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## Ceo Incentive-Based Compensation and Reit Performance

Magdy Carolina Noguera

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CEO INCENTIVE-BASED COMPENSATION  
AND REIT PERFORMANCE

By

Magdy Carolina Noguera

A Dissertation  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy  
in Business Administration (Finance)  
in the Department of Finance and Economics

Mississippi State, Mississippi

May 2007

CEO INCENTIVE-BASED COMPENSATION  
AND REIT PERFORMANCE

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This research examines the relation between incentive-based compensation and subsequent Real Estate Investment Trust (REIT) performance as well as the determinants of incentive-based compensation for REITs. It is proposed that REITs either rely on incentive-based compensation to substitute for poor corporate governance practices or may not need to rely excessively on incentive-based compensation to align managers and shareholder interests, given their heavily regulated nature and their corporate governance practices.

Using a sample of publicly traded equity, hybrid, and operating REITs for the 1999-2003 period, a negative relationship was found between incentive based compensation awards and subsequent stock returns for REITs. Interestingly, this relation is not found when return on assets (ROA) is the measure of performance. These results

imply that excessive incentive-based compensation negatively impacts future REIT performance from a market perspective, but not an accounting perspective.

With regard to the determinants of incentive based compensation, it was found that CEO ownership, board of director characteristics, and institutional ownership are consistent determinants of the level of incentive based compensation awarded to REIT CEOs.

Overall, the results imply that REIT corporate governance practices substitute for incentive-based compensation, but still, the level of incentive-based compensation paid to REIT CEOs is excessive up to the point that it negatively affects subsequent REIT performance.

JEL Classification: G30; G32; G34

Keywords: Incentive-Based Compensation, Performance-Based Compensation, REITS

## DEDICATION

I would like to dedicate this research to my family and friends.

I am profoundly grateful to my mother, Maria Anderico, for her unconditional love, support, and positive influence in my life. She fostered in me the values of independence, integrity, and humanism, among many others.

I am also especially grateful to my father, Vicente Noguera, for his key influence in my character. He nurtured my love for books, my attitude to question everything, and dare to do anything.

Finally, I wish to dedicate my work to:

My siblings, as a show of how proud I am of all of you,

My friends, for being by my side and bring joy to my life, all the time; and,

God, for giving me the strength and ability needed to enjoy the gift of life.

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# CHAPTER 1

## INTRODUCTION

Agency problems are ubiquitous in corporate finance literature and a continuous concern for corporate America. Thus, compensation contracts for CEOs and corporate managers are commonly designed to encourage these agents to act in the best interests of shareholders. Interestingly, there is empirical evidence that compensation practices vary across industries. For example, Ittner, Lambert, and Lacker (2003) document that the use of stock options and restricted stock in high-tech, new-economy firms substantially exceeds the equity compensation in large, old-economy manufacturing firms. Murphy (2003) and Bryan and Hwang (2000) state that the use of managerial stock options is extremely common, but options are used less frequently in highly regulated utility industries. This implies that direct monitoring by regulators reduces the need for CEO stock option awards.

Building on the results in Bryan and Hwang (2000), this dissertation focuses on the highly regulated Real Estate Investment Trust (REIT) industry. In order to maintain their federal tax-exempt status, REITs must meet several conditions. First, they must distribute 90 percent of taxable income as dividends. Second, qualified REITs must have at least 100 shareholders while adhering to the five or fewer rule, a prohibition against

five or fewer shareholders owning 50 percent or more of the shares. Third, they must have at least 75 percent of their assets invested in real estate oriented investments, cash, and/or government securities. Finally, they must generate at least 75 percent of their income from rent, mortgages, and the sale of property. Given the fact that they are highly regulated financial firms yet pay substantial incentive-based compensation, REITs should provide an interesting laboratory to investigate performance-based managerial compensation.

For the purpose of this study, incentive-based compensation is defined as long-term compensation including stock options, restricted stock, and long-term incentive plan awards. It is different from equity based compensation because incentive-based compensation includes long term incentive plans whose payoff is not necessarily equity. For instance, long term incentive plans (LTIPs) include specific compensation once set performance goals are attained for a period longer than one fiscal year from the date of the award. The performance measure can be in terms of accounting ratios or equity prices, and the actual payoff can be in cash, equity, or a combination thereof. Incentive-based compensation is also different from performance-based compensation because incentive-based compensation is forward-looking; thus, it refers to compensation awarded to CEOs as incentive for long-term future executive performance.

In contrast to the large amount of research conducted on CEO compensation for typical corporate firms and despite the growing usage of different incentive compensation vehicles in CEOs compensation contracts, the topic of incentive based compensation has yet to be fully examined in the context of REITs. There are many reasons for this void in the real estate literature. Most notably, limitations on data availability may have led most

previous REIT studies to focus on cash and total compensation<sup>1</sup> rather than on incentive-based compensation, or even equity-based compensation.

This dissertation contributes to the literature by addressing three previously unexplored topics in the REIT managerial compensation research. First, the relation between incentive-based compensation and subsequent performance is determined. The alignment of interest hypothesis states that managerial remuneration is a device used to align the interests of shareholders and, thus, suggests a positive relation between compensation and subsequent performance. By using panel-data econometric techniques in balanced and unbalanced panel datasets for the period 1999-2003, it is tested the impact of incentive-based compensation on one and three-year subsequent performance as measured by ROA and stock returns.

Second, it is analyzed how various economic variables and monitoring mechanisms impact the decision to pay incentive-based compensation using a logistic fixed-effect regression methodology.

Third, the determinants of incentive-based compensation are examined. While the determinants of total and cash compensation have been directly examined in the context of REITs, the literature had not yet specifically examined what determines the level of incentive-based compensation paid to REIT CEOs. Given the strict nature of the regulatory requirements for firms that elect REIT status, it is reasonable to assume that

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<sup>1</sup> Ghosh and Sirmans (2005) work on the effect of board structure on CEO compensation and find that CEO compensation is higher when the board of directors are not independent and are subject to CEO influence. Hardin (1998) works on the determinants of cash compensation and finds that a REITs size, type, and the number of years since IPOs took place are all positively related to cash compensation, while the dividend cash flow to senior executive is negatively related. Chopin et al (1995) analyzes the relation between a CEO's total compensation and sales and profits (as performance measures) and finds a positive relation between sales and compensation, but little impact of profits on compensation.

these regulations affect REIT corporate governance mechanisms and thus affect the need for and level of incentive-based compensation. For example, Campbell, Ghosh, and Sirmans (2001) attribute the lack of hostile takeovers among REITs to their regulatory environment. They argue that the disperse ownership for REITs, resulting from the five or fewer rule, diminishes the effectiveness of monitoring by the market for corporate control and makes board and other monitoring mechanisms more critical. On the other hand, if regulations limit managerial discretion over corporate decision making, a corporate governance is likely to be less critical.

Using Ghosh and Sirmans (2005) as a guide, the determinants of incentive-based compensation in light of the structure of the board of directors, CEO ownership, the level of debt contracting, institutional holdings, and other factors, such as firm size, investment opportunities, prior year performance, and other economic determinants are examined. However, this study refines Ghosh and Sirmans' (2005) study by examining the effect of institutional ownership rather than that of blockholder ownership. Although blockholders may be effective monitors of management, generally by exerting hostile takeovers (Gorton and Kahl, 1999), blockholders are limited in the REIT industry because of the five or fewer rule. In contrast, institutional shareholders are not subject to the same rule, are permanent block holders, and can provide some monitoring of management. To address endogeneity concerns, a two-stage least squares procedure is used for the period of 1999-2003, where compensation, performance, and CEO ownership are treated as endogenous variables.

This study supplements Pennathur, Gilley, and Shelor's (2005) results in the determinants of option awards. They find a negative relation between changes in stock

returns and option awards, and they also find a negative relation between stock returns and the options award mix, or ratio of awarded stock options to cash compensation. They suggest that such findings may be due to the fact that their sample covers the period of 1997-2000, and during the years of 1998 and 1999, REITs experienced negative returns, most likely due to investor preference for high-tech companies' stocks at the time. Therefore, to the extent that their findings may be driven by the market conditions of that time, their results may not be robust. In contrast, this study analyzes the determinants of incentive-based compensation for the generally REIT friendly time span of January 1, 1999, through December 31, 2003, as indicated by the NAREIT index level<sup>2</sup>.

This research effort also complements Delcoursé's (2005) work. She analyzes executive compensation in terms of salary, bonus, and long-term compensation for 32 REITs between 1999 and 2001 and finds a positive relation between long-term compensation and CEO stock ownership and volatility of funds from operations (FFO). Also, she finds a negative relation between long-term compensation and institutional ownership. Her results support both the "passing-the-baton" hypothesis and the "substitute" hypothesis. The "passing-the-baton" hypothesis states that boards under the influence of CEOs award larger compensation, whereas the "substitute" hypothesis states that monitoring by boards, in the presence of other monitoring mechanisms, makes incentive compensation less needed and, thus, lower. Although very similar to this study where Delcoursé's (2005) analyzes the determinants of the different forms of REIT CEO

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<sup>2</sup> The levels of the NAREIT composite index were 1,099 (year 1998), 1,019.39 (year 1999), 1,288.51 (year 2000) in accordance to NAREIT and 1,494.65 (year 2001), 1,572.61 (year 2002), 2,177.53 (year 2003), 2,839.7 (year 2004) in accordance to FTSE NAREIT

compensation, her study has several issues addressed here. First, her long-term compensation measure does not include the value of stock options granted in any given year. Second, her results may not be reliable due to the relatively small sample size of only 32 firms. Third, she ignores important determinants of compensation cited by Ghosh and Sirmans (2005), such as firm size, previous year performance, and the structure of the board of directors. Fourth, her econometric models do not address the simultaneity between CEO ownership and compensation.

To summarize the findings of this dissertation, contrary to the expectations, it did not find a positive relation between compensation and subsequent performance. Instead, a negative relation between incentive-based compensation and subsequent stock return was obtained. Interestingly, such relation is not found when ROA is the measure of performance. The partial result for the case of stock returns is consistent with the findings of Pennathur, Gilley, and Shelor (2005) in the relation between change in stock returns and stock option awards but inconsistent with agency theory and other findings, Ryan and Wiggins (2000) and Scott, Anderson, and Loviscek (2001). Clearly, incentive-based compensation is not an effective bonding mechanism for REIT CEOs since it is not enhancing REIT performance. Finally, as far as the determinants of incentive based compensation, the study finds that CEO ownership, whether the CEO chairs the board or not, board size, and institutional ownership are consistent determinants of the level of incentive based compensation awarded to REITs CEOs. In addition, the study finds that retail, industrial, mixed, and health care REITs pay more incentive-based compensation to their CEOs than self-storage REITs do.

The remainder of this dissertation proceeds as follows. Chapters 2 and 3 investigate the current research in the area of REIT executive compensation. Chapter 2 examines the major theories explaining the relation between managerial compensation and firm performance. Also, the empirical evidence supporting or rejecting these theories is discussed. Chapter 3 presents the theories surrounding the determinants of executive compensation, the empirical evidence on these theories as presented in corporate finance and REIT literature, and the testable hypotheses. Chapter 4 presents the data and provides details on the empirical models. Chapter 5 presents the results on the relation between incentive-based compensation and REIT performance. Chapter 6 presents the results for the decision to pay and determinants of incentive-based compensation. Chapter 7 provides the dissertation conclusion. Please note, in accordance with Mississippi State University policies on dissertations, all tables and figures are grouped at the end of the chapter in which they are first cited in the text.

## CHAPTER 2

### COMPENSATION AND FIRM PERFORMANCE

This chapter discusses the literature and empirical evidence on the relation between CEO compensation and firm performance. In addition, it develops the research hypothesis for testing such relation. Section 2.1 discusses the relevant literature for REITs.

As originally described by Jensen and Meckling (1976), the traditional principal-agent problem found in the agency theory literature is based on the situation where a CEO has incentives and goals that are in direct conflict with the best interests of shareholders. Compensation schemes are one of several mechanisms employed to alleviate such situations. Agency theory states that when managerial actions are unobservable, optimal incentive contracts are needed to link the manager's wealth to firm value in order to induce managers to behave in the best interest of shareholders. However, empirical evidence shows that not all forms of compensation provide effective alignment incentives.

Studying the pay-performance sensitivity of CEO wealth, Jensen and Murphy (1990) and Hall and Liebman (1998) demonstrate that cash compensation is a poor alignment mechanism. First, Jensen and Murphy (1990) examine the 1974–1988 period

and find a median change in CEO wealth of \$2.59 per \$1,000 change in shareholder wealth, or approximately 0.26 percent. Using a more recent sample period of 1980–1994, Hall and Liebman (1998) find that cash compensation sensitivity to performance is 0.22. Thus, they show that CEO cash compensation, defined as annual salary plus cash bonus, and firm performance are somewhat dissociated. They conclude that cash compensation does not provide alignment incentive for managers to act in the best interest of shareholders.

In contrast to the results for cash compensation, researchers have found a stronger link between performance and stock-based compensation. Hall and Liebman (1998), Lewellen, Loderer, and Martin (1987), and Core, Guay, and Lacker (2003) suggest that equity-based compensation vehicles are more appropriate to provide alignment incentive to CEOs. Hall and Liebman (1998) find that CEO ownership and stock options create a strong link between firm performance and changes in CEO wealth. The reasons are simple. Salary compensation is paid regardless of firm performance. If shareholders want performance, they must tie CEO compensation directly to performance, typically, stock performance for long-term incentive compensation or accounting performance for annual bonus. This also seems to be understood outside of academic circles. In fact, Hall and Liebman (1998) find that stock options constitute an important fraction of total compensation in their sample. For instance, the mean value of stock options granted was about 25 percent of the total direct compensation during the period of 1982–1984, but it increased to approximately 50 percent of total direct compensation a decade later, 1992–1994. In short, from Jensen and Murphy (1990) and Hall and Liebman (1998), one can conclude that it is how CEOs are paid, not how much they are paid, that matters.

