in the presence of a high level of monitoring by institutional investors. This finding is consistent with the hypothesis that institutional investors are effective as a watchdog to monitor and discipline managers from misbehaving. However, independent directors and external bankers do not have any significant impact on reducing the probability of REITs engaging in bad growth. This suggests that the effectiveness of independent directors and external bankers in monitoring managerial action is debatable.[7] Our finding is robust using alternative ways to classify good and bad growths.

The rest of this paper is organized as follows. Section 2.0 discusses the research methodology adopted to test our hypothesis. Section 3.0 describes the data. Section 4 carries several tests on the effectiveness of institutional investors and creditors in disciplining and monitoring REIT managers to grow the company in the right direction. Section 5.0 concludes.

2.0 Methodology to Measure Economies of Scale

The rapid growth of REITs in the last few decades has stimulated studies on scale efficiency. Anderson, Lewis and Springer (2000) suggest that a motivating economic factor, such as economies of scale or other efficiency gains, must be available to support the continuous trend towards larger REITs. The literature on firm efficiency has thus examined both economies of scale and technical-efficiency, i.e. deviation from the efficient frontier as proposed by Leibenstein (1996). "Economies of scale" concerns the efficiency of

[7] While Agrawal and Knoeber (1996) find a negative relationship between percentage of outside board members and firm performance, Rosenstein (1990) observes a positive stock price reaction to appointment of outside directors. There are also a number of studies which evaluate the relationship between corporate performance and various aspects of board composition, such as size of the board (Yermack, 1996; Eisenberg, Sundgren and Wells, 1998; Dalton et al., 1999; Coles, Daniel and Naveen, 2008), and duality of CEO as the Chairman of the Board (Rechner and Dalton, 1991; Finkelstein and D'Aveni, 1994).

firms that are producing on the efficient frontier. Figure 3 is an illustration: Scale efficient firms are producing at the bottom of "U-shape" cost curve with constant return to scale. Firms on the left side of "U-shape" curve are producing with increasing return to scale, while firms on the right side of "U-shape" curve are producing with decreasing return to scale.

Insert Figure 3 here

Several methods have been used to directly calculate the efficiency of REITs. The pioneering study by Bers and Springer (1997) on REIT scale efficiency estimated a translog cost function for a sample of REITs from 1992 to 1994. Using total assets and dividend as measures of output for the REITs, they defined economies of scale exist for a REIT if an increase in its output leads to a smaller proportion increase in total costs. Besides being sensitive to the cost function used, another limitation of the methodology is the assumption that all the REITS are producing on the efficient frontier (see Anderson, et al. 2000). The stochastic frontier methodology, which was adopted by Lewis, Springer and Anderson (2003), offers another way to separately calculate scale efficiency and technical-efficiency.[8] Using data from 1995 to 1997, the authors suggest that most REITs face increasing return to scale. On the contrary, a recent paper by Miller, Clauretie and Springer (2006) which also used the stochastic frontier methodology, but over a longer sample period (1995-2003), find evidence of diseconomies of scale. However, a limitation of the stochastic frontier methodology is its sensitivity to assumptions on its production function or cost function, or on the functional form or error term (Anderson et al. 2000; Miller, 2006). A third approach to analyze efficiency is the non-parametric data envelopment analysis (DEA). Besides being able to separate scale efficiency from technical efficiency, another advantage of the DEA is that it does not require any prior assumption on the production function. DEA is also able to combine multiple inputs to fit any measure of efficiency with the efficient frontier formed through a linear combination

[8] Lewis, Springer and Anderson (2003) use total assets and market capitalization as alternative measures of output.

of the sample decision making units (DMUs).[9] The DEA approach has been adopted by Anderson et al. (2002) and Topuz, Darrat and Shelor (2005) to calculate the efficiency for a sample of US REITs during years 1992-1996, and 1989-1999, respectively.[10]

For our current research, scale efficiency is calculated using the DEA. Measuring the relative efficiency of decision making units (DMUs), a DMU is assumed to be fully efficient if and only if none of its inputs or output can be improved without worsening some of its other inputs or outputs (Cooper, Seiford and Zhu, 2011). The DEA model, first presented by Charnes, Cooper and Rhodes (CCR, 1978), has n DMUs with m categories of inputs and s categories of outputs.[11] To evaluate the efficiency of DMU$_k$ measured with θ, the model is specified as:

$$\min \theta - \varepsilon\left(\sum_{1=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+\right) \qquad (1)$$

$$st. \sum_{j=1}^{n} x_{ij}\lambda_j + s_i^- = \theta x_{ik} \qquad i = 1,2, \dots m$$

$$\sum_{j=1}^{n} y_{rj}\lambda_j - s_r^+ = y_{rk} \qquad \mathrm{r} = 1,2, \dots \mathrm{s}$$

