

# Real Estate, Governance, and the Global Economic Crisis

Piet Eichholtz

*p.eichholtz@maastrichtuniversity.nl*

Nils Kok

*n.kok@maastrichtuniversity.nl*

Erkan Yonder

*e.yonder@maastrichtuniversity.nl*

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## **Summary**

Real estate has been at the forefront of the financial crisis, with the intransparency of securitized products, such as MBS, CMBS, and CDOs, playing a critical role. Real estate equity investments have received less attention during the crisis. Listed property companies (REITs) offer an interesting perspective on the behavior of institutional investors in the real estate equity market. In this paper, we study the influence of the recent crisis on the relation between corporate governance and the performance of listed property companies in the U.S. We first investigate the effect of corporate governance structures on abnormal stock returns during the pre-crisis period, and then address the effects of the financial crisis on this relationship, during the recent period of economic distress. We find that firm-level corporate governance did not influence performance of real estate equity investments before the crisis, but the structure of corporate governance has become an important performance driver of real estate equity investments during and after the market downturn. One of the interpretations is that institutional investors have just started to recognize the importance of transparency in real estate equity investments during the recent crisis, which is fully consistent with the herd investments in securitized debt products, where opacity of the investments was so blissfully ignored.

Please send all correspondence to Piet Eichholtz: Maastricht University, Department of Finance, PO Box 616, 6200 MD, Maastricht, Netherlands. The European Centre for Corporate Engagement (ECCE), and METEOR, the research school of Maastricht University, provided financial support for this research. We thank the participants at the 2009 Conference on “Institutional Investors, Risk/Return and Corporate Governance Failures; Practical Lessons from the Global Financial Crisis” at Saint Mary’s College, California, Shyam Kamath, and two anonymous referees for their helpful comments.

## **I. Introduction**

The real estate sector has played an important role in the current economic crisis. Investors' bullish perspectives regarding the residential and commercial property markets not only allowed borrowers access to cheap and almost unlimited credit, but also offered the possibility to raise large amounts of equity on the public capital markets. However, when the property boom eventually came to an end, this changed the situation with regard to these investments rapidly and fundamentally.

In retrospect, the recent crisis is to a large extent a governance crisis, in which the lack of transparency of securitized products, such as Mortgage Based Securities (MBSs), Collateralized Mortgage Based Securities (CMBs) and Collateralized Debt Obligations (CDOs) played a crucial role. However, this lack of transparency seems to be mostly associated with the securitized debt products that have been created to finance real estate investments. On the real estate equity side, transparency seems to be less of a problem, thanks to the global rise of the Real Estate Investment Trust (REIT).<sup>1</sup>

This REIT market has become of major importance for institutional investors. The REIT structure was primarily created as an avenue for retail investors to gain exposure to (commercial) real estate investments. In the last two decades, however, institutional investors in many countries have shifted their property exposure from direct real estate holdings into listed and private property companies. As a result, REITs have become the key vehicle for real estate investments of institutional investors, who are now the dominant holders of REIT shares. For example, more than 60 percent of the property allocation of Dutch pension funds is now invested through private or public property companies.

With property investments mostly allocated to intermediate property vehicles, the governance structures of these vehicles are of real importance to key players in the global capital market -- pension funds and insurance companies. The governance structures and their

implications for the performance of equity investments in real property are difficult to observe in the market for private funds, but the listed property sector offers a laboratory as to how real estate capital providers integrate and evaluate corporate governance in real estate investment decisions.

Interestingly, where many papers have shown the importance of firm-level governance for common equity investments (see the next section for a detailed review of the literature), the evidence shows that governance has less influence on the performance of REITs.<sup>ii</sup> The distinct legal setting and organizational structure of REITs – U.S. law requires a 90 percent mandatory payout of net earnings – fundamentally changes the traditional principal-agent setting. The free cash flow problem is of less concern for REIT investors, as the legal distribution requirement limits the opportunities for managerial entrenchment.<sup>iii</sup> Thus, the restricted setting in which managers of REITs operate offers an interesting natural experiment to test the relationship between governance and performance. Under the substitution hypothesis, the legal restrictions that apply to REITs mitigate the need for strong firm-level corporate governance mechanisms.<sup>iv</sup> Governance may therefore be less important to investors. On the other hand, REIT managers can freely decide on how to use the free cash flow that remains after the mandatory payout. As the depreciation expense is sizeable for property companies, the discretionary cash flows can still be substantial. Under the complement hypothesis, it can therefore be expected that the relation between corporate governance and performance, which has been documented in the finance literature, holds for U.S. REITs as well.