There are relevant considerations regarding the usage of incentive compensation as an alignment mechanism, though. First, as noted by Stammerjohan (2004), equity-based compensation appears to encourage short-term rather than long-term performance, a non-maximizing shareholder wealth practice. Second, researchers have argued that the design of executive compensation creates its own agency problems. For example, Bebchuk and Fried (2003) state that due to the dispersed ownership of publicly traded companies, managers do have influence over their own pay arrangements and use that power to favor weak and even perverse incentives. Jensen (2005) mentions that the usage of equity-based compensation has exacerbated the agency costs of overvalued equity, a value destruction practice. Efendi, Srivastava, and Swanson (2004) provide empirical support to these hypotheses. However, Thatcher (2005) provides a less radical explanation for the existence of imperfect incentive compensation schemes. She suggests that companies may have been historically unable to use better performance incentives simply because of their accounting treatment under Accounting Principles Board opinion number 25 (APB 25) and the challenge of designing meaningful and understandable performance objectives for the awards

Continued research on compensation is needed for two important reasons. First, boards can choose incentive remuneration vehicles rather than equity-based compensation vehicles. For instance, long-term performance plans can be distributed in cash, equity, or any combination thereof. In these cases, it is important to assess the efficiency of these alternative forms of incentive compensation. Second, compensation practices change across time. For example, stock options have been extremely popular over the last two decades due to their favorable accounting treatment. However, this

artificial bias in favor of stock options is likely to disappear with the mandatory expensing of stock options that became effective in January 2006. As noted by Thatcher (2005), other forms of incentive-based compensation, such as restricted stock, have become increasingly popular in CEO compensation contracts for both REITs and non-REITs.

Given that firms will potentially switch among incentive vehicles in response to specific performance goals or changes in rules and regulations, this study concentrates on incentive-based compensation rather than on equity-based compensation. Equity based compensation studies focus solely on stock options, restricted stock, or a combination thereof. Both equity based compensation and LTIPs, designed as an alignment mechanism under the agency theory framework, have been widely studied for non-REITs, but the determinants of incentive-based compensation for REIT CEOs and its effect on REIT performance remain a timely empirical question. Therefore, this study examines the relation between incentive-based compensation and REIT performance.

There is empirical evidence in the relation between some forms of incentive-based compensation and performance for non-REITs. Mehran (1995) examines the relation between CEO equity-based compensation, stock ownership, and firm performance. He finds that performance is positively related to both equity-based compensation and insider ownership. More recently, Stammerjohan (2004) examines the relation between different forms of compensation and subsequent (1, 3, and 5-year) stock returns. He concludes that stock options provide CEOs with incentives for maximizing firm value in the long-run while annual bonuses, which are short term reward compensation, are effective short-term incentives.

In an agency theory framework, compensation should be structured to serve as an incentive for managers to act on the best interest of shareholders. Specifically, the literature provides empirical evidence that distinct types of compensation provide different incentives to managers. As suggested by Stammerjoham (2004) and Lewellen, Loderer, and Martin (1987), annual bonuses, which are considered part of cash compensation in the compensation literature, are intended to be short-term incentives. In contrast, stock options, restricted stocks, and long-term performance plans are typically designed as long-term compensation. These types of incentive-based compensation should alleviate a specific agency problem, the horizon problem. The horizon problem is a distinct aspect of the agency conflict between shareholders and managers. It states that since managers are not sure about their duration of employment with the corporation, they may tend to make managerial decisions to maximize current or short-term performance instead of long-term performance, which is more consistent with shareholder value maximization. Thus, it is hypothesized that

*H<sub>1</sub>: Incentive-based compensation positively impacts long-term REIT performance.*

If incentive-based compensation shows a positive relation to long-term subsequent performance, this result would be consistent with the alignment of interest hypothesis. On the other hand, a negative relation or evidence of no relation between these two variables would question the reason REIT CEOs are paid incentive based compensation. However, as posited by Agrawal and Knoeber (1996), a finding of no relation between incentive-based compensation and REIT performance could be due to the highly regulated nature of the REIT industry. Put simply, since other monitoring and

alignment mechanisms are in place, greater use of incentive-based compensation does not need to be positively related to REIT performance.

## **2.1. The Evidence for REITs**

The effect of managerial compensation on performance has been examined in the context of REITs to some extent. For example, Cannon and Vogt (1995) find a positive relation between cash salary and annual REIT stock returns. However, Alshimmiri (2004) finds a weak negative relation between cash compensation and firm performance as measured by Tobin's Q. More recently, Ghosh and Sirmans (2005) find that total and cash compensation are positively related to contemporaneous performance as measured by ROA and ROE. However, these studies do not focus on incentive-based compensation. To our knowledge, there is no study that investigates the relation between incentive-based compensation and subsequent REIT performance.

Scott, Anderson, and Loviscek's (2001) investigate the link between performance compensation, defined as total compensation minus cash compensation, and REIT market performance. They find a positive relation between current performance compensation and previous year REIT stock returns, which implies that REIT market performance is an even more important explanatory variable of performance-based compensation than prior research suggested. However, Scott, Anderson, and Loviscek (2001) have limited relevance to this study for two reasons. First, their sample does not include the value of stock options, an important component of incentive-based compensation. In fact, the 2003 SNL Financial Review reports that options constituted 21.4 percent of total compensation in 2002, and restricted stock composed 23.1 percent of total option-

adjusted compensation in 2002.<sup>3</sup> It seems troublesome to investigate performance-based compensation while leaving out approximately 23.1 percent of the incentive-based compensation. Second, they examine the effect of trailing REIT returns on the incentive components of compensation. In contrast, this study seeks to fill the gap in the literature by examining the relation in the opposite direction; that is, the effect of all forms of incentive-based compensation on subsequent REIT performance

An aggregate measure for incentive-based compensation is used. It is acknowledged that using an aggregate measure can be a limitation in the study. As noted by Stammerjohan (2004), an aggregate incentive-based compensation measure is imperfect since not all compensation arrangements provide the same incentives. For example, Thatcher (2005) affirms that stock options and restricted stock provide two very different incentives to the CEO. Restricted stock, as a full-value award, does not provide as much leverage or as strong of an incentive for performance as do stock options or SARs because the restricted stock continues to have value even if the stock price decreases over the vesting period. A grantee benefits if the value increases, but they do not suffer a complete loss if the stock price declines. Bryan and Hwang (2000) conclude that restricted stock is relatively inefficient in inducing risk averse CEOs to accept risky, value-increasing investment projects due to its linear payoffs. However, as noted by Thatcher (2005), restricted stock has a stronger retention power than options or SARs. The separate analysis of each form of incentive-based compensation constitutes material for future research.

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<sup>3</sup> The Executive Compensation Review in the 2003 edition of SNL Real Estate Securities Weekly, available at [http://www.snl.com/real\\_estate/archive/20030721.asp](http://www.snl.com/real_estate/archive/20030721.asp)

## CHAPTER 3

### THE DETERMINANTS OF COMPENSATION

Much of the existing empirical work in CEO compensation concentrates on how various characteristics of the firms are associated with different compensation schemes. In general, monitoring and alignment mechanisms, as well as economic determinants, have been found to affect the value maximizing structure of CEO compensation. Section 3.1 discusses the empirical findings and states the research hypotheses on the relation between corporate governance mechanisms and CEO compensation. Section 3.2 discusses the empirical evidence in the relation between economic determinants and compensation. A summary of the major empirical studies is provided in Table 3.1.

#### **3.1. Governance Structure and Compensation Determinants**

Corporate governance practices have been found to influence compensation. Board composition, CEO ownership, and debt monitoring are common devices used to alleviate agency problems; however, empirical findings are mixed as to what extent and effect these monitoring and alignment mechanisms are associated with compensation practices.

### ***3.1.1. CEO Ownership***

In the context of agency theory, a one-to-one relation between firm value and CEO ownership would seem to minimize agency costs; however, as noted by Hall and Liebman (1998), this idea overlooks two practical considerations. On one hand, it is impossible and impractical for managers to have significant ownership in the companies they manage because this would require an enormous amount of CEO wealth and it would force CEOs to ignore the fundamental principle of diversification. Moreover, excessive CEO ownership has a perverse effect on manager's attitude towards risk. If managers are risk averse, excessive CEO ownership distorts the original incentive since their personal wealth would be substantially and directly tied to company performance; thus, they will avoid risky projects in order to protect their private wealth. Stammerjohan (2004) studies this hypothesis and finds that as CEO ownership increases, only contemporaneous performance increases. This evidence suggests that non-diversified CEOs may make overly conservative decisions in response to risk aversion in the attempt to protect current personal wealth. Thus, large personal stock ownership does not provide the automatic "alignment of interest" so widely assumed in the executive compensation literature. Given that Hall and Liebman (1998) suggest a small percentage of CEO ownership, absent other effective monitoring mechanisms, it will not be sufficient to induce value-maximizing decisions; then it can be deduced that CEO ownership is an important determinant of compensation, but only in an optimal quantity.

Unfortunately, the relation between CEO ownership and compensation is still not clear. Mehran (1995), Core, Holthausen, and Larcker (1999), and Bryan and Hwang (2000) find a negative and significant relation between CEO ownership and different

forms of compensation. However, Yermack (1995) and Kole (1997) do not find any relation between CEO ownership and different forms of compensation.

To make matters more difficult, the empirical evidence for REITs is scarce and even more confusing. Hardin (1998) finds a positive relation between cash compensation and CEO ownership, but Ghosh and Sirmans (2005) find a negative and significant relation between CEO ownership and total, cash, and salary compensation. Their results are consistent with the hypothesis that as CEOs have more ownership interest in the firm, they will favor fair executive compensation packages and will try to keep incentive compensation at a reasonable level. This way, they will avoid excessive exposure of their personal wealth to the risks of the firms.

Despite the mixed empirical evidence, it is expected that a CEO with an optimal amount of ownership in his company would behave more as a shareholder and would make managerial decisions to enhance shareholders wealth. In setting compensation schemes, CEOs with share ownership would still agree to be paid incentive-based compensation but at a reasonable level. Therefore, it is hypothesized that

*H<sub>2</sub>: CEO ownership is inversely related to incentive based compensation.*

### ***3.1.2. Structure of the Board of Directors***

The board of directors is the main internal mechanism of corporate governance in place at any corporation. Since the board of directors monitors managers and makes executive compensation decisions, it is typical to include board features in compensation

models. Specifically, the most common are the size of the board, the composition of the board, director characteristics<sup>4</sup>, and the influence of the CEO on the board.

The size and composition of the board may provide evidence of board effectiveness and independency. Core, Holthausen, and Larcker (1999) find that less independent boards award higher levels of compensation to their CEOs. Feng, Ghosh, and Sirmans (2005) argue that small boards and boards with a large number of outside directors, compared to large boards or those with many inside directors, may be more efficient and act more independently on behalf of shareholders. In fact, they find that REITs with small boards outperform those with large boards in terms of five year average ROA and market to book ratio. However, they find no evidence that boards with more outside directors lead to better financial performance. They provide as a possible explanation that independent, small boards tend to have more outside directors but more of these directors joined the board after the current CEO was appointed; hence, the independence of outside directors could be compromised due to CEO involvement in their appointments.

To the point that small boards are more efficient, agreements on the level and type of compensation arrangements for REIT CEOs can be expected to be better than in the case of large boards. As board size increases, it is reasonable to think that it becomes more difficult to coordinate board actions. Therefore, it is hypothesized that

*H<sub>3</sub>: There is a positive relation between board size and incentive-based compensation.*

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<sup>4</sup> Undesirable director traits are also important. For example, directors who are older than 69, who are paid by the company in excess of his board pay, or who perform functions on different boards at the same time might be unable to fulfill their obligations properly. Directors who are interlocked, where an officer of the firm serves on the board of that outside director's company, might also have a conflict of interest

In addition, the influence of CEOs on boards is usually measured in the form of the number of directors appointed by the CEO and whether the CEO is chairman of the board. Core, Holthausen, and Larcker (1999) find that boards under the influence of CEOs tend to award higher levels of compensation to their CEOs. In a similar vein, Ghosh and Sirmans (2005) observe a positive relation between CEOs chairing the board and total compensation when performance is measured by stock return.

In that matter, a CEO that chairs the board and has the power to nominate directors is assumed to have more control on board decisions, for his own benefit, than in the case where a CEO neither chairs the board nor nominates directors. Therefore, it is hypothesized that

*H<sub>4</sub>: There is a positive relation between the CEO chairing the board and incentive-based compensation.*

### ***3.1.3. Debt Monitoring***

In non-REIT compensation studies, leverage is typically a control variable for agency costs of debt. Mehran (1995), Yermack (1995), and Stammerjohan (2004) find that leverage is unrelated to compensation. In contrast, Ryan and Wiggins (2000) finds a positive relation between debt and compensation, but Bryan and Hwang (2000) find the opposite. In the case of REITs, Delcoure (2005) controls for the debt-equity agency conflict and finds no relation between short- or long-term debt and any kind of compensation. Ghosh and Sirmans (2005) include leverage in their regression analysis, also finding it unrelated to compensation.

Bathala, Moon, and Rao (1994) summarize that significant use of debt financing may result in a substantial increase of bankruptcy risk and may also increase other agency problems, such as asset substitution and underinvestment. However, Myers (1977) suggests that debt can also be used to alleviate such agency problems. The need to pay interest and principal periodically reduces the control that managers have over the firm's cash flows. In addition, it subjects managers to monitoring by debtholders or other capital market agents, such as credit-rating companies like Standard and Poor's or Moody's Investor Services. REITs provide an opportunity to test for the monitoring benefits of debt rather than for controlling for agency cost of debt.

First, REITs invest in tangible assets which, in accordance to capital structure theory, make them less sensitive to bankruptcy risk compared with other firms. Second, despite the logic that REITs may rely on debt as a source of financing due to their requirement to pay out 90 percent of their taxable income every year, REITs should prefer equity financing over debt financing. After all, REITs do not obtain a tax shelter for the use of debt, and if they issue debt, they must compete with other firms who enjoy tax savings by paying a competitive interest rate. Accordingly, Ghosh, Nag, and Sirmans (1997) report that REITs used equity more than debt to finance new projects during the 1991–1996 period. Third, Smith and Watts (1992) state that regulated firms are expected to have higher leverage and pay out higher dividends. In consequence, to fund investment opportunities, regulated firms will depend on capital markets and will be subject to monitoring by capital market agents. Fourth, Highfield, Roskelley, and Zhao (2006) study agency costs of debt for REITs, rooted in Myers (1977) theory, by examining the maturity of REITs debt issues and the matching of their debt maturity to asset maturity.