$$\lambda_j, s_i^-, s_i^+ \geq 0$$

Where x_{ij} stands for the amount of input i for DMU$_j$; y_{rj} is the amount of output r for DMU$_j$; λ_j is the weight of DMU$_j$ in the hypothetical efficient DMU. $\varepsilon > 0$ is non-Archimedean element, which is smaller than any positive real number. This specification allows the model to prioritize the task to find the minimum value of θ. s_i^- and s_r^+ are slack variables to make the restriction functions equal. The hypothetical efficient DMU has the amount of $\sum_{j=1}^{n} x_{ij}\lambda_j$ for input i ($i = 1,2, \dots m$) and the amount of $\sum_{j=1}^{n} y_{rj}\lambda_j$ for output r ($\mathrm{r} = 1,2, \dots \mathrm{s}$). The solution of θ_k^* will always be ≤ 1, since the constrains can be fulfilled at $\theta = 1$, $\lambda_k = 1$ with all other $\lambda_j = 0$, and $s_i^-, s_i^+ = 0$. $\theta_k^* x_{ik}$ ($i = 1,2, \dots m$) can be interpreted as the upper bound of each input x_{ik} needed for the hypothetical efficient firm to produce no less than the amount of each output y_{rk} ($\mathrm{r} = 1,2, \dots \mathrm{s}$) of DMU$_k$. A CCR efficient DMU operates at constant return to scale (CRS) and has $\theta = 1$, while an inefficient DMU has $\theta < 1$.

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9 A weakness of DEA is that the hypothetical frontier can be influenced by random measurement error of the sample DMUs (Anderson 2000).

10 Both studies used total asset as the output measure.

11 This work was built on Farrell (1957), which introduces the concept of relative efficiency and makes the initial effort to evaluate productivity with multiple inputs for single output.

To identify return to scale status of DMUs, all DMUs need to be projected to the efficient frontier first. The projection formula for DMU_k is:

$$\begin{cases} \hat{X}_{ik} = \theta_k^* x_{ik} - s_i^{-*} = \sum_{j=1}^{n} x_{ij}\lambda_j^* & i = 1,2, \dots m \\ \hat{Y}_{rk} = y_{rk} + s_r^{+*} = \sum_{j=1}^{n} y_{rj}\,\lambda_j^* & \mathrm{r} = 1,2, \dots \mathrm{s} \end{cases} \quad (2)$$

where $\hat{X}_{ik}$ is the projection of x_{ik} to the efficient frontier; $\hat{Y}_{rk}$ is the projection of y_{rk} to the efficient frontier. Returns to scale (RTS) can be determined for $(\hat{X}_k,\ \hat{Y}_k)$ with Banker and Thrall (1992) Theorem:

$$\begin{cases} \text{increasing returns to scale (IRS)} & if \sum_{j=1}^{n} \lambda_j^* < 1 \\ constant\ returns\ to\ scale\ (CRS) & if \sum_{j=1}^{n} \lambda_j^* = 1 \\ decreasing\ returns\ to\ scale\ (DRS) & if \sum_{j=1}^{n} \lambda_j^* > 1 \end{cases} \quad (3)$$

Alternatively, we can calculate RTS using BCC model, which assumes the production frontier to have variable returns to scale[12]. Since the CCR model and the BCC model have consistent results on returns to scale status for every DMU, we can choose either model.

In our empirical study, we follow the REIT literature to measure output with total assets, which are decomposed into net property investment, loans and other assets. The inputs are measured with the total expenses of REITs, which is decomposed into interest expense, operating expense, and management expense. The relative efficiency of peer REITs in each sample year is then analyzed.[13] We run the above programming formula for each of our sample observations and identify the return to scale status accordingly. If a REIT with DRS chooses to increase its output, bad growth is identified. Otherwise, the expansion incidents will be identified as good growth.

3.0 Data

Our study sample covers 176 equity REITs that were publicly listed between 1992 and 2012. Since the DEA method compares relative efficiency of similar firms, mortgage REITs and hybrid REITs are excluded from the sample. The sample period is lengthy

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12 BCC model is proposed by Banker, Charnes, and Cooper (1984). Compared with the CCR model, BCC calculates the technical efficiency of DMUs using a production frontier with variable returns to scale. Efficiency score obtained from CCR model (which measures both scale efficiency and technical efficiency) will be no larger than that obtained from BCC model (which measures technical efficiency only). Using BCC model, return to scale status can also be examining by projecting DMUs onto the production frontier.

13 Following the argument that "sample sizes by property types are too small to provide meaningful efficiency results" by Anderson et al. (2002), we did not analyze REITs by asset categories separately.

enough to cover the eras of modern REITs, the New Millennium, as well as the recent subprime crisis. The NAREIT dataset specifies the year of IPO and the asset sector for each REIT. Information on the individual REITs are extracted from their annual financial statements in the SNL REIT database. We use 10-k report and adjust the data for inflation to standardized the figures to US$ in 2012. Data on their corporate governance practices, namely board structure, insider ownership, and block ownership are manually collected from their Proxy statements, which are published annually around March and April. Information on institutional ownership is obtained from Thompson Financial.

Fourteen REITs were dropped from the sample because their financial data were either not available or incomplete in the SNL database. These include three REITs that were delisted less than a year after they were publicly listed; resulting in less than a full financial year data. The above selections leave us a final sample of 176 REITs, or 1568 firm-year observations. In the part of DEA analysis, we also drop another 70 observations that do not have information on outputs and inputs components (including loans to customers by equity REITs, net property investment and other assets, interest expense, operating expense, and management expense). We run DEA for each year using the remaining 1,498 observations. Our goal is to identify whether a REIT is operating at Increasing Returns to Scale, Constant Returns to Scale, or Decreasing Returns to Scale for each of the firm-year observed. The results are reported in the first panel of Table 1.

Insert Table 1 here

We next examine the year-on-year change in their total asset size. 1330 out of the 1498 firm-year observations have information on change in total asset size. To compute growth, we need lagged information on total asset size of each REIT; which resulted in a further 168 observations being omitted. Out of the remaining observations, 874 observations involved growth, i.e. an increase in total assets over the preceding year. Since our study focuses on REIT growth, we omitted 456 observations that are associated with a decline in total assets. We then categorized the 874 growth incidents into "good" and "bad" growth as follows: "good" growths are defined as those operating at increasing returns to scale, and "bad" growths are defined as those operating at declining returns to scale. The results are reported in Table 1, Panel B, which shows that 485 (55.5%) of the incidents could be classified as good growths, and 389 (44.5%) incidents as bad growths.[14] No discernible pattern can be observed, although it is noted that the % of bad growths are higher than average (44.5%) in the following years: 1995 (61.1%), 1997 (59.3%), 1999-2000 (65.0%-70.2%), 2002 (48.0%), 2007-11 (51.0%-72.7%). It appears that market environment may have an impact on the benefits of corporate growth. During the period of the internet bubble (1998-2002) and the subprime crisis (2008-2011), growths are largely value-destroying.

Table 2 presents descriptive statistics of the sample. Institutional ownership refers to the percentage of shares owned by institutional investors, such as pension or investment funds. Insider ownership refers to the amount of shares owned by the REIT manager and directors. Block ownership is the amount of shares owned by shareholders with more than 5% holdings. Board size is the total number of directors on board, while the presence of outside director is measured with the percentage of outside directors on board. CEO duality is a dummy variable, which equals 1 if CEO of a REIT also chairs the board of directors. Compensation structure refers to the percentage of long term compensation in total compensation.[15]

Insert Table 2 here

The average REIT has an asset size of $ 2.6 billion. Confirming the popularity of REITs as an investment vehicle, institutional investors on average owned 65.1% of the REITs stocks. The total debt ratio of the average REIT was 0.562. Block ownership was also considerably high, with a mean of 26.1%. Insider ownership constituted 11.6% of the REIT stocks. With regards to board composition, 48.8% of the REIT CEOs also served as chairman of the board. The average REIT had 8 directors sitting on the board of directors,

[14] Note that a further 73 observations were neutral growths, i.e. they involved REITs increasing their asset size when facing constant returns to scale.

[15] Note that 183 observations have to be dropped due to missing information on institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage.

out of which 72.8% were independent directors. Long term compensation, on average, consisted 29.9% of total compensation of REIT managers.

4.0 Monitoring by Institutional Investors and Creditors

4.1 Univariate Analysis

We divide the sampled REITs into two groups, namely "good growth" and "bad growth", as defined earlier. Table 3 compares their firm attributes. Noticeably, the average "bad growth" REITs ($3.844 b) is more than doubled the size of the average "good growth" REITs ($1.651 b), which is consistent with a diminishing marginal economy of scale as the REITs grow. The ownership structures of the two groups are also significantly different. Specifically, "good growth" REITs have marginally higher level of insider ownership, but lower block ownership. Contrary to the active monitoring role of institutional investors, "bad growth" REITs surprisingly have higher level of institutional ownership. Meanwhile, "good growth" REITs appear to employ marginally more debt in their capital structure, as compared to "bad growth" REITs. This is consistent with the disciplining role of debt. These univariate relationships however should be interpreted with caution since ownership structure is highly correlated with firm size (Below, Stansell, and Coffin 2000; Ferreira and Matos, 2008). For example, we find that bigger REITs have more concentrated institutional ownership and lower insider and block holder ownerships. Thus, the impact of monitoring by institutional investors on growth has to be analyzed within a multivariate context to control for the effect of firm size.

Insert Table 3 here

4.2 Multivariate Regressions

In this section, we employ a probit model to examine the impact of monitoring by the various stakeholders on the probability of REITs exercising good growth. The specification of the probit model is as follows:

$$\Pr(good\ growth = 1|X) \quad = \Phi(X'B) \qquad (4)$$

$$= \Phi(C + B_1 governance + B_2 controls)$$

The dependent variable is a binary variable equivalent to 1 for "good growth" and 0 for "bad growth". The key independent variables in the model are the debt ratio and various monitoring mechanisms, namely ownership structure (proportion of shares owned by institutional investors, insiders and blockowners), compensation structure (proportion of CEO compensation that are tied to long-term corporate performance), and board structure (size, independent directors, and CEO duality) as defined earlier in Table 2.

In addition, we include a set of firm-specific attributes that may influence the firm performance. They are REIT size, age, and leverage. We also control for whether the REIT is structured as an UPREIT and whether it is registered in Maryland. Asset acquisitions by UPREIT can happen at lower price due to tax deferment. The effectiveness of internal governance can differ between Maryland and non-Maryland REITs, since Maryland law offers additional protection against takeovers. Finally, we control for variations across property sectors and over time by including property sector and year fixed effects.