They find that REITs with relatively high market-to-book ratios tend to issue short-term debt, but they find no evidence that REITs match debt maturity to asset maturity. Their results provide at least partial empirical evidence that REITs, by shortening the maturity of their debt issues, reduce their agency costs of debt. For all the mentioned reasons, it is hypothesized that

*H<sub>5</sub>: Debt monitoring substitutes for incentive-based compensation; thus, debt is negatively related to incentive-based compensation.*

#### **3.1.4. Institutional Ownership**

With the exception of Ryan and Wiggins (2000), who find a positive relation between institutional shareholders and equity-based compensation, and Delcoursé (2005), who finds a negative relation between institutional shareholders and long-term compensation, most researchers concentrate on investigating the relation between block holders and compensation. In general, no distinction is made in compensation studies between a block holder and an institutional shareholder. While block holders can be any external holder of a significant portion of outstanding shares (individual investor, corporations, or institutional investors), it is believed that institutional shareholders have legal and ethical requirements that exceed those of single blockholders.

Bathala, Moon, and Rao (1994) observe that institutional investors often undertake a protagonist's role on corporate governance activities due not only to their significant growing participation in the ownership of outstanding equity, but also to their inability to follow an "exit policy" in their portfolio strategies. Exit policy refers to the

deliberate unloading of a block of shares by institutional shareholders as a pressure mechanism against the managers of the firm when the institutional shareholder disagrees with their actions or strategies for the future.

In the case of REITs, institutional shareholders are not subject to the five or fewer rule, are permanent block holders, and, thus are able to provide monitoring of management, which block holders cannot. Therefore, seeking to exclusively assess the monitoring capability of institutional shareholders in this work, it is hypothesized that

*H<sub>6</sub>: Institutional holdings are negatively related to incentive-based compensation.*

For the purpose of this study, and following Bathala, Moon, and Rao (1994), institutional holdings are assumed to be exogenously determined since managers do not have direct control on the level of institutional ownership of equity in the firm.

### **3.2. Economic Determinants**

In addition to the corporate governance and alignment mechanisms discussed above, economic determinants, which can have an impact on CEO compensation, include firm characteristics such as size, investment opportunities, risk (total or idiosyncratic), prior or current year performance, and leverage. For the case of REITs, it is argued that their property focus can also have an impact on CEOs compensation. The following subsections discuss a variety of economic determinants of managerial compensation as presented in previous literature.

### ***3.2.1. Firm Size***

Firm size can proxy for the complexity of a firm's operations. Larger firms are more difficult to monitor, and, therefore, firm size may positively impact the use of incentive-based compensation. However, empirical evidence on the relation between compensation and size is mixed. For non-REITs, Mehran (1995) finds no relation between equity-based compensation and a firm's size, while Ryan and Wiggins (2000), Core, Holthausen, and Larcker (1999), and Stammerjohan (2004) find a positive relation between size and a given type of compensation.

For REITs, Hardin (1998) finds a positive relation between cash compensation and size. In addition, Scott, Anderson, and Loviscek (2001) find a positive relation between performance compensation and firm size. However, both find size unrelated to total compensation. Pennathur, Gilley, and Shelor (2005) find a negative relation between size and stock option awards, but they find no relation between size and the stock option awards mix or the ratio of stock options awarded to total the CEO's compensation.

### ***3.2.2. Investment Opportunities***

As suggested by Ryan and Wiggins (2000), firms with high growth opportunities get more of their value from future cash flows. Smith and Watts (1992) suggest that manager actions are less observable if the firm has more investment opportunities. As information asymmetries grow, it becomes more difficult for shareholders to observe managerial behavior and growth opportunities. Thus, it is rational to find that firms with high investment opportunities use more incentive-based compensation to reward their CEOs. Consistent with this hypothesis, Mehran (1995), Ryan and Wiggins (2000), Core,

Holthausen, and Larcker (1999), and Bryan and Hwang (2000) find a positive relation between investment opportunities and different forms of CEO compensation for non-REITs. In contrast, Yermack (1995) finds no significant relation between stock option awards and investment opportunities.

For REITs, the evidence is truly mixed. For example, Ghosh and Sirmans (2005) find a negative relation between investment opportunities and total compensation. Pennathur, Gilley, and Shelor (2005) find a positive relation to stock option awards, and Delcours (2005) finds no link between market-to-book ratio and long-term compensation for REITs.

Typically, expenditures on research and development and the market-to-book ratio are commonly used as proxies for investment or growth opportunities in non-REITs. Only Delcours (2005) employs the market-to-book ratio as proxy for growth opportunities for REITs. In contrast, Ghosh and Sirmans (2005) and Pennathur, Gilley, and Shelor (2005) employ the ratio of real estate investment to total assets and changes in real estate investment as measures of growth opportunities. They do so because a market-to-book ratio for a REIT can be interpreted as the ratio between the current market value of real estate holdings and their book value, a simple historical value appreciation measure.

### ***3.2.3. Firm Performance***

Previous or current year performances have traditionally been tied to CEO compensation because the board of directors commonly uses past accounting and market performance measures as a guide in evaluating CEO performance at the time of setting

the CEO's annual compensation contracts. Thus, in an agency framework, it is reasonable to assume that incentive-based compensation should be an increasing function of firm performance in order to serve as both an incentive and alignment mechanism to hire and retain the best CEOs. Empirical evidence almost conclusively supports such a hypothesis.

For non-REITs, Core, Holthausen, and Larcker (1999) and Stammerjohan (2004) find a positive relation between previous performance and different forms of compensation. For REITs, Ghosh and Sirmans (2005) find that both ROA and stock returns are positively related to total compensation in the next period. In contrast, Scott, Anderson, and Loviscek (2001) find such a relation only for performance compensation, but they find no such relation between total compensation and past performance. Finally, Pennathur, Gilley, and Shelor (2005) find that option awards and the option awards mix, are negatively related to stock returns. They explain that this may be due to the fact that their sample period is a recessionary period for REITs and options may be awarded in such circumstances to incentive managers to enhance REIT performance. In summary, performance measures, in most cases, whether they are accounting or market measures, seem to positively impact compensation.

#### **3.2.4. Risk**

As firms bear more business or total risk, their cash flows become more uncertain, and it becomes more difficult to monitor CEOs. In addition, Bryan and Hwang (2000) argue that under uncertainty, managers have the incentive to undertake a safer project over a risky one due to the fact that they bear the total risk of their investment choice,

while shareholders do not. To control both situations, firms may rely on incentive-based compensation.

Yermack (1995) and Bryan and Hwang (2000) find a positive relation between use of stock options or restricted stocks awards and noise in accounting earnings. Core, Holthausen, and Larcker (1999) use two measures of firm risk and find exactly opposite results. Using the standard deviation of ROA as a proxy for firm risk, they find a negative relation between firm risk and total and cash compensation, but no relation to salary. Using the standard deviation of stock returns, they find no relation between firm risk and total and cash compensation, but a negative relation for salary. Similarly, Ryan and Wiggins (2000) find no significant relation between equity-based compensation and noise in accounting earnings, and Mehran (1995) finds no significant relation between business risk and equity-based compensation.

For REITs, Pennathur, Gilley, and Shelor (2005) find a positive relation between the standard deviation of monthly returns and both stock options awards and stock options mix. Likewise, Delcoure (2005) finds a positive relation between funds from operations (FFO) volatility and long-term compensation.

### ***3.2.5. Leverage***

Following the logic given in Smith and Watts (1992), if incentive-based compensation is instituted to align the interests of managers and shareholders at the expense of debtholders, heavily leveraged firms should decrease such compensation since their agency costs of debt are exacerbated for firms in such circumstances. However, Mehran (1995), Yermack (1995), and Stammerjohan (2004) find leverage is unrelated to

compensation. In contrast, Ryan and Wiggins (2000) find a positive relation between debt and compensation, but Bryan and Hwang (2000) find the opposite. With regard to REITs, Ghosh and Sirmans (2005) include a proxy for leverage in their analysis and find a non-significant relation, and Delcours (2005) finds no relation between short-or long-term debt and any type of compensation.

In short, with the exception of the positive relation between prior year (or current) performance and all forms of compensation, the empirical evidence is mixed for all the other factors. The main reason for such heterogeneous results could be that compensation schemes, as well as the focus of academic research, have varied across time. That is, before equity-based compensation became popular in the early 1990s, compensation studies concentrated on the level of compensation.<sup>5</sup> Currently, the structure of compensation is dominated by equity-based incentives.

### **3.2.6. Property Focus**

As stated by Capozza and Seguin (1999), the simplicity of the REIT industry, the availability of detailed financial accounts, and the availability of information about replacement costs of real properties make REITs relatively more transparent compared to non-REITs. However, there are variations in the level of transparency within the REIT industry. For example, in the case of hotel REITs, data in hotel occupancy and prices are publicly available; thus, their cash flows can be estimated. In contrast, cash flow data in multi-family and industrial space deals are not as readily available, making it more difficult to estimate their cash flows. Thus, cash flow estimations are easier for some

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<sup>5</sup> Even though some of the studies included all forms of monetary compensation in their measures, cash compensation was actually a predominant portion of total compensation in those studies.

REITs than others. The SNL Financial database classifies REITs into twelve different foci; namely, “self-storage,” “shopping center,” “regional mall,” “retail:other,” “multy-family,” “manufactured homes,” “office,” “industrial,” “specialty,” “diversified,” “hotel,” and “health care.” This study groups REITs with similar focus and create binary variables as follows: RETAIL is equal to one for REITs with focus on shopping center, regional mall, or retail:other; zero otherwise; RESIDENTIAL is equal to one if the REIT focuses on multy-family or manufactured homes, zero otherwise; MIXED is equal to one if the REIT focuses on specialty or diversified; zero otherwise; and HOTEL, OFFICE, INDUSTRIAL, and HEALTHCARE are equal to one for REITs with focus on hotels, offices, industries, and health care respectively.

### **3.3. The Interrelation between Monitoring and Alignment Mechanisms**

In addition to incentive-based compensation, corporate governance relies on other alignment and monitoring mechanisms to control managerial actions. Bathala, Moon, and Rao (1994) suggest that the existence of other internal and external monitoring mechanisms determine the extent to which debt, managerial ownership, and other devices are utilized to minimize agency conflicts. Lippert and Moore (1995) study the relation between CEO compensation and internal or external monitoring mechanisms and find that firms with well-developed internal monitoring systems and that are open to the market for corporate control have CEO contracts with less incentive-based compensation. Such results imply that incentive-based compensation substitutes for other corporate governance mechanisms Delcoure (2005) and Core, Holthausen, and Larcker (1999) have also concluded that compensation substitutes for monitoring mechanisms.

Even though the relation between board structure, firm performance, and CEO compensation has been widely explored, for most of these studies, the reliability of the results is questionable because they have either analyzed performance or compensation including one monitoring mechanism at the time<sup>6</sup> or have included several monitoring mechanisms but employed a deficient econometric approach.<sup>7</sup> Agrawal and Knoeber (1996) find empirical evidence that research findings may be misleading when monitoring mechanisms are examined separately because the interdependence among them is ignored. Furthermore, Agrawal and Knoeber (1996) note that findings may also be misleading when mechanisms are examined in a cross-sectional regression instead of within a simultaneous equation framework.

Based on Core, Holthausen, and Larcker (1999), Ghosh and Sirmans (2005) analyze the effects of board structure on cash compensation and total compensation for REITs. Since economic theory suggests that ownership, board structure, and performance are often endogenously determined, they perform a two-stage least squares procedure to account for the perceived endogeneity problem. In addition, to be able to estimate their simultaneous equation model, they treat all board of directors' variables as exogenous variables.

In order to examine the determinants of CEO incentive based compensation for REITs, the two-stage least squares procedure is employed as well. Following their methods, all board features are treated as exogenous variables.

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<sup>6</sup> See Feng, Ghosh, and Sirmans (2005) and Ghosh and Sirmans (2003) on the relation between board structure and performance, Chan, Leung and Wang (1998) on institutional investment and performance, and Han (2004) on insider ownership and a REITs value.

<sup>7</sup> See Delcours (2005) and Core, Holthausen, and Larcker (1999)

Table 3.1 Overview of the major empirical studies

Study	Major issue	Major findings
<b>Panel A: Non-REIT studies</b>		
Mehran (1995)	Determinants of executive compensation and relation between equity based compensation and firm performance	<ul style="list-style-type: none"> <li>• Negative relation between managerial ownership and equity based compensation (EBC)</li> <li>• Negative relation between outside blockholder ownership and EBC</li> <li>• Firms with more outside directors pay more EBC</li> <li>• Performance (Tobin's Q and ROA) is positively related to EBC and top managers ownership</li> <li>• No relation between performance and blockholders holdings</li> </ul>
Yermack (1995)	Why corporations award stock options to their CEOs	<ul style="list-style-type: none"> <li>• Of five agency related variables, namely, alignment of hypothesis (CEO stock ownership), horizon problem (CEO age), growth opportunities (Tobin's Q), monitoring difficulty (Variance of annual changes in ROE), and agency costs of debt (financial leverage), only one has a statistically significant coefficient estimate indicating a negative relation between noise in accounting earnings and the mix of stock options to cash compensation.</li> </ul>
Core, Holthausen, and Larcker (1999)	Determinants of CEO compensation and the relation between CEO compensation and performance	<ul style="list-style-type: none"> <li>• Significant positive relation between total, cash, salary compensation and firm size, investment opportunities, stock returns, and standard deviation ROA</li> <li>• CEO compensation is an increasing function of board size, CEO chairmanship and outside directors; and a decreasing function of CEO ownership and blockholders holdings.</li> <li>• Predicted component of compensation is negatively related to subsequent firm operating and stock return performance</li> </ul>
Ryan and Wiggins (2000)	Determinants of equity based compensation for CEOs and other executives	<ul style="list-style-type: none"> <li>• Positive relation between equity-based awards and investment growth opportunities, firm size, institutional holdings, percentage of outsiders in the board, and leverage respectively</li> </ul>
Stammerjohan (2004)	CEO compensation and subsequent firm performance	<ul style="list-style-type: none"> <li>• Stock options are positively related to subsequent performance (t+1, t+3, t+5)</li> <li>• CEO ownership is negatively related to subsequent performance (t+3, t+5)</li> </ul>

Table 3.1 Continued.