The regression results are reported under the base model (1) in Table 4. Not surprising, total asset size has a significantly negative association with "good growth" REITs. This suggests that growth is less likely to be good for larger firms. The empirical results also show that firm age has a "∩" shape impact on the outcome of growth: growth is most valued for mid-aged firms. Consistent with the monitoring role of institutional investors, we find that the probability for REITs undertaking good growth is associated significantly with the level of institutional investors. The positive coefficient is consistent with the finding of Hartzell, et al. (2006) that institutional investors monitor the investment activities of REITs.[16] The finding is also consistent with Gorton and Schmid (2000) who find that equity ownership of institutional investors can significantly improve firm performance. However, the regression coefficients for independent directors and

[16] The investment styles of REITs have been shown to be sensitive to corporate governance. According to Hartzell, Sun and Titman (2006), governance mechanisms make REIT managers invest less when investment opportunities are not good; in contrast, entrenched managers are prone to have their own investment agendas.

external bankers are not significant. This suggests that they are not as effective as institutional investors in monitoring the managers' decision to expand the companies. The other corporate governance variables, namely insider ownership, block ownership, compensation structure, CEO duality and independent directors are however not statistically significant. The results are robust when the corporate governance variables are expressed in lagged first difference (Model 2) as well as when we redefined corporate expansion to include only growth in net real estate investment (Model 3).

Insert Table 4 here

Our analysis so far has relied on the DEA to segregate the sampled REITs into good growth and bad growth based on corporate expansion. To test the robustness of our results, we expand our sample to include firms that contracted over the sample period, i.e. "good contraction" and "bad contraction". The estimation results are reported under Model (4). It is encouraging to note that our results are robust. In particular, the monitoring role of institutional investors remain significant.

4.3 A Further Test on the Role of Corporate Governance

In this section, we carry out an additional test to evaluate the impact of corporate governance mechanism on the growth of REITs. If good corporate governance leads to a REIT undertaking "good" growth, it can be hypothesized that the elasticity of financial performance to asset size is a function of the corporate governance:

$$\frac{Growth\ in\ performance}{Growth\ in\ size} = f(TA, corporate\ governance) \quad (5)$$

Measuring financial performance by FFO/equity[17], we can indirectly test the above equation with the following regression model:

$$\Delta ln(FFO/equity) = C + \beta_1 \Delta \ln(\text{TA}) + \beta_2 [\Delta \ln(\text{TA}) \times \ln(\text{TA})]$$

[17] While ROE (net profit/equity) is the most frequently adopted indicator for traditional firms, this indicator is less suitable for REIT due to the depreciation is considered as cost real estate assets in accounting sense. In case of REITs, FFO/equity, should be a more suitable indicator to adjust for depreciation

$$+\boldsymbol{B_3}\Delta ln(TA) \times \boldsymbol{governance} + \boldsymbol{B_4 controls} \quad (5)$$

$\Delta ln(FFO/equity)$ represents growth in financial performance, while Δln(TA) represents growth in total assets over the same period. The interaction term $[\Delta Ln(TA) \times Ln(TA)]$ measures the impact of assets growth on performance growth controlling for firm size. Likewise, the corporate governance variables are interacted with growth in total assets.

An arguable endogeneity issue with equation (5) is the potential reserve causality problem between performance and corporate governance, in the sense that firms with good performance may adopt more relax corporate governance. Our identification strategy to address this potential endogeneity through a 2SLS regression using one year lagged governance data as instrument variables. With this specification, we control for the flow of causal relationship from the governance mechanisms in the preceding year to the firm's performance in the current year, but not the reverse. The empirical results using both OLS and 2SLS regression models are presented in Table 5.

The results suggest that the elasticity of financial performance to asset size depends not only on the asset level, but also on corporate governance. Consistent with the previous findings, larger REITs are less likely to benefit from growth in total assets. For the corporate governance variables, the coefficient estimation of $\Delta \ln(TA) \times institutional\ ownership$ is significantly positive, providing additional support that institutional investors can serve as external monitors on growth decisions of REITs.

Insert Table 5 here

5.0 Conclusions

The rapid growth of REITs since the early 1990s attracts extensive study on whether REITs can benefit from expansion. While some growth can be economically justified, we are particularly interested to see that some REITs are still growing even when growth is value-destroying. According to the finance literature on agency conflict, managers are prone to over-grow their firms to maximize their own Interest. Using a sample of equity REITs listed from year 1992 to 2012, we test our hypothesis that the growth of REIT is less likely to be value-destroying under strong discipline of corporate governance mechanisms. Various internal governance mechanisms are examined, including ownership structures, compensation structures, and board structures.

Using Data Envelopment Analysis (DEA), we identify the return to scale status of our sample REIT observations (IRS, CRS, or DRS). "Good growth" is identified if a REIT facing increasing returns to scale choose to increase its total asset size subsequently. "Bad growth" is identified if a REIT facing decreasing returns to scale choose to increase its total asset size subsequently. We further conduct multivariate analysis to test the causal impact of corporate governance and the probability of "good growth". The results suggest that monitoring by institutional investors can reduce (increase) the probability of REITs undertaking bad (good) growth. The results are robust to an alternative way of determined good and bad growth through the REIT stocks performance relative to their sector's performance. Finally, by testing the impact of corporate governance on the elasticity of financial performance to asset size, we find that growth is more likely to enhance the financial performance of REIT when institutional ownership is high.

Since REITs are considered transparent investment vehicles, there are continuing debates on the validity of corporate governance for REITs. By examining firm growth behaviors in the framework of scale efficiency, this paper provides implications for policy makers and managers that corporate governance mechanisms, especially the monitoring of institutional investors, are valid to create better outcomes during the expansion of REITs.

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Figure 1. Expansion of REIT since modern REIT era

This figure plots the change in total asset size for a sample of 176 equity REITs. Both average and median asset size are reported. The values have been inflation adjusted to 2012 USD.

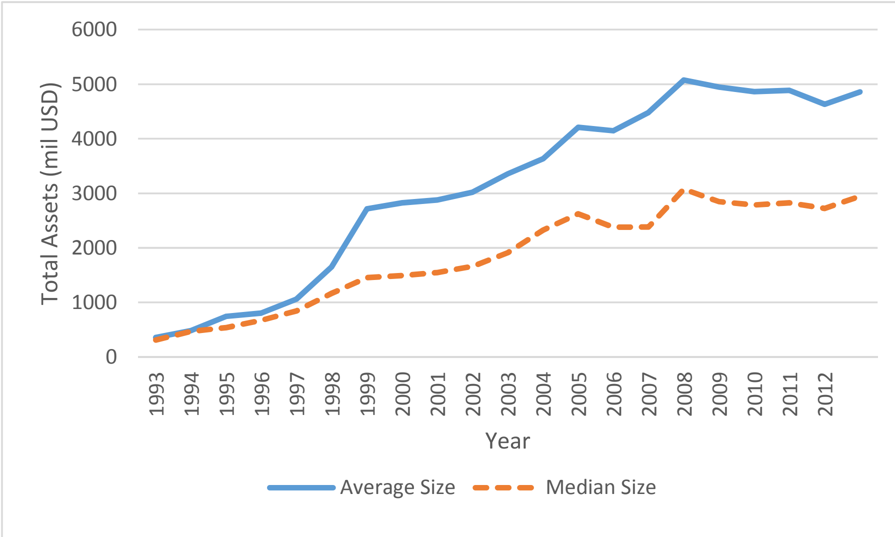

Figure 2. Institutional ownership in equity REITs since modern REIT era

This figure plots change in institutional ownership in equity REITs since the modern era.

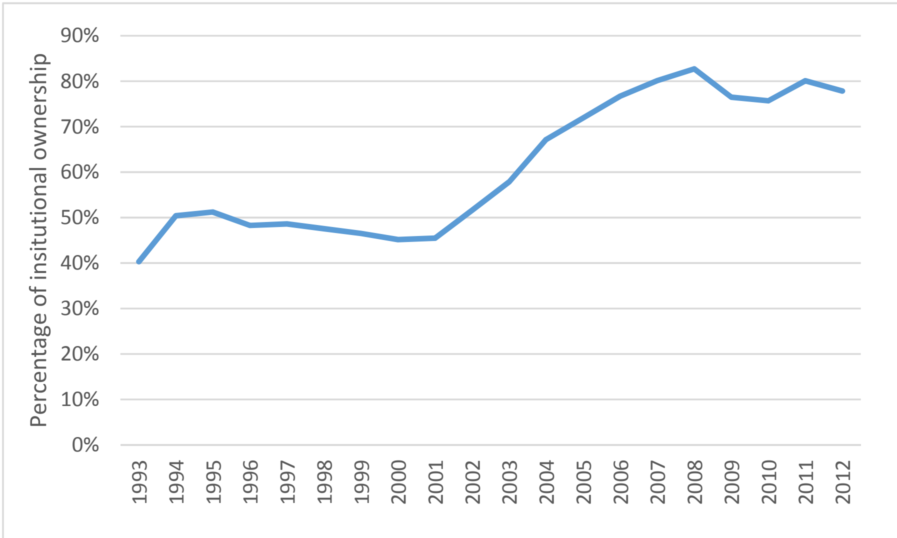

Figure 3

This figure draws the long run cost curve and locates the firms operating at increasing/ decreasing/ constant returns to scale.