Study	Major issue	Major findings
<b>Panel B: REIT studies</b>		
Hardin (1998)	The determinants of REIT CEO's cash compensation	<ul style="list-style-type: none"> <li>• Positive relation between cash compensation and firm size and senior executive stock ownership.</li> </ul>
Scott, Anderson, and Loviscek (2001)	REIT performance as a determinant of REIT CEOs compensation	<ul style="list-style-type: none"> <li>• Positive relation between performance compensation and firm size and REIT stock return</li> <li>• No relation between property focus and performance compensation</li> </ul>
Pennathur, Gilley and Shelor (2005)	Determinants of CEO stock based compensation	<ul style="list-style-type: none"> <li>• REIT CEOs are rewarded for increasing Real Estate Investment and funds from operations</li> <li>• Positive relation between option awards and variability in stock returns (proxy for noise or riskiness in projects)</li> <li>• Negative relation between option awards (or option award mix, the ratio of option awards to cash compensation) and REIT stock return and REIT size</li> </ul>
Ghosh and Sirmans (2005)	The determinants of CEO compensation	<ul style="list-style-type: none"> <li>• Larger boards, with a higher percentage of outside directors award higher total compensation</li> <li>• Positive relation between total compensation and previous year performance and CEO chairmanship</li> <li>• Negative relation between total compensation and CEO ownership and blockholder ownership respectively</li> </ul>
Delcours (2005)	The determinants of REITs' senior executive compensation	<ul style="list-style-type: none"> <li>• REITs where CEO chairs the board and with volatility in their earnings award more long term compensation</li> <li>• Negative relation between long-term compensation and institutional holdings</li> </ul>

## CHAPTER 4

### DATA AND METHODS

This chapter describes the data set and lays out the methods employed on this research. Section 4.1 describes the data, sample selection, and sample characteristics. Section 4.2 discusses the methodology. Section 4.2.1 develops the statistical models used to examine the relation between incentive-based compensation and subsequent REIT performance. Section 4.2.2 presents the statistical models used to estimate the determinants of REIT CEOs incentive-based compensation.

#### **4.1. Data**

The sample is initially identified from a list of exchange-traded, equity, hybrid, and operating REITs reported in the SNL Financial REIT Database (SNL). The financial variables of interest, CEO cash compensation, CEO incentive-based compensation, institutional holdings, and CEO ownership data are collected from the SNL Financial REIT Database. Stock returns are collected from the Center for Research in Security Prices (CRSP) file. Board of directors characteristics are obtained from proxy statements.

A sample of 185 REITs from SNL that existed in 1998 was obtained. From these observations, 152 are equity REITs, 11 are hybrid REITs, and 22 are Real Estate Operating Companies (REOCs). All REITs must be publicly traded on the NYSE,

AMEX, or NASDAQ. As shown in Table 4.1, SNL reports information on real estate companies with SIC codes ranging from 6500 to 7011. As denoted by the Securities and Exchange Commission, a REIT must be reported as SIC code 6798; thus, the observations with SIC codes other than 6798 were dropped. In cases where the SIC codes are unobservable in SNL, the SIC code reported in the company's proxy statement is used. This screen reduces the sample to 159 observations with an SIC code of 6798.

Then the sample was screened for missing data. Twenty-eight observations did not have total value of assets as of the end of 1998; thus, the remaining 131 observations contain equity, hybrid, or operating REITs. Turning to the proxies, board data for 18 of the firms is not obtainable; thus, the sample is reduced to 113 firms. The same procedure is repeated for the years of 1999 to 2003. The final sample is an unbalanced panel data with 390 observations. Table 4.2 provides the descriptive statistics for the full sample and by year.

As shown in Panel A of Table 4.2, over the five-year period, the average REIT CEO received around 45 percent of his compensation in the form of incentive based compensation. Again, CEO incentive-based compensation is the sum of stock options, restricted stocks, and performance plans as reported by SNL. In addition, REIT CEOs held approximately 6.69 percent of the REIT total outstanding shares. As far as performance is concerned, the average REIT experienced annual stock returns of 9.05 percent and the average return on assets was 3.52 percent. As far as board of directors' characteristics, the average REIT had a board of around eight members, and almost 63 percent of all boards were led by the CEO serving as chairman of the board. Approximately 67.7 percent of board members were outside directors. Compared to non-

REIT boards, which have an average size of 12.25 members (Yermack, 1996), REIT boards are smaller, but their independence, as represented by the presence of outside directors, is compromised by the high percentage of boards chaired by their CEOs. Finally, the average REIT had an average market capitalization of almost 1.2 billion, a net property investment of almost eighteen times the amount of REIT funds from operations (FFO), long-term debt that represented around 37 percent of their total capitalization, and average institutional holdings, as indicated by the percentage of shares outstanding held by institutional investors, of 46.9 percent.

In panel B of Table 4.2, it is presented the descriptive statistics per year. The table indicates that incentive-based compensation has increased from 42.6 percent of the total compensation in 1999 to almost 46.7 percent in 2003, which represents an increase of around ten percent over this 5-year period. Figure 4.3 shows the incentive-based compensation trends, by component, for the whole period. One can observe that the growth in incentive-based compensation stems mainly from the award of restricted stocks, as awards of stock options have declined since the year 2000. In addition, it can be noticed that performance and other long-term compensation plans have represented around four percent of incentive-based compensation in the whole period. REIT profitability, as proxied by return on assets, has declined steadily from around four percent in 1999 to 2.81 percent in 2003. In contrast, the average REIT stock return has fluctuated widely during the same period. REIT average stock returns were -9.81 and -3.87 percent during the years of 1999 and 2000, respectively. However, during the years of 2001 and 2002, REIT stocks returned 24.08 and 23.66 percent, respectively. In 2003, the average REIT stock return was around 9.44 percent. Average institutional holdings

have increased by almost twenty percent, from 46.2 percent in 1999 to 55.16 percent in 2003. The long-term debt-to-equity ratio indicates that leverage has been quite constant since the year 2000. The average CEO stock ownership has averaged 6.22 to seven percent during the sample period. Finally, board size has increased slightly from 7.87 percent in 1999 to 8.09 percent in 2003, and the presence of outsiders has increased from 65.9 percent in 1999 to 68.6 percent in 2003. However, by 2003, more than 66 percent of REIT boards were led by the CEO, whereas around 61 percent did so in 1999.

Table 4.4 presents the Pearson correlation coefficients for all variables in the sample. While some variables are statistically correlated, the degree of correlation between variables does not appear to indicate the presence of multicollinearity.<sup>8</sup> The correlation matrix shows, as expected, highly significant correlations between incentive-based compensation and market capitalization. While correlation does not indicate causation, in most cases where two variables are highly correlated, the coefficient estimate will be statistically significant in a regression analysis due to the fact that OLS is based on linearity and correlation is a linear measure.

## **4.2. Methods**

The following sections develop a framework for testing the hypotheses stated in section 3. Section 4.2.1 describes the estimation approach to assess the relation between

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<sup>8</sup> There is a high correlation between market capitalization and institutional holdings. I ran the OLS equations excluding one variable at the time and the results do not change significantly. In addition to Pearson correlation coefficients, I ran condition numbers and we find collinearity presence in the case of market capitalization and board size. Such findings indicate little variation of these variables in the sample, which is expected, and, thus, do not represent any problem.

CEO compensation and REIT performance. Section 4.2.2 details the method for examining the determinants of incentive-based compensation.

#### 4.2.1. Compensation and REIT Performance

Unlike previous studies, this dissertation analyzes the effect of incentive-based compensation on REIT performance. In accordance to the alignment hypothesis, it seems reasonable to assume that incentive-based compensation would encourage CEOs to increase REIT performance.

In order to determine how incentive-based compensation is associated with REIT performance, the following empirical models are proposed:

$$RETURN = \alpha + \beta_1 COMP + \beta_2 REINVEST + \beta_3 MKTCAP + \varepsilon_i, \quad (1)$$

and

$$ROA = \alpha + \beta_1 IBCOMP + \beta_2 REINVEST + \beta_3 MKTCAP + \varepsilon_i, \quad (2)$$

where *RETURN* and *ROA* are one-year and three-year cumulative stock returns using daily data and the ratio of earnings before interest and taxes (before extraordinary items) to total capitalization, respectively. *IBCOMP* is the natural log of incentive-based compensation.<sup>9</sup> The last two variables are control variables representing the ratio of net property investment to FFO (*REINVEST*) and the natural logarithm of total capitalization of the firm (*MKTCAP*).<sup>10</sup> It is expected that firms with higher growth opportunities will experience better performance than firms with low growth opportunities. In addition, the

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<sup>9</sup> We also use the ratio of total incentive based compensation to total compensation in these models as a robustness check. The results are similar. Please refer to tables 5.1 and 5.2 for details.

<sup>10</sup> MKTCAP is total market capitalization. That is, the market capitalization of common equity, assuming the conversion of all operating partnership units into common stock plus total debt plus preferred equity plus redeemable preferred plus trust preferred plus preferred minority Interest in operating partnership units. Debt is shown at book value. All preferred interests are calculated at liquidation value.

size of the firm may have a relation with performance. For example, Alshimmiri (2004) finds that large REITs experience lower performance compared to small REITs, as measured by Tobin's Q. Therefore, a negative relation between firm size and REIT performance is expected. Control variables are measured as of the prior year to the performance. For example, it is tested whether incentive-based compensation awarded in 2000 affects 2001 and 2003 REIT stock returns. In such scenarios, MKTCAP and REINVEST are measured as of 2000 and 2002, respectively.

Following Stammerjohan (2004) the above models are based on the following sequence of events: (1) prior to  $t-1$ , the CEO and firm set a compensation contract for services performed during the year beginning at  $t-1$  and ending at  $t$ ; (2) the CEO makes decisions affecting current and future firm performance during the year; (3) compensation resulting from the contract is observable at  $t$ ; (4) and, contemporaneous firm performance is observable at  $t$  and subsequent firm performance is observable over subsequent periods at times  $t+k$ , for  $k$  is equal to one and three.

The sample is grouped in a panel data set. Time-series cross-sectional data has several advantages (Baltagi, 1998). First, it allows a more efficient estimation of the parameters due to the richer source of variation. Second, panel data sets are better to identify and estimate effects that are simply not detectable in pure cross-section or pure time-series data. Third, panel data sets a control for individual heterogeneity. Such heterogeneity is often the central focus of the analysis (Greene (2003) and requires important econometric considerations. As in the typical panel dataset, our sample consists of a large number of cross-sectional units (REITs) and only few periods (years). The first

hypothesis is tested by using both balanced and unbalanced panel data sets. Results are shown in Tables 5.1 and 5.2.

Models (1) and (2) follow the basic regression model of the form:

$$y_{it} = \alpha + X_{it}\beta + \mu_{it}.$$

However, under the error components specification, the residual terms take the form:

$$\mu_{it} = z_i + v_{it},$$

Where  $z_i$  is a time invariant, cross-section specific component (the heterogeneity or individual effect) and  $v_{it}$  are remainder effects.

Under the least square dummy variable (LSDV) specification,  $z_i$ 's are thought as fixed parameters to be estimated and included as a part of the intercept:

$$y_{it} = (\alpha + z_i D_i) + X_{it}'\beta + v_{it} \text{ and } v_{it} : (0, \sigma_v^2),$$

Where  $D_i$  is a dummy variable for the  $i$ -th REIT

Under a random effects model specification, the dummy variable is part of the error:

$$y_{it} = \alpha + X_{it}'\beta + (z_i D_i + v_{it}) \text{ and } z_{it} : (0, \sigma_z^2).$$

The first step is to decide between performing pooled OLS or panel data techniques. For this purpose, the Lagrange Multiplier (LM) test is employed. The null hypothesis is that the variance of  $z_i$  is equal to zero. If the null hypothesis is rejected, then a panel data approach should be employed.

Moreover, a decision is needed about using either one or two-way fixed and random effect models. One-way models are appropriate when variations depend only on either group effects (REITs) or time effects (years), while two-way models are appropriate when variations depend on both. Greene (2003) points out that “time effects are often viewed as transitions or discrete changes of state. They are typically modeled as specific to the period in which they occur and are not carried across periods within a cross-sectional unit.” Therefore, it is assumed that REIT characteristics are constant across time; that is, the variations stem mainly from the cross sectional units or different REITs, and, therefore, results for one-way fixed or random effect models are provided.

Finally, a decision is needed about using the random effect model or the fixed effect model, its competing specification. A random effect model is appropriate when a random sample is drawn from a population. Since in this case observations are representative of the whole REIT population, the fixed effect approach is the most appropriate specification.<sup>11</sup>

#### ***4.2.2. The Determinants of the level of incentive-based compensation paid to REIT***

##### ***CEOs***

Ghosh and Sirmans (2005), Ryan and Wiggins (2000), Core, Holthausen, and Larcker (1999), and Bathala, Moon, and Rao (1994) clearly identify interrelations among CEO compensation, CEO ownership, and firm performance. Thus, if the interrelations

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<sup>11</sup> Alternatively, the Hausman specification test for random effects can be employed to decide between the fixed effects and random effects models. The Hausman’s test states that under the null hypothesis,  $z_i$  is uncorrelated with the independent variables. If the unobserved heterogeneity can be assumed to be uncorrelated with the included variables, then a random approach is appropriate; otherwise, a fixed effects specification may be better.

between variables when examining the determinants of incentive-based compensation for REITs were ignored, the models will render biased estimates. This situation occurs because an important assumption of the classical ordinary-least squares (OLS) model is that the error term is uncorrelated with the independent variables. In the presence of endogeneity, this OLS assumption is violated; therefore, one needs to employ the two-stage-least squares (2SLS) methodology. Thus, following Ghosh and Sirmans (2005), a 2SLS procedure is employed.