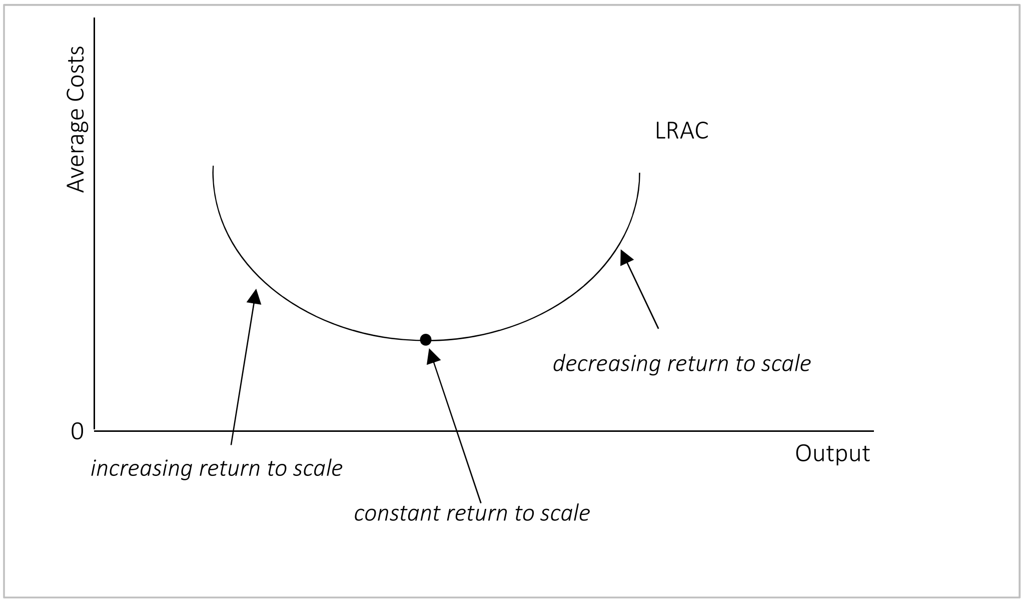

Table 1. Returns to scale (RST) of peer REITs for year (1994-2012)

This table presents the results of Data Envelopment Analysis (DEA) on a sample of 176 equity REITs publicly traded between 1992 and 2012 with information to execute DEA analysis. Panel a. shows the number of firms operating at IRS/ CRS/ DRS for each year from 1994 to 2012 for the1498 observations. Panel b. evaluates the growth of REITs for a sample of 874 observations.

	a. DEA results on return to sale (RST)				b. Evaluation of the growth of REITs		
	IRS	CRS	DRS	total	good growth	bad growth	total
1994	30	6	12	48	19	9 (32.1%)	28
1995	34	10	43	87	14	22 (61.1%)	36
1996	66	5	19	90	45	14 (23.7%)	59
1997	32	6	52	90	24	35 (59.3%)	59
1998	75	6	20	101	52	10 (16.1%)	62
1999	29	9	63	101	21	39 (65.0%)	60
2000	37	5	55	97	14	33 (70.2)	47
2001	48	9	31	88	27	17 (38.6%)	44
2002	35	7	37	79	26	24 (48.0%)	50
2003	57	3	14	74	36	10 (21.7%)	46
2004	49	6	21	76	36	12 (25.0%)	48
2005	46	7	30	83	31	15 (32.6%)	46
2006	47	5	23	75	31	18 (36.7%)	49
2007	31	7	28	66	25	26 (51.0%)	51
2008	17	6	42	65	15	20 (57.1%)	35
2009	17	6	42	65	11	16 (59.3%)	27
2010	12	6	49	67	9	24 (72.7%)	33
2011	25	7	44	76	18	25 (58.1%)	43
2012	41	5	24	70	31	20 (39.2%)	51
total	**762**	**120**	**616**	**1498**	**485**	**389 (44.5%)**	**874**

Table 2. Descriptive statistics of firm characteristics

This table presents descriptive statistics of firm characteristics. The sample includes 176 equity REITs for 874 observations. Panel a. defines and summarizes the variables. Information on firm characteristics (institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage) are missing for 50 observations. Panel b. presents descriptive statistics of net changes in governance variables. Another 363 observations are dropped due to missing information on log change in governance variables.

Panel a. descriptive statistics of firm characteristics in level data

Variable	Definition	Mean	Std.Dev.
INSTI_OWN	% of shares owned by institutional investors	0.651	0.262
INSIDER_OWN	% of shares owned by both executives and directors.	0.116	0.114
BLOCK_OWN	% of shares owned by shareholders with more than 5% ownership as declared in Proxy statement	0.261	0.171
SALARY	% of long-term compensation (option grants and stock grants) in total compensation	0.299	0.239
CEO_DUALITY	Dummy variable equals 1 if the CEO and Chairman is the same person	0.488	0.500
IND_DIRECTOR	No. of outside director over total number of directors	0.728	0.102
NUM_DIRECTOR	Total number of directors on board	7.981	1.944
SIZE	Total assets (in $ million)	2643.3	3764.1
DEBT	Debt to asset ratio	0.562	0.151
AGE	Age of REIT from IPO (in years)	6.715	4.831

Panel b. descriptive statistics of governance variables in increments

Variable	Mean	Std.Dev.
INSTI_OWN	0.0371	0.1530
INSIDER_OWN	-0.0785	0.4090
BLOCK_OWN	0.0030	0.4667
SALARY	0.0957	0.8460
IND_DIRECTOR	0.0070	0.0802
NUM_DIRECTOR	0.0136	0.1115
DEBT	0.0154	0.1550

Table 3. Characteristics of "Good Growth" REITs versus "Bad Growth" REITS

This table shows difference in mean comparison for a set of firm characteristics for the good growth sample and bad growth sample. The variables are defined according to Table 3. The original sample is from 176 equity REITs listed between 1992 and 2012 with a total of 1568 firm year observations, among which 1498 observations have adequate information to execute DEA analysis. 874 out of the 1498 observations experience growth in total asset size. Panel a. shows difference in mean comparison of firm characteristics in level data. Information on firm characteristics (institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage) are missing for 50 observations. For the remaining 824 observations, 451 observations are identified as good and 373 observations are identified as bad. Panel b. shows difference in mean comparison of governance variables in increment data. Another 363 observations are dropped due to missing information on log change in governance variables. For the remaining 461 observations, 217 observations are identified as good and 244 observations are identified as bad.

Panel a. Difference in mean comparison of firm characteristics in level data

	mean		
Firm attributes	Good growth	Bad growth	Difference in mean
INSTI_OWN	0.6032	0.7084	-0.1052***
INSIDER_OWN	0.1201	0.1110	0.0091
BLOCK_OWN	0.2422	0.2830	-0.0408***
SALARY	0.2869	0.3139	-0.0270
CEO_DUALITY	0.5033	0.4692	0.0342
IND_DIRECTOR	0.7264	0.7296	-0.0032
NUM_DIRECTOR	7.6541	8.3753	-0 .7212***
DEBT	.5710	.5520	0.0191*
AGE	6.2262	7.3056	-1.0794***
SIZE	1,650.319	3,843.920	- 2,193.602***
Number of observations	451	373	

Panel b. Difference in mean comparison of governance variables in increments

	mean		
Firm attributes	Good growth	Bad growth	Difference in mean
INSTI_OWN	0.0608	0.0160	0.0447***
INSIDER_OWN	-0.0388	-0.1137	0.0749*
BLOCK_OWN	0.0130	-0.0058	0.0188
SALARY	0.1207	0.0734	0.0473
IND_DIRECTOR	0.0074	0.0066	0.0007
NUM_DIRECTOR	0.0089	0.0177	-0.0087
DEBT	0.0251	0.0067	0.0184
Number of observations	217	244	

Table 4. Probit regression results

This table shows regression results of mode $Pr(good\ growth = 1|X) = \Phi(C + \boldsymbol{B_1 governance} + \boldsymbol{B_2 controls})$. Dependent variable is good growth, which equals 1 (0) for good (bad) growth. In model (1) good (bad) growth is identified if growth in total assets lead to CRS/IRS (DRS). The governance variables (institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage) are in level data. In model (2), good (bad) growth is identified if growth in total assets lead to CRS/IRS (DRS). The governance variables are in increment data. In model (3), good (bad) growth is identified if growth in net real estate investment lead to CRS/IRS (DRS). The governance variables are in increment data. In model (4), we include both the growth sample and the contraction sample. Good (bad) growth is identified if growth in total assets lead to CRS/IRS (DRS). The governance variables are in increment data. 874 observations with growth in total asset size can be identified as good/bad using DEA analysis. Information on firm characteristics (institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage) are missing for 50 observations. Another 363 observations are dropped due to missing information on log change in governance variables. 461 observations are left in the baseline model. T-stats are in parenthesis, ***p<0.01, ** p<0.05, * p<0.1.

VARIABLES	(1)	(2)	(3)	(4)
INSTI_OWN	1.179*	1.272**	1.202**	0.849**
	(1.684)	(2.155)	(2.131)	(2.085)
INSIDER_OWN	-2.442	0.273	0.274	0.166
	(-1.595)	(1.323)	(1.347)	(1.180)
BLOCK_OWN	0.348	0.00120	0.0253	0.103
	(0.520)	(0.00731)	(0.158)	(0.819)
SALARY	0.178	0.0521	0.0622	-0.0173
	(0.383)	(0.579)	(0.695)	(-0.243)
CEO_DUALITY	-0.0829	-0.0464	-0.0398	-0.319**
	(-0.426)	(-0.236)	(-0.208)	(-2.364)
IND_DIRECTOR	-0.217	1.168	0.938	0.962
	(-0.218)	(1.256)	(1.017)	(1.279)
NUM_DIRECTOR	-0.0319	-0.354	-0.453	-0.213
	(-0.534)	(-0.543)	(-0.704)	(-0.427)
DEBT	0.737	0.505	0.455	0.578
	(0.907)	(0.923)	(0.846)	(1.291)
Ln(SIZE)	-0.735***	-0.702***	-0.638***	-0.150*
	(-4.738)	(-5.033)	(-4.787)	(-1.868)
AGE	-0.00222	-0.00981	-0.00995	0.00149
	(-0.0622)	(-0.278)	(-0.289)	(0.0642)
UPREIT	0.0972	-0.106	0.0200	-0.212
	(0.274)	(-0.305)	(0.0606)	(-0.909)
Maryland	-0.0778	-0.105	-0.181	-0.0774
	(-0.314)	(-0.425)	(-0.756)	(-0.494)
Year fixed	Y	Y	Y	Y

Asset-sector fixed	Y	Y	Y	Y
Observations	461	461	462	614
Number of firm	94	94	95	103
chi2	77.77	78.66	77.50	61.70
Prob>chi2	0.000	0.000	0.000	0.003
Growth measurement	Total assets	Total assets	Net RE inv	Total assets
Sample	Growth sample	Growth sample	Growth sample	Full sample
Governance variables in level/increment	level	increment	increment	increment