Two systems of simultaneous equations are used to account for stock returns and ROA as the performance variable, respectively. The equations are very similar to the ones employed by Ghosh and Sirmans (2005) but with the dependent variable being incentive based compensation instead of total compensation:

$$\begin{aligned}
 IBCOMP &= \alpha + \beta_1 RETURN + \beta_2 CEOOWN + \beta_3 REINVEST + \beta_4 BSIZE \\
 &\quad + \beta_5 OUTSIDERS + \beta_6 CEOCHAIR + \beta_7 INST + \\
 &\quad + \beta_j YEAR_j + \beta_k FOCUS_k \\
 RETURN &= \alpha + \beta_1 IBCOMP + \beta_2 CEOOWN + \beta_3 MKTCAP + \beta_4 REINVEST \\
 &\quad + \beta_5 LTDE + \beta_6 OUTSIDERS + \beta_7 CEOCHAIR \\
 &\quad + \beta_j YEAR_j + \beta_k FOCUS_k \\
 CEOOWN &= \alpha + \beta_1 RETURN + \beta_2 IBCOMP + \beta_3 LTDE + \beta_4 BSIZE \\
 &\quad + \beta_5 OUTSIDERS + \beta_6 CEOCHAIR + \beta_7 INST + \varepsilon,
 \end{aligned}
 \tag{4}$$

and

$$\begin{aligned}
IBCOMP &= \alpha + \beta_1 ROA + \beta_2 CEOOWN + \beta_3 REINVEST + \beta_4 BSIZE \\
&\quad + \beta_5 OUTSIDERS + \beta_6 CEOCHAIR + \beta_7 INST + \\
&\quad + \beta_j YEAR_j + \beta_k FOCUS_k \\
ROA &= \alpha + \beta_1 IBCOMP + \beta_2 CEOOWN + \beta_3 MKTCAP + \beta_4 REINVEST \\
&\quad + \beta_5 LTDE + \beta_6 OUTSIDERS + \beta_7 CEOCHAIR \\
&\quad + \beta_j YEAR_j + \beta_k FOCUS_k \\
CEOOWN &= \alpha + \beta_1 ROA + \beta_2 IBCOMP + \beta_3 LTDE + \beta_4 BSIZE \\
&\quad + \beta_5 OUTSIDERS + \beta_6 CEOCHAIR + \beta_7 INST + \varepsilon,
\end{aligned}
\tag{5}$$

where the endogenous variables are the natural log of total compensation that is incentive-based (*IBCOMP*), REIT performance (*ROA* or *RETURN*), and CEO ownership (*CEOOWN*). Incentive-based compensation refers to pay for long-term performance, not to the method of payment. That is, incentive-based compensation includes long-term incentives, such as equity-based incentives (stock options and restricted stocks) as well as long-term performance plans that can be paid in cash, equity, or both cash and equity. This is an important difference with respect to other studies that concentrate on the role of stock options and restricted stocks in providing incentives to increase the stock price while completely ignoring other incentives.<sup>12</sup> In that regard, this study differs from Scott, Anderson, and Loviscek (2001) because it includes the estimated value of options granted in a given year. Thus, *IBCOMP* is the natural log of the sum of restricted stock, long-term incentive plans, and estimated value of options awarded divided by the CEO's total compensation.

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<sup>12</sup> See Yermack (1995), Hall, and Liebman (1998), Bryan and Hwang (2000), and Core, Guay, and Larcker (2003)

Following Core, Holthausen, and Larcker (1999), stock options are valued at 25% of their exercise price. The grants of restricted stocks and the value of long term performance plans are taken as reported by the SNL Financial Database. As Core, Holthausen, and Larcker (1999) do, it is acknowledged that the valuation of long term compensation is complicated and that, in reality, the amount of compensation that will ultimately be received from any form of long-term compensation plan is uncertain.

REIT performance is measured using either stock return in system (4) or return on assets in system (5). *RETURN* is the cumulative stock market return for the year prior to the year in which compensation is awarded. *ROA* is the ratio of earnings before interest and taxes (before extraordinary items) are divided by total capitalization for the year prior to the year in which compensation is awarded.

The exogenous variables in systems (4) and (5) are *MKTCAP*, *REINVEST*, the standard deviation of daily stock returns over the past year (*SDRETURN*), the standard deviation of ROA over the past three years (*SDROA*), the number of directors in the board (*BSIZE*), the number of outside directors (*OUTSIDERS*), a binary variable equal to one for CEOs serving as chairman of the board, zero otherwise (*CEOCHAIR*),<sup>13</sup> the ratio of long-term debt to total capitalization (*LTDE*), the percentage of outstanding shares owned by institutional shareholders (*INST*), and the binary variables for REIT property focus. The property type variables are included as control variables for variations in the level of transparency in corporate governance for REITs to be consistent with Scott, Anderson, and Loviscek's work (2001). Self-storage REITs are used as the reference

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<sup>13</sup> These board of director variables are chosen since they are consistently found significant by Ghosh and Sirmans (2005) and Core, Holthausen, and Larcker (1999)

focus because in a rough ranking from least to most transparent REITs,<sup>14</sup> using as criteria the availability of cash flows and other financial data, self-storage REITs are considered to have an average ranking on transparency.

The SNL Financial database classifies REITs as “self-storage,” “shopping center,” “regional mall,” “retail:other,” “multy-family,” “manufactured homes,” “office,” “industrial,” “specialty,” “diversified,” “hotel,” and “health care.” In contrast, this study created binary variables as follows: RETAIL is equal to one for REITs with focus on shopping center, regional mall, or retail:other; zero otherwise; RESIDENTIAL is equal to one if the REIT focuses on multy-family or manufactured homes, zero otherwise; MIXED is equal to one if the REIT focuses on specialty or diversified; zero otherwise; and HOTEL, OFFICE, INDUSTRIAL, and HEALTHCARE are equal to one for REITs with focus on hotels, offices, industries, and health care, respectively.

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<sup>14</sup> From the least to the most transparent REITs: multi-family, industrial, retail, self-storage, health care, office, and hotel REITs.

Table 4.1. Real Estate Related Standard Industrial Classification (SIC) Codes

SIC Code	Description
6500	Real Estate
6510	Real Estate Operators (No Developers) & Lessors
6512	Operators of Nonresidential Buildings
6513	Operators of Apartment Buildings
6519	Lessors of Real Property, NEC
6531	Real Estate Agents & Managers (For Others)
6532	Real Estate Dealers (For Their Own Account)
6552	Land Subdividers & Developers (No Cemeteries)
6770	Blank Checks
6792	Oil Royalty Traders
6794	Patent Owners & Lessors
6795	Mineral Royalty Traders
6798	Real Estate Investment Trusts
6799	Investors, NEC
7000	Hotels, Rooming Houses, Camps & Other Lodging Places
7011	Hotels & Motels

This table provides the description for real estate related standard industrial classification (SIC) codes 6500 through 7011 as outlined by the United States Department of Labor and the Bureau of Labor Statistics. Source: SIC code list available at <http://www.sec.gov/info/edgar/siccodes.htm>.

Table 4.2 Descriptive statistics for the full sample.

<i>Panel A: Descriptive statistics for the full Sample</i>						
Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
IBCOMP(%)	390	45.177	47.606	26.850	0.025	100.000
MKTCAP	390	21.115	21.223	1.085	17.728	24.020
ROA(%)	390	3.518	3.328	2.155	-5.051	13.164
SDROA	390	1.153	0.837	1.183	0.023	11.311
RETURN(%)	390	9.046	8.349	23.657	-66.237	95.627
SDRETURN	390	0.077	0.014	1.226	0.008	24.233
REINVEST	390	14.190	13.493	18.960	-183.162	292.629
BSIZE	390	7.944	8.000	2.037	4.000	15.000
OUTSIDERS(%)	390	67.700	66.667	11.917	30.000	93.333
CEOCHAIR (%)	390	62.820	100.000	48.390	0.000	100.000
CEOOWN (%)	390	6.688	3.064	9.912	0.079	72.584
INST (%)	390	46.900	46.673	25.413	0.000	100.00
LTDE (%)	390	36.639	39.116	16.571	0.000	83.207

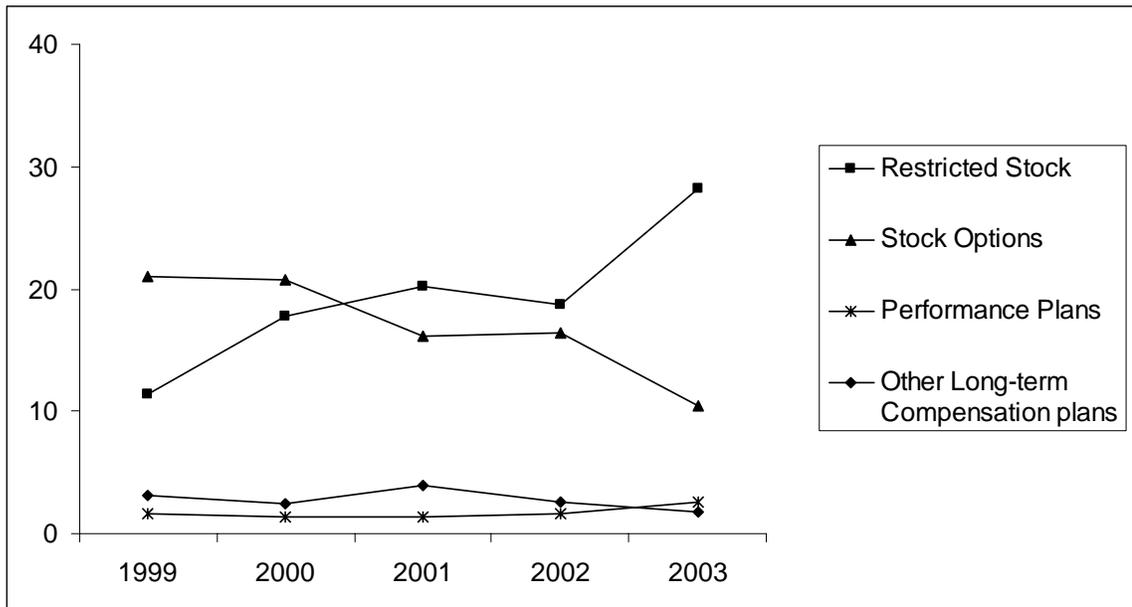
Panel A shows descriptive statistics for the full sample during the period of 1999-2003 and panel B shows descriptive statistics by year. Compensation is at time t, all other variables are at time t-1. IBCOMP% is the ratio of total incentive based compensation to total compensation, MKTCAP is the natural logarithm of total capitalization, ROA is the ratio of earnings before interest and taxes (before extraordinary items) to average assets, and SDROA is the standard deviation of ROA over the last three years. RETURN is the 1-year cumulative stock return, using daily stock return data, and SDRETURN is the standard deviation of one-year daily stock returns. REINVEST is the ratio of Net Property Investment to Funds from Operations. BSIZE is the number of directors in the board, OUTSIDERS is the ratio of outside directors to the total number of directors in the board; CEOCHAIR is an indicator variable that equals one if the CEO leads the board of directors, zero otherwise, and CEOOWN is the CEO's share ownership as a percentage of the total outstanding shares. Finally, INST is the percentage of outstanding shares owned by institutional investors, and LTDE is the ratio of long-term debt to total capitalization.

Table 4.2. Continued.

<i>Panel B: Descriptive statistics by year</i>						
Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
<b>Year 1999</b>						
IBCOMP(%)	69	42.553	45.117	27.197	0.033	100.00
MKTCAP	69	21.052	21.166	1.149	17.728	23.471
ROA(%)	69	4.071	3.971	2.115	-2.567	9.147
SDROA	69	1.726	1.191	1.652	0.152	11.311
RETURN(%)	69	-9.807	-7.909	14.474	-58.739	18.898
SDRETURN	69	0.368	0.015	2.915	0.009	24.233
REINVEST	69	19.384	14.463	33.899	3.325	292.629
BSIZE	69	7.870	7.000	1.999	4.000	13.000
OUTSIDERS(%)	69	65.905	66.667	11.801	30.000	90.000
CEOCHAIR (%)	69	60.870	100.000	49.162	0.000	100.000
CEOOWN (%)	69	6.226	2.992	8.709	0.117	42.978
INST (%)	69	46.200	48.166	23.257	0.003	80.745
LTDE (%)	69	32.274	35.899	17.048	0.000	63.858
<b>Year 2000</b>						
IBCOMP(%)	83	46.020	47.109	25.005	0.198	100.00
MKTCAP	83	20.875	20.955	1.092	17.974	23.449
ROA(%)	83	4.159	3.977	2.226	0.117	13.164
SDROA	83	1.101	0.840	0.952	0.034	5.072
RETURN(%)	83	-3.872	-3.118	14.585	-52.922	27.638
SDRETURN	83	0.015	0.015	0.003	0.009	0.025
REINVEST	83	13.487	13.426	3.577	4.507	25.771
BSIZE	83	7.807	7.000	1.991	4.000	15.000
OUTSIDERS(%)	83	67.232	66.667	11.604	40.000	90.909
CEOCHAIR (%)	83	59.036	100.000	49.476	0.000	100.000
CEOOWN (%)	83	6.715	3.028	10.802	0.079	70.575
INST (%)	83	43.349	41.170	24.732	0.088	89.473
LTDE (%)	83	36.778	39.148	15.810	0.000	70.242
<b>Year 2001</b>						
IBCOMP(%)	79	45.892	50.063	27.030	0.029	100.00
MKTCAP	79	21.080	21.203	1.105	18.246	23.758
ROA(%)	79	3.528	3.314	2.056	-5.051	10.491
SDROA	79	0.983	0.654	1.109	0.084	6.650
RETURN(%)	79	24.079	23.547	22.863	-66.237	90.181
SDRETURN	79	0.016	0.014	0.006	0.008	0.050
REINVEST	79	13.432	12.837	5.159	-14.619	29.429
BSIZE	79	7.949	8.000	1.999	4.000	13.000
OUTSIDERS(%)	79	68.236	70.000	12.455	37.500	92.308
CEOCHAIR (%)	79	65.823	100.000	47.733	0.000	100.000
CEOOWN (%)	79	7.007	3.020	11.198	0.160	72.584
INST (%)	79	43.165	41.131	26.887	0.000	93.018
LTDE (%)	79	37.922	39.700	17.769	0.000	70.502

Table 4.2. Panel B. Continued.