Table 5. Additional Tests

This table presents estimation results of model $\Delta ln(FFO/equity) = C + \beta_1 \ln(SIZE) + \beta_2 GROWTH \times \ln(SIZE) + \boldsymbol{B_3} GROWTH \times \boldsymbol{governance} + \boldsymbol{B_4 controls}$. Dependent variable is growth in FFO/equity, which equals ln(FFO/equity)$_t$ - ln(FFO/equity)$_{t-1}$. GROWTH equals $\ln(SIZE) - \ln(SIZE)_{t-1}$. The interaction term $GROWTH \times \ln(SIZE)$ captures potential impact of economies of scale. Model (3) is estimated with OLS, The original sample is from 176 equity REITs listed between 1992 and 2012 with a total of 1568 firm year observations, 912 out of 1568 observations experience increases in total asset size. Another 185 observations are dropped due to missing information on growth in FFO/equity, institutional ownership, insider ownership, block ownership, CEO duality, board size, percentage of outside board and leverage. The final sample of model (3) include 727 observations. Model (4) further addresses potential endogeneity of governance variables with 2SLS using one year lagged governance variables (45 missing variables) as instruments. T-stats are reported in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

	(5)	(6)
VARIABLES	OLS	2SLS
GROWTH	0.651	2.173
	(0.848)	(1.325)
GROWTH ×Ln(SIZE)	-0.0780*	-0.141**
	(-1.707)	(-2.292)
GROWTH×INSTI_OWN	1.256***	1.817**
	(3.443)	(2.259)
GROWTH×INSIDER_OWN	-0.287	-1.377
	(-0.509)	(-1.312)
*GROWTH×BLOCK_*OWN	0.0177	-1.872
	(0.0372)	(-1.558)
GROWTH×SALARY	0.154	-0.734
	(0.523)	(-0.724)
GROWTH×CEO_DUALITY	0.117	0.112
	(0.863)	(0.486)
GROWTH×IND_DIRECTOR	-0.896	-1.531
	(-1.284)	(-0.878)
GROWTH×NUM_DIRECTOR	-0.0217	0.00392
	(-0.591)	(0.0466)
GROWTH×DEBT	-0.0267	0.000135
	(-0.739)	(0.00319)
AGE	-0.00863	-0.000606
	(-0.506)	(-0.0350)
$(AGE)^2$	0.000582	0.000125
	(0.667)	(0.142)
DEBT	0.0116	0.0119
	(1.352)	(1.255)
INSTI_OWN	0.0100	-0.186
	(0.0882)	(-0.983)

INSIDER_OWN	0.0940	0.230
	(0.463)	(0.767)
BLOCK_OWN	0.0101	0.242
	(0.115)	(0.911)
SALARY	0.0902	-0.0345
	(0.453)	(-0.0989)
CEO_DUALITY	0.00273	0.0169
	(0.240)	(0.875)
IND_DIRECTOR	0.0236	0.0409
	(0.578)	(0.725)
NUM_DIRECTOR	-0.0765	0.269
	(-0.555)	(1.022)
UPREIT	0.000118	-0.0213
	(0.0471)	(0.0731)
MARYLAND	-0.00736	0.0355
	(-0.210)	(0.722)
Year fixed	Y	Y
Asset-sector fixed	Y	Y
Observations	727	682
Number of firm	138	130

Appendix

Table 1A. Descriptive statistics on stock performance of REITs that choose to grow

This table shows excess annual return (over asset-sector market index) for a sample of 849 firm-year observations between 1992 and 2012. Holding period return for individual REITs are obtained from CRSP; sector return are obtained from FTSE NAREIT US Real Estate Index Series. The sample is grouped into two according to positive/negative excess return. *** p<0.01, ** p<0.05, * p<0.1

	#obs	mean excess return	Std. Dev.	t-stats (H_0: mean=0)
Positive excess return	449	0.1385***	0.3341	8.7841
Negative excess return	400	-0.1204***	0.1183	-20.3542
Total	849	0.0165	0.2929	1.6412

Table 2a. Correlation matrix

This table shows the pairwise correlation of a set of firm characteristics. The variables are defined according to Table 3. *** p<0.01, ** p<0.05, * p<0.1.

	AGE	*SIZE*	*INSIDER_OWN*	*INSTI_OWN*	*SALARY*	*NUM_DIRECTOR*	*IND_DIRECTOR*	*CEO_DUALITY*	*BLOCK_OWN*
AGE	1								
SIZE	0.3657***	1							
INSIDER_OWN	-0.1465***	-0.1402***	1						
INSTI_OWN	0.3711***	0.3422***	-0.3669***	1					
SALARY	0.2322***	0.2154***	-0.1671***	0.3366***	1				
NUM_DIRECTOR	0.2801***	0.3951***	0.0400	0.1545***	0.0339	1			
IND_DIRECTOR	0.1434***	0.0733**	-0.0601	0.0296	0.1313***	0.1189***	1		
CEO_DUALITY	-0.0758*	-0.1165***	0.0468	-0.2161***	-0.0224	-0.0474	0.0202	1	
BLOCK_OWN	0.2192***	0.1197***	-0.1207***	0.4941***	0.1127***	0.1965***	0.1651***	-0.1357***	1