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
<b>Year 2002</b>						
IBCOMP(%)	79	44.273	46.823	27.753	0.025	100.00
MKTCAP	79	21.261	21.276	1.060	18.785	24.020
ROA(%)	79	3.067	2.815	2.169	-4.433	7.806
SDROA	79	0.928	0.689	0.868	0.023	3.899
RETURN(%)	79	23.656	18.968	24.579	-23.401	95.627
SDRETURN	79	0.014	0.012	0.006	0.008	0.034
REINVEST	79	12.299	13.304	23.078	-183.162	35.891
BSIZE	79	8.000	8.000	2.172	4.000	15.000
OUTSIDERS(%)	79	68.354	66.667	12.454	40.000	93.333
CEOCHAIR (%)	79	62.025	100.000	48.842	0.000	100.000
CEOOWN (%)	79	6.746	3.386	9.044	0.257	55.192
INST (%)	79	46.610	45.926	25.152	2.735	97.719
LTDE (%)	79	37.456	41.235	17.018	0.000	70.367
<b>Year 2003</b>						
IBCOMP(%)	80	46.751	53.005	27.781	0.222	99.063
MKTCAP	80	21.306	21.360	0.994	18.980	23.668
ROA(%)	80	2.811	2.824	1.912	-2.834	7.013
SDROA	80	1.101	0.766	1.130	0.077	7.714
RETURN(%)	80	9.439	11.627	17.795	-53.397	62.913
SDRETURN	80	0.015	0.013	0.005	0.010	0.039
REINVEST	80	13.056	13.873	13.644	-68.210	43.935
BSIZE	80	8.087	8.000	2.057	4.000	14.000
OUTSIDERS(%)	80	68.558	66.667	11.353	40.000	90.909
CEOCHAIR (%)	80	66.250	100.000	47.584	0.000	100.000
CEOOWN (%)	80	6.686	3.444	9.617	0.264	62.425
INST (%)	80	55.164	55.233	25.385	3.373	100.000
LTDE(%)	80	38.185	40.848	14.946	0.000	83.207



**Figure 4.3 Incentive-based compensation trend**

This table shows the time trend of each component of incentive-based compensation. Restricted stocks are valued at 25 percent of their granted value; all other forms of incentive-based compensation are valued at their granted value as reported by the SNL financial database. Each measure is presented as a percentage of total compensation.

Table 4.4. Pearson Correlation Coefficients

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.IBCOMP	1.000												
2.MKTCAP	<i>0.379</i>	1.000											
3.RETURN	0.081	0.088	1.000										
4.SDRETURN	-0.047	-0.039	-0.058	1.000									
5 ROA	<i>0.128</i>	0.068	<i>0.117</i>	-0.076	1.000								
6 SDROA	<i>-0.111</i>	<i>-0.221</i>	<i>-0.263</i>	0.056	0.007	1.000							
7.REINVEST	-0.080	<i>-0.156</i>	<i>-0.101</i>	0.035	<i>-0.142</i>	<i>-0.006</i>	1.000						
8.BSIZE	0.020	<i>0.425</i>	0.028	-0.091	-0.000	<i>-0.102</i>	-0.058	1.000					
9.OUTSIDERS	<i>0.174</i>	0.093	0.049	-0.053	-0.033	0.031	0.005	0.059	1.000				
10.CEOCHAIR	<i>0.129</i>	0.029	-0.002	0.003	-0.014	-0.055	0.027	<i>-0.120</i>	-0.029	1.000			
11.CEOOWN	<i>-0.203</i>	<i>-0.279</i>	0.004	0.055	<i>-0.158</i>	-0.003	<i>0.106</i>	<i>-0.188</i>	-0.080	<i>0.144</i>	1.000		
12.INST	<i>0.368</i>	<i>0.707</i>	0.038	<i>-0.108</i>	0.036	<i>-0.135</i>	<i>-0.112</i>	<i>0.215</i>	<i>0.109</i>	-0.048	<i>-0.298</i>	1.000	
13.LTDE	<i>-0.105</i>	<i>-0.207</i>	-0.093	0.003	<i>-0.381</i>	0.025	0.046	0.015	<i>0.099</i>	<i>-0.146</i>	0.066	<i>-0.052</i>	1.000

This table provides Pearson correlation coefficients between incentive based compensation and economic, board structure, and monitoring variables. IBCOMP is the ratio of total incentive based compensation to total compensation; MKTCAP is the natural logarithm of total capitalization; ROA is the ratio of earnings before interest and taxes (before extraordinary items) to average assets, and SDROA is the standard deviation of ROA over the last three years. RETURN is the 1-year cumulative stock return, using daily stock return data, and SDRETURN is the standard deviation of one-year daily stock returns. REINVEST is the ratio of Net Property Investment to Funds from Operations. BSIZE is the number of directors in the board; OUTSIDERS is the ratio of outside directors to the total number of directors in the board; CEOCHAIR is an indicator variable that equals 1 if the CEO leads the board of directors, zero otherwise, and CEOOWN is the CEO's share ownership as a percentage of the total outstanding shares. Finally, INST is the percentage of outstanding shares owned by institutional investors, and LTDE is the ratio of total long-term debt to total assets. Correlation coefficients that are significant at the 5 percent level are in italics.

## CHAPTER 5

### RESULTS ON PERFORMANCE

This chapter provides and discusses the results for the relation between incentive-based compensation and subsequent REIT performance. Results for both unbalanced and balanced panel data are included.

As described in section 4.2.1., Lagrange Multiplier tests were performed to decide between pooled OLS or panel data techniques. For the balanced panel data, based on the least square residuals, a Lagrange Multiplier test statistic of 4.85 is obtained. This value exceeds the 95 percent critical value (3.84) as given by the chi-square distribution, with one degree of freedom. Since the test statistic is greater than the critical value, the hypothesis that the variance of  $z_i$  is equal to zero can be rejected, and it can be concluded that individual effects do exist. As such, the classical regression model is inappropriate. Similarly, for unbalanced panel data the, Lagrange multiplier test statistic is 12.60 and the critical value, again, equals 3.84; thus, the hypothesis that the variance of  $z_i$  is again rejected, and it can be concluded that individual effects do indeed exist.

Next, it was modeled the ROA and RETURN equations using a one-way fixed effects approach. Tables 5.1 and 5.2 show the results of performance models for unbalanced and balanced panel data, respectively. Compensation is measured either as the ratio of incentive-based compensation to total compensation (Model 1) or as the natural log of the dollar amount of incentive-based compensation (Model 2).

Hypothesis 1 examines whether paying incentive-based compensation at time  $t$  improves long term REIT subsequent performance. Specifically, it was tested the effect

of incentive-based compensation awarded at time  $t-1$ , and observed at time  $t$  on REIT performance at times  $t+1$  and  $t+3$ . It is expected to see no relation between incentive-based compensation and performance at time  $t+1$ , but a positive relation between incentive-based compensation and performance at time  $t+3$  would be consistent with the alignment of interest hypothesis. It is assumed that incentive-based compensation is intended to improve long run rather than short run REIT performance.

Table 5.1, for an unbalanced panel data, shows the effects of incentive-based compensation on REIT performance. The results find no relation between incentive-based compensation and ROA for either one-year or three-year subsequent REIT performance. In addition, and contrary to expectations, it is found a strong negative relation between incentive-based compensation and subsequent one-year and three-year REIT stock returns. Overall, the findings in the relation between incentive-based compensation and three year subsequent performance, as measured by ROA, and between incentive-based compensation and subsequent performance, as measured by REIT stock returns, are inconsistent with the alignment of interest hypothesis for the case of REITs.

As shown in Table 5.2, results on the relation between incentive-based compensation and REIT performance are similar for the case of a balanced panel data. Again, it is found a strong negative relation between incentive-based compensation and subsequent one-year and three-year REIT stock returns. In addition, it is found no relation between incentive-based compensation and ROA for either one-year or three-year subsequent REIT performance.

Overall, the results are inconsistent with the alignment of interest hypothesis and the findings of Ryan and Wiggins (2000), Scott, Anderson, and Loviscek (2001); and Mehran (1995). However, our findings are consistent with Pennathur, Gilley, and Shelor (2005) who find a negative relation between one-year change in stock return and stock option awards. They attribute such results to the market conditions at the time covered in their sample. However, it was controlled for time effects and the research findings were similar. Such results imply that paying incentive based compensation negatively affects REIT performance, especially in the short-term. In accordance to agency theory, there should not be any relation between long-term incentives and short-term performance.

The results on the relation between incentive-based compensation and long-term subsequent performance are especially intriguing. The hypothesis states a positive relation between incentive-based compensation and long-term subsequent performance. Therefore, the findings of no relation between incentive-based compensation and long term REIT return on assets are at odds with the agency literature theory. It is possible that incentive-based compensation is not found to affect REIT performance given the highly regulated nature of REITs and the existence of alternative control and monitoring mechanisms that substitute for incentive-based compensation paid to REIT CEOs.

However, the negative relation between incentive-based compensation and long-term stock returns is harder to explain. Theoretically, incentive-based compensation is the form of remuneration that gives REIT CEOs the incentive to maximize their firm value, but our results represent evidence against such a hypothesis. Then, why is incentive-based compensation being paid at high levels to CEOs even though REITs experience poor performance? The answer could be in the nature of the managerial labor market for

REIT CEOs. REIT management requires a set of specialized skills that may be scarce in the market. Hence, to attract and retain the best CEOs, competitive compensation needs to be awarded. This process may distort the original purpose that incentive-based compensation has from an agency perspective, which is to motivate managers to pursue shareholders' interests instead of their own and result in non-maximizing compensation practices. Thus, agency-theory explanations for incentive-based compensation may not apply due to labor market competition.

Table 5.1 Results on Performance: Unbalanced panel data

<i>PANEL A: Dependent variable: One-year subsequent performance</i>				
	Model 1		Model 2	
	ROA	RETURN	ROA	RETURN
IBCOMP	0.664 (1.40)	-14.341** (-2.04)		
LOGIBCOMP			0.083 (1.18)	-2.848*** (-2.61)
MKTCAP	-0.415 (-1.09)	-8.885 (-1.86)	-0.441 (-1.15)	-7.662 (-1.61)
REINVEST	0.005 (0.82)	0.040 (0.57)	0.004 (0.80)	0.036 (0.51)
R-Square	0.641	0.230	0.641	0.240
Observations	436	436	436	436

<i>PANEL B: Dependent variable: Three-year subsequent performance</i>				
	Model 1		Model 2	
	ROA	RETURN	ROA	RETURN
IBCOMP	-0.125 (-0.40)	-25.189** (-1.99)		
LOGIBCOMP			-0.005 (-0.12)	-3.817** (-2.04)
MKTCAP	-0.372 (-1.48)	22.065** (2.14)	-0.370 (-1.47)	22.466** (2.18)
REINVEST	0.003* (1.73)	0.262*** (3.28)	0.003* (1.74)	0.258*** (3.22)
R-Square	0.865	0.628	0.865	0.628
Observations	329	329	329	329

This table presents one-way fixed effects estimates for the models considered. The dependent variables are RETURN, the cumulative subsequent stock return, and ROA, the ratio of net income (before extraordinary items) to average assets as of the next period. IBCOMP is the ratio of incentive-based compensation to total compensation (Model 1), and LOGIBCOMP is the natural log of the dollar amount of incentive based compensation (Model 2). MKTCAP is the natural logarithm of total capitalization, and REINVEST is the ratio of Net Property Investment to Funds from Operations. Statistical significance is displayed by the use of one (10%), two (5%), or three (1%) stars.

Table 5.2 Results on Performance: Balanced panel data

<i>PANEL A: Dependent variable: One-year subsequent performance</i>				
	Model 1		Model 2	
	ROA	RETURN	ROA	RETURN
IBCOMP	0.780 (1.40)	-18.374*** (-2.68)		
LOGIBCOMP			0.086 (1.10)	-2.815*** (-2.95)
MKTCAP	-0.703 (-1.48)	-8.350 (-1.43)	-0.713* (-1.49)	-7.660 (-1.31)
REINVEST	0.003 (0.37)	0.121 (1.34)	0.003 (0.38)	0.112 (1.23)
R-Square	0.640	0.160	0.639	0.165
Observations	325	325	325	325

<i>PANEL B: Dependent variable: Three-year subsequent performance</i>				
	Model 1		Model 2	
	ROA	RETURN	ROA	RETURN
IBCOMP	-0.164 (-0.48)	-32.289*** (-2.58)		
LOGIBCOMP			-0.010 (-0.21)	-3.564** (-2.00)
MKTCAP	-0.318 (-1.12)	35.632*** (3.40)	-0.313 (-1.10)	36.303*** (3.44)
REINVEST	0.010*** (3.91)	0.328*** (3.44)	0.010*** (3.93)	0.333*** (3.47)
R-Square	0.868	0.650	0.868	0.645
Observations	259	259	259	259

This table presents one-way fixed effects estimates for the models considered. The dependent variables are RETURN, the cumulative subsequent stock return, and ROA, the ratio of net income (before extraordinary items) to average assets as of the next period. IBCOMP is the ratio of incentive-based compensation to total compensation (Model 1), and LOGIBCOMP is the natural log of the dollar amount of incentive based compensation (Model 2). MKTCAP is the natural logarithm of total capitalization and REINVEST is the ratio of Net Property Investment to Funds from Operations. Statistical significance is displayed by the use of one (10%), two (5%), or three (1%) stars.

## CHAPTER 6

### RESULTS ON THE DETERMINANTS OF INCENTIVE-BASED COMPENSATION

This chapter provides a discussion and interpretation of the results for the determinants of incentive-based compensation. Sections 6.1 through section 6.4 discuss the effect of monitoring mechanisms on the determination of the level of incentive-based compensation to REIT CEOs. Section 6.5 discusses findings on the interrelations between incentive-based compensation, CEO ownership, and performance; and other secondary results.

In general, monitoring and alignment mechanisms, such as CEO ownership, board of directors, debt monitoring, and institutional or blockholders ownership, as well as economic determinants, such as size, investment opportunities, total or idiosyncratic risk, prior or current year performance, and leverage, have been found to affect CEO compensation schemes. In this section, the results for the determinants of incentive-based compensation for REITs CEOs are presented.

Panel A in Tables 6.1. and 6.2. shows the OLS results on the relation between incentive-based compensation, measured either as the ratio of incentive-based compensation to total compensation or as the natural log of the dollar amount of incentive-based compensation, respectively, and economic and governance determinants.

In addition to the pooled OLS results, panel B of Tables 6.1. and 6.2 presents the 2SLS regression results. The academic literature points out that compensation, firm performance, and CEO stock ownership are endogenously determined. That is, the CEO stock ownership may affect performance, but it can be a function of performance, too. For example, in the scenario of good firm performance, the CEO may have the incentive to increase his stock ownership in the firm, and as the CEO obtains more ownership in the firm, he has more incentive to improve firm performance. In the same token, endogeneity is possible between compensation and performance. Specifically, incentive-based compensation could be both a result of REITs previous performance and a factor that influences subsequent performance. In this scenario, OLS results are unreliable because of simultaneous equation bias.

To address endogeneity issues, a system of simultaneous equations with CEO incentive based compensation, performance, and CEO ownership as the endogenous variables is estimated. Economic determinants and other governance variables are treated as exogenous variables. In order to solve the system, at least two exogenous variables must be dropped from each equation so that the equation is identified. This relies on theory or prior research to determine the exogenous variables to be included or excluded in each of the equations. Following Ghosh and Sirmans (2005), the market capitalization and the debt to equity variable are dropped from the compensation equations.<sup>15</sup> Also, institutional holdings and board size are dropped from the performance equations.

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<sup>15</sup> We acknowledge, as previous researchers have, that the exclusion of variables driven by the identification requirement can result in unreliable results. However, this seems not to be the case in our study because we drop alternative variables and run the models, as robustness checks, and the results for both the compensation and performance equations stay the same.

## 6.1. CEO Ownership

Agency literature suggests that CEO ownership in the firm serves as an alignment mechanism between his interests and those of the shareholders. It is argued that in setting compensation schemes, CEOs with share ownership would still agree to be paid incentive-based compensation but at a reasonable level. Therefore, it is expected to find a negative relation between CEO ownership and the level of incentive-based compensation paid to CEOs.

Similar to Ghosh and Sirmans (2005), pooled regression results indicate that CEO ownership is inversely related to incentive based compensation when incentive-based compensation is measured as the natural log of incentive-based compensation to total compensation. This could mean that CEOs with high stock ownership prefer cash compensation over incentive-based compensation in order to reduce excessive exposure of their personal wealth to the firm's risk. However, when the measure of incentive-based compensation is the natural log of total incentive-based compensation, the finding is no longer statistically significant.

2SLS results confirm the pooled regression results. When incentive-based compensation is measured as the natural log of the dollar amount of incentive-based compensation, it is found that incentive-based compensation and CEO ownership are inversely related for both measures of performance, REIT return on assets, and stock returns. However, when incentive-based compensation is measured as the ratio of incentive-based compensation to total compensation, CEO stock ownership is negatively related to incentive-based compensation, but only in the case of returns on assets.

## **6.2. Structure of the Board of Directors**

The size and composition of the board may provide evidence of board effectiveness and independency. Researchers argue that small boards are more efficient than large boards because as board size increases, it becomes more difficult to coordinate board actions, such as agreements on the level and type of compensation arrangements for REIT CEOs. Therefore, it is expected to observe a positive relation between board size and incentive-based compensation.

In addition, whether the CEO is chairman of the board is commonly considered a measure of the influence of CEOs on boards. A CEO that chairs the board and has the power to name directors is assumed to have more control on board decisions, for his own benefit, than in the case where a CEO neither chairs the board nor appoints directors. Therefore, it is expected to observe a positive relation between the CEO leading the board and incentive-based compensation.

Panel A in Tables 6.1 and 6.2 provides results for the pooled regression models. Unlike Ghosh and Sirmans (2005) and contrary to our expectations, it is found that board size is inversely related to incentive based compensation. This implies that CEOs in REITs with larger boards receive lower incentive-based compensation. Such a result goes against the hypothesis that larger boards are less effective in monitoring activities and are easier to control by the CEO. However, the case of REITs may be an exception. Compared to the average twelve-member board for non-REITs, the average REIT board with eight members is relatively small but within the optimal size range suggested by Jensen (1993).

The 2SLS results are consistent with our pooled regression results. When incentive-based compensation is measured as the ratio of incentive-based compensation to total compensation or the natural log of the dollar amount of incentive-based compensation, the size of the board is found to be negatively related to incentive-based compensation for both measures of performance.

With respect to the relation between the CEO serving as chairman of the board and incentive-based compensation, the pooled regression results indicate a positive relation between the CEO serving as chairman of the board and incentive-based compensation. This is consistent with the idea that as the CEO has more power over the board, he or she is more able to extract additional compensation.

Panel B in Tables 6.1 and 6.2 shows the 2SLS results when incentive-based compensation is measured as the natural log of the dollar amount of incentive-based compensation or the natural log of the dollar amount of incentive-based compensation, respectively. For both measures of performance, CEO chairmanship of the board is found to be positively associated to the level of incentive based compensation. Overall, these results confirm the OLS results.

In addition, it is found a positive relation between the percentage of outside directors in the board and incentive based compensation, when measured as the ratio of incentive-based compensation to total compensation except in the case of 2SLS model when return is the measure of performance. This result is plausible with the common practice of independent directors to favor the award of incentive-based compensation in the attempt to align managers and shareholders.

### **6.3 Debt Monitoring**

Leverage is typically a control variable for agency costs of debt in non-REITs and REITs compensation studies. However, it is believed that REITs provide an opportunity to test for the monitoring benefits of debt rather than for controlling for agency cost of debt. Given that REITs invest in tangible assets which make them less sensitive to bankruptcy risk, are highly regulated firms, should prefer equity financing over debt financing due that they do not obtain a tax shelter for the use of debt, and apparently have low agency cost of debt, it is expected that debt is negatively related to incentive-based compensation since debt monitoring is a substitute for incentive-based compensation.

Consistent with previous compensation literature for REITs, in both pooled and 2SLS regression results, it is found that debt is unrelated to incentive-based compensation, consistent with previous compensation literature for REITs. This is a peculiar result since it could be expected a leverage variable to capture either agency costs of debt or debt monitoring power. As suggested by John and John (1993) and Bryan, Nash, and Patel (2006), a possible explanation could be the lack of usage of proxies that target agency problems better. However, the effect of CEO incentive-based compensation on the agency costs of debt for REITs or a fancier measure for debt monitoring constitute by themselves topics out of the scope of this dissertation (to be addressed in further research efforts).

### **6.4. Institutional Ownership**

Institutional shareholders are not subject to the five or fewer rule for REITs, are permanent blockholders, and, thus, are able to control the level of incentive-based

compensation paid to CEOs; therefore, a negative relation between the level of incentive-based compensation paid to CEOs and institutional shareholdings is expected.

In the pooled regression results, it is found that institutional ownership is positively related to incentive based compensation. The 2SLS results confirm such findings, except when stock returns are the measure of performance. Overall, a positive relation between incentive-based compensation and institutional holdings is inconsistent with previous results for other types of compensation other than those reported by Ryan and Wiggins (2000). Thus, the hypothesis that institutional shareholders monitor REIT managers, thereby substituting for the role of incentive-based compensation is rejected. Instead, there is evidence suggesting that institutional shareholders seek more incentive-based compensation to further align managers' interests with their own.

In summary, the OLS and 2SLS results consistently support two of five hypotheses; namely, incentive-based compensation is positively related to CEO chairmanship and negatively related to CEO ownership. Still, there is no empirical support for the remaining three hypotheses. Instead of a negative relation between debt monitoring and incentive-based compensation, no relation was found. Also, the hypotheses state a positive relation between board size and incentive-based compensation and a negative relation between institutional holdings and incentive-based compensation, but it was found, instead, that board size is negatively related to incentive-based compensation and institutional holdings are positively related to it.

## 6.5. Other results

Compared to the case of governance and alignment mechanisms, economic determinants are less decisive determinants of the level of incentive-based compensation paid to REIT CEOs. As shown in panel A of Table 6.1, when incentive-based compensation is measured as the ratio of incentive-based compensation to total compensation, no economic determinant is significantly related to incentive-based compensation. That is, a REITs' size, leverage, growth opportunities, and business risk are unrelated to the level of REIT CEOs incentive-based compensation. In addition, REIT property focus also does not impact the level of incentive-based compensation. In contrast, as shown in panel A of Table 6.2, when incentive-based compensation is measured as the natural logarithm of the total dollar amount of CEO incentive-based compensation, REIT size impacts incentive-based compensation programs. Consistent with most of the previous literature, the larger the firm, the more complex its operation, and, thus, there is more need for using incentive-based compensation to align managers' and shareholders' interest. Interestingly, no other economic determinant is significantly related to incentive-based compensation. That is, leverage, growth opportunities, and business risk are unrelated to the level of a REIT CEOs incentive-based compensation. In addition, incentive-based compensation turns out to be affected by property focus<sup>16</sup> for all REITs but office REITs. Finally, the year on which incentive-based compensation is awarded seems not to be important in any other case. This implies that the levels of incentive based compensation are set independently of the market conditions.

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<sup>16</sup> The reference level is self-storage, following Scott, Anderson, and Loviscek (2001)

The 2SLS results in panels B of Tables 6.1 and 6.2 generally support the pooled results. 2SLS results also fail to show any relation between incentive-based compensation and economic determinants.<sup>17</sup> The only point of contrast between pooled OLS and 2SLS results is the loss of statistical significance for the health care, hotel, and residential property focus dummies, when incentive-based compensation is measured as the natural log of the total dollar amount of incentive-based compensation.

The results for the remaining equations in the 2SLS systems are as follows: REIT performance (ROA) is negatively impacted by growth opportunities and leverage. In addition, a REITs ROAs steadily decline over the years, as indicated by the negative and significant sign of the year effect dummies. Specifically, REITs experienced lower ROAs during the years of 2001 and 2002 compared to the ROA in the year 1999. Finally, ROA is lower for hotel REITs compared to self-storage REITs. CEO ownership of company stock is a decreasing function of board size and an increasing function of CEO chairmanship. The latter may be due to the fact that many REITs CEOs are founders (or related to the founders) who have accumulated an important ownership in the REITs over the years.

As far as the results for the performance equation when stock returns are the measure of REIT performance, it is found that only debt influences stock returns, and the influence is negative. In addition, stock returns vary depending on the year; specifically, they have been consistently better since year 1999. Finally, when incentive-based compensation is measured as the ratio of incentive-based compensation to total

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<sup>17</sup> We could not verify the relation between REIT size and incentive-based compensation since, following Ghosh and Sirmans (2005), we exclude MKTCAP, the proxy for REIT size, from the 2SLS models. The reason is that MKTCAP seems to rob explanatory power to other explanatory and control variables included in the models.

compensation, hotel REITs stock returns turn out lower than stock returns for self-storage REITs.

Finally, in the interrelation between incentive-based compensation, performance, and CEO ownership, it is found that incentive-based compensation is, generally, negatively impacted by CEO stock ownership, a result that is consistent with Ghosh and Sirmans' (2005) findings for the case of total compensation. However, unlike Ghosh and Sirmans (2005), the results suggest no interrelation between incentive-based compensation and performance. Thus, incentive-based compensation is set independently to REIT performance, and it appears to not influence REIT performance. Interestingly, the results suggest that performance, as measured by stock returns, positively impacts CEO stock ownership.

Table 6.1: Results for IBCOMP

<i>Panel A: Pooled OLS</i>			
	Predicted Effect	Model 1	Model 2
INTERCEPT		-43.984 (-1.15)	-41.266 (-1.14)
MKTCAP	+	2.769 (1.49)	2.910 (1.59)
ROA	+	0.652 (0.93)	
SDROA	?	-0.363 (-0.31)	
RETURN	+		0.084 (1.18)
SDRETURN	?		-0.663 (-0.62)
REINVEST	+	0.059 (0.84)	0.051 (0.73)
BSIZE	+	-1.737 (-2.33)**	-1.777 (-2.38)**
OUTSIDERS	?	0.292 (2.54)**	0.272 (2.36)**
CEOCHAIR	+	0.067 (2.37)**	0.069 (2.43)**
CEOOWN	-	-0.195 (-1.33)	-0.202 (-1.38)
INST	-	0.273 (3.64)***	0.262 (3.45)***
LTDE	-	0.007 (0.08)	-0.008 (-0.09)
YR00	?	4.398 (1.04)	4.006 (0.96)
YR01	?	3.672 (0.85)	0.600 (0.12)
YR02	?	1.374 (0.32)	-1.907 (0.39)
YR03	?	1.244 (0.29)	-1.015 (-0.23)
Health Care	?	10.932 (1.22)	12.350 (1.39)
Hotel	?	1.060 (0.12)	1.182 (0.13)
Residential	?	1.023 (0.13)	0.903 (0.11)
Retail	?	5.658 (0.73)	5.223 (0.67)
Office	?	-3.128 (-0.38)	-2.881 (-0.35)
Industrial	?	12.438 (1.41)	13.149 (1.49)
Mixed		8.235 (0.98)	8.296 (0.99)
Adjusted R-Square		0.134	0.136
Observations		390	390

This table presents pooled OLS (panel A) and 2SLS (panel B) estimates for the models considered. The dependent variable is IBCOMP, the incentive based compensation as a percentage of total compensation. MKTCAP is the natural logarithm of total capitalization; ROA is the ratio of net income (before extraordinary items) to average assets, and SDROA is the standard deviation of ROA over the last three years. RETURN is the 1-year cumulative stock return, using daily stock return data, and SDRETURN is the standard deviation of one-year daily stock returns. REINVEST is the ratio of Net Property Investment to Funds from Operations. BSIZE is the number of directors in the board' OUTSIDERS is the percentage of outside directors out of the total number of directors in the board; CEOCHAIR is an indicator variable that equals one if the CEO leads the board of directors, zero otherwise, and CEOOWN is the CEO's share ownership as a percentage of the total outstanding shares. Finally, INST is the percentage of outstanding shares owned by institutional investors, and LTDE is the ratio of total long-term debt to total capitalization. YR 00, YR 01, YR02, and YR03 are binary variables that have value one for observations in years 2000, 2001, 2002, and 2003 respectively, and 0 otherwise. Finally, Health Care, Hotel, Residential, Retail, Office, Industrial, and Mixed are dummy variables for a REITs property focus. Statistical significance is displayed by the use of one (10%), two (5%), or three (1%) stars.

Table 6.1. Continued

<i>Panel B: 2SLS</i>						
	IBCOMP		ROA		CEOOWN	
INTERCEPT	31.742	(1.23)	14.328	(2.60)***	16.663	(2.95)***
<i>Endogenous variables</i>						
IBCOMP			0.008	(0.53)	-0.139	(-1.43)
ROA	0.779	(0.34)			0.522	(0.72)
CEOOWN	-2.203	(-1.44)*	-0.014	(-0.17)		
<i>Exogenous variables</i>						
MKTCAP			-0.381	(-1.52)		
REINVEST	0.075	(0.84)	-0.010	(-1.96)*		
LTDE			-0.046	(-7.21)***	0.025	(0.53)
BSIZE	-3.034	(-1.94)*			-0.818	(-3.18)***
OUTSIDERS	0.262	(1.86)*	-0.009	(-0.93)	-0.021	(-0.38)
CEOCHAIR	0.137	(2.25)**	-0.003	(-0.78)	0.040	(3.04)***
INST	0.220	(1.83)*			-0.022	(-0.59)
YR00	4.686	(0.95)	0.128	(0.42)		
YR01	4.700	(0.91)	-0.315	(-1.03)		
YR02	2.466	(0.45)	-0.712	(-2.31)**		
YR03	2.664	(0.45)	-0.963	(-3.14)***		
Health Care	2.813	(0.24)	1.060	(1.38)		
Hotel	-2.135	(-0.18)	-1.354	(-2.08)**		
Residential	0.979	(0.10)	-0.322	(-0.55)		
Retail	20.445	(1.32)	0.023	(0.03)		
Office	2.919	(0.25)	-0.032	(-0.05)		
Industrial	12.485	(1.22)	0.469	(0.68)		
Mixed	15.812	(1.33)	0.538	(0.80)		
Adjusted R-Square	0.081		0.260		0.083	
Observations	390		390		390	

Table 6.1. Continued

<i>Panel B: 2SLS</i>						
	IBCOMP		RETURN		CEOOWN	
INTERCEPT	39.947	(1.51)	49.640	(0.89)	19.292	(5.25)***
<i>Endogenous variables</i>						
IBCOMP			0.214	(1.33)	-0.118	(-1.35)
RETURN	0.172	(0.33)			0.097	(3.00)***
CEOOWN	-2.280	(-1.40)	-0.231	(-0.27)		
<i>Exogenous variables</i>						
MKTCAP			-3.123	(-1.23)		
REINVEST	0.056	(0.63)	0.056	(1.08)		
LTDE			-0.210	(-3.20)***	0.012	(0.39)
BSIZE	-3.052	(-1.92)*			-0.831	(-3.27)***
OUTSIDERS	0.230	(1.46)	0.079	(0.78)	-0.043	(-0.80)
CEOCHAIR	0.143	(2.10)**	-0.031	(-0.84)	0.039	(3.23)***
INST	0.208	(1.58)			-0.033	(-1.01)
YR00	3.708	(0.65)	5.421	(1.74)*		
YR01	-1.526	(-0.09)	34.254	(10.97)***		
YR02	-3.981	(-0.23)	34.195	(10.94)***		
YR03	-1.489	(-0.14)	19.934	(6.39)***		
Health Care	4.871	(0.38)	-11.681	(-1.50)		
Hotel	-1.410	(-0.11)	-11.378	(-1.72)*		
Residential	0.444	(0.05)	1.487	(0.25)		
Retail	19.612	(1.31)	8.706	(1.10)		
Office	2.903	(0.24)	2.557	(0.40)		
Industrial	12.780	(1.21)	-1.822	(-0.26)		
Mixed	15.500	(1.31)	5.217	(0.76)		
Adjusted R-Square	0.078		0.386		0.104	
Observations	390		390		390	

Table 6.2. Results for LOG-IBCOMP

<i>Panel A: Pooled OLS</i>					
	Predicted Effect	Model 1		Model 2	
INTERCEPT		2.750	(1.00)	3.917	(1.51)
MKTCAP	+	0.313	(2.36)**	0.289	(2.21)**
ROA	+	0.060	(1.20)		
SDROA	?	0.074	(0.88)		
RETURN	+			0.003	(0.67)
SDRETURN	?			-0.067	(-0.87)
REINVEST	+	0.003	(0.63)	0.002	(0.37)
BSIZE	+	-0.109	(-2.05)**	-0.112	(-2.09)**
OUTSIDERS	?	0.011	(1.32)	0.009	(1.14)
CEOCHAIR	+	0.006	(2.85)***	0.006	(2.85)***
CEOOWN	-	-0.032	(-3.02)***	-0.033	(-3.16)***
INST	-	0.025	(4.75)***	0.025	(4.50)***
LTDE	-	-0.001	(-0.22)	-0.003	(-0.54)
YR00	?	0.469	(1.56)	0.380	(1.28)
YR01	?	0.469	(1.53)	0.251	(0.72)
YR02	?	0.390	(1.26)	0.148	(0.42)
YR03	?	0.388	(1.26)	0.199	(0.62)
Health Care	?	2.076	(3.26)***	2.226	(3.50)***
Hotel	?	1.447	(2.31)**	1.449	(2.31)**
Residential	?	1.199	(2.08)**	1.207	(2.09)**
Retail	?	1.767	(3.20)***	1.765	(3.17)***
Office	?	0.835	(1.42)	0.927	(1.56)
Industrial	?	2.075	(3.31)***	2.139	(3.40)***
Mixed	?	2.132	(3.55)***	2.180	(3.62)***
Adjusted R-Square		0.238		0.236	
Observations		390		390	

This table presents pooled OLS (panel A) and 2SLS (panel B) estimates for the models considered. The dependent variable is LOG-IBCOMP, the natural logarithm of the total dollar amount of CEO incentive based compensation. MKTCAP is the natural logarithm of total capitalization; ROA is the ratio of net income (before extraordinary items) to average assets and SDROA is the standard deviation of ROA over the last three years. RETURN is the 1-year cumulative stock return, using daily stock return data, and SDRETURN is the standard deviation of one-year daily stock returns. REINVEST is the ratio of Net Property Investment to Funds from Operations. BSIZE is the number of directors in the board; OUTSIDERS is the percentage of outside directors out of the total number of directors in the board; CEOCHAIR is an indicator variable that equals one if the CEO leads the board of directors, zero otherwise, and CEOOWN is the CEO's share ownership as a percentage of the total outstanding shares. Finally, INST is the percentage of outstanding shares owned by institutional investors and LTDE is the ratio of total long-term debt to total capitalization. YR 00, YR 01, YR02, and YR03 are binary variables that have value one for observations in years 2000, 2001, 2002, and 2003, respectively, and 0 otherwise. Finally, Health Care, Hotel, Residential, Retail, Office, Industrial, and Mixed are dummy variables for a REITs property focus. Statistical significance is displayed by the use of one (10%), two (5%), or three (1%) stars.

Table 6.2. Continued

<b>Panel B: 2SLS</b>						
	IBCOMP		ROA		CEOOWN	
INTERCEPT	11.148	(5.04)***	13.357	(2.75)***	25.167	(2.83)*
<i>Endogenous variables</i>						
IBCOMP			0.097	(0.53)	-0.839	(-0.99)
ROA	0.114	(0.58)			0.248	(0.39)
CEOOWN	-0.248	(-1.89)*	-0.006	(-0.08)		
<i>Exogenous variables</i>						
MKTCAP			-0.376	(-1.53)		
REINVEST	0.004	(0.56)	-0.010	(-1.93)*		
LTDE			-0.046	(-7.15)***	0.018	(0.40)
BSIZE	-0.245	(-1.84)*			-0.729	(-3.06)***
OUTSIDERS	0.008	(0.64)	-0.008	(-0.89)	-0.056	(-1.27)
CEOCHAIR	0.013	(2.55)**	-0.003	(-0.83)	0.034	(3.01)***
INST	0.019	(1.89)*			-0.041	(-1.23)
YR00	0.411	(0.98)	0.126	(0.41)		
YR01	0.503	(1.14)	-0.324	(-1.05)		
YR02	0.446	(0.95)	-0.732	(-2.37)**		
YR03	0.510	(1.01)	-0.988	(-3.16)***		
Health Care	1.214	(1.22)	0.970	(1.15)		
Hotel	1.197	(1.21)	-1.478	(-2.06)**		
Residential	1.217	(1.44)	-0.430	(-0.67)		
Retail	3.354	(2.53)**	-0.149	(-0.18)		
Office	1.550	(1.55)	-0.165	(-0.25)		
Industrial	2.047	(2.34)**	0.372	(0.47)		
Mixed	2.936	(2.90)***	0.374	(0.49)		
Adjusted R-Square	0.099		0.261		0.091	
Observations	390		390		390	

Table 6.2. Continued

<i>Panel B: 2SLS</i>				
	IBCOMP		RETURN	CEOOWN
INTERCEPT	12.350	(5.33)***	24.813 (0.51)	27.412 (3.14)***
<i>Endogenous variables</i>				
IBCOMP			2.477 (1.34)	-0.962 (-1.15)
RETURN	0.025	(0.56)		0.098 (3.14)***
CEOOWN	-0.259	(-1.82)*	-0.027 (-0.03)	
<i>Exogenous variables</i>				
MKTCAP			-2.996 (-1.21)	
REINVEST	0.002	(0.20)	0.062 (1.21)	
LTDE			-0.204 (-3.11)***	0.018 (0.60)
BSIZE	-0.248	(-1.78)*		-0.742 (-3.12)***
OUTSIDERS	0.003	(0.23)	0.118 (1.32)	-0.067 (-1.52)
CEOCHAIR	0.014	(2.37)**	-0.037 (-0.98)	0.036 (3.26)***
INST	0.018	(1.54)		-0.040 (-1.25)
YR00	0.268	(0.53)	5.383 (1.74)	
YR01	-0.409	(-0.26)	34.023 (10.91)***	
YR02	-0.499	(-0.32)	33.679 (10.80)***	
YR03	-0.098	(-0.11)	19.319 (6.11)***	
Health Care	1.515	(1.37)	-13.993 (-1.64)	
Hotel	1.303	(1.13)	-14.547 (-2.00)**	
Residential	1.139	(1.37)	-1.281 (-0.20)	
Retail	3.232	(2.46)**	4.319 (0.52)	
Office	1.548	(1.49)	-0.837 (-0.12)	
Industrial	2.091	(2.26)**	-4.299 (-0.54)	
Mixed	2.890	(2.79)***	1.022 (0.13)	
Adjusted R-Square	0.089		0.390	0.109
Observations	390		390	390

## CHAPTER 7

### SUMMARY AND CONCLUSION

Even though incentive-based compensation has grown to comprise an important part of REIT CEOs total pay, incentive-based compensation has not been explicitly studied yet for Real Estate Investment Trusts (REITs). Besides, in an agency framework, the alignment role of incentive-based compensation remains an empirical question for REITs. The fact that REITs are subject to strict regulations, in exchange for corporate tax exemption, may affect a REITs compensation practices in two ways. On one hand, REIT managers may be better monitored than their counterparts in other, industries making it unnecessary to rely on incentive-based compensation. On the other hand, regulations can negatively affect REITs corporate governance mechanisms and, thus, make incentive-based compensation a key alignment mechanism for a REITs CEOs.

This dissertation tested the effect of incentive based compensation on REIT performance. Specifically, it was tested the alignment hypothesis, that of incentive-based compensation being positively related to long-term performance. In addition, this dissertation built on Ghosh and Sirmans' (2005) models to examine the determinants of the level of incentive-based compensation paid to REIT CEOs, but focusing on the role of institutional shareholdings rather than on the role of block holders' holdings.

Contrary to the expectations, this study did not find a positive relation between compensation and long-term subsequent performance. Instead, it found a negative relation between subsequent stock return and previously awarded incentive based compensation. Interestingly, no relation was found between incentive-based compensation and performance when ROA is the measure of performance. The result for the case of stock returns is consistent with the findings of Pennathur, Gilley, and Shelor (2005) in the relation between change in stock returns and stock option awards but inconsistent with agency theory and other findings (e.g. Ryan and Wiggins, 2000; Scott, Anderson, and Loviscek, 2001). Consequently, the evidence supports the interpretation that there is a need to limit incentive-based compensation paid to REIT CEOs in order to improve REIT performance.

As far as the determinants of incentive based compensation, the study finds that CEO ownership, whether the CEO chairs the board or not, board size, and institutional ownership are consistent determinants of the level of incentive based compensation awarded to REIT CEOs. Specifically, CEO ownership and board size are found to be negatively related to incentive-based compensation, while, whether the CEO chairs or not and institutional holdings are positively related to incentive-based compensation. In addition, the study finds that debt monitoring is unrelated to the level of incentive-based compensation paid to REIT CEOs. Finally, the study finds limited evidence that retail, industrial, and mixed REITs pay more incentive-based compensation to their CEOs than self-storage REITs.

In summary, this dissertation was started by asking two specific questions. First, does incentive-based compensation affect subsequent REIT performance? The answer is,

yes, it does because incentive-based compensation is negatively related to subsequent REIT performance. Second, what are the determinants of incentive-based compensation? The answer is that CEO stock ownership, board size, CEO chairmanship, and institutional holdings consistently determine the level of incentive-based compensation paid to REIT CEOs.

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