Moreover, corporate governance is likely to play a more critical role during the current global financial crisis, as the expected return on investment for managers declines during such crises.<sup>v</sup> As a result, managers may become more entrenched during the crisis, in order to compensate their losses. Rajan and Zingales have documented how investors shunned

away from Asian markets at the beginning of the Asian crisis, since the legal environment did not sufficiently protect them from losses and/or downright expropriation.<sup>vi</sup> And, the role of institutional ownership may also change during a crisis: Mitton finds that institutional ownership positively affected returns during the Asian crisis, which was not the case before the market downturn.<sup>vii</sup>

We analyze the impact of the strength of corporate governance on the performance of equity investments in property, during the most recent boom and bust in the real estate market. Our analysis covers U.S. equity REITs, which we study on a yearly basis from 2003 through mid-2009. From 2003 through 2006, the REIT market was booming, and attracted large inflows of capital from both retail and institutional investors. In the real estate frenzy that preceded the current financial crisis, investors may well have invested in REITs, regardless of their governance structure. The investigation for the remaining period – from 2007 through mid-2009 – examines how corporate governance affected stock performance during the market downturn, when well-governed REITs may have had an edge over their less transparent counterparts.

To investigate whether there are significant performance differences between well-governed and poorly governed REITs, we exploit the Corporate Governance Quotient (CGQ) index, provided by Institutional Shareholder Services. First, we perform a two-step cross-sectional analysis on the sample of equity REITs. We then replicate the process for two sub-periods, in the rising market before the crisis and in the market downturn.

Our results show that the effects of corporate governance on REIT performance differ markedly between the two sub-periods. In the boom period, we do not find any significant relationships between corporate governance structures of real estate equity investments and their abnormal returns. One of the interpretations of this finding is that (institutional) investors did not incorporate extra-financial information on the corporate

governance structure of REITs in their investment decision-making process. Contrasting the pre-crisis results, we document that the governance structure of property companies is positively associated with abnormal returns during the downturn, especially where related to board composition and audit quality.

We also address the degree of ownership concentration of institutional investors and executives. We find a convex relationship between abnormal returns and the share ownership of executives. Up to a threshold, insider ownership negatively affects stock performance, but above that threshold, stock performance is positively related to insider ownership. Our results also show that the size of shareholdings of block-holders has a positive relationship with abnormal returns. Thus, even though real estate holdings of institutional investors are mostly indirect, large shareholders can still have a direct impact on the performance of their real estate equity investments.

The rest of this paper is organized as follows: in the next section, we briefly address the literature on corporate governance, performance, and listed property companies. The third section provides an explanation of our main dataset: the ISS corporate governance index. This section also provides the descriptive results of the portfolio analysis, comparing the performance of portfolios of badly governed REITs with those of well-governed ones. In the fourth section, we analyze the relationship between corporate governance and equity performance in the light of the changing investment climate surrounding U.S. listed property companies. We investigate the effect of corporate governance determinants on equity performance from a cross-sectional perspective. The paper ends with conclusions and practical implications for institutional investors and policy makers.

## **II. Literature Review**

The seminal work of Gompers, Ishii, and Metrick documents that stock returns are positively related to the structure and strength of corporate governance.<sup>viii</sup> An investment strategy that buys a portfolio of well-governed companies, and sells a portfolio of poorly governed companies generates abnormal returns of 8.5 percent. Following this paper, a new stream of literature has emerged, studying different markets and different time periods.

For instance, Drobetz, Schillhofer, and Zimmermann perform a similar portfolio analysis on German companies.<sup>ix</sup> Their investment strategy that takes a long position in companies with high governance quality and a short position in poorly governed companies earns abnormal returns of 12 percent. They explain this finding by unexpected agency costs, the closing of the value gap, and a noise effect. If investors do not identify the corporate governance differentials immediately, and they eventually do, this is corrected by paying a premium for well-governed companies. Alternatively, it is possible that correcting a poor governance structure creates value, and consequently causes a value gap between the fair market value and actual market value of companies. The adjusting of stock prices then closes this value gap. Last, there may be a sudden improvement in the governance structure, leading to a noise effect that produces higher stock returns.

The literature regarding the relationship between stock returns and corporate governance for other countries than the U.S. and Germany generates similar findings. Bauer, Guenster, and Otten find that good governance portfolio returns are higher than returns for bad governance portfolios by around 7 percent for UK companies, but much smaller for similar continental European portfolios.<sup>x</sup> For Japan, Bauer et al. show that well governed companies exhibit annual excess abnormal returns of up to 15 percent as compared to poorly governed companies.<sup>xi</sup>

The governance anomaly seems to be at least partially driven by the ignorance of governance issues by investors during the early days of the bull market in the nineties, as the

results disappear in studies using more recent samples.<sup>xii</sup> Indeed, after adjusting firm returns by industry returns, the abnormal returns obtained from the difference portfolio in the 1990s disappear in the analysis of Johnson, Moorman, and Sorescu.<sup>xiii, xiv</sup>

The importance of corporate governance has also been investigated for investments in real estate equities -- or "REITs". To gain their tax-exempt status, REITs are required to generate at least 75 percent of their income from real-estate-related projects and are required to distribute 90 percent of net income to shareholders. However, net income excludes depreciation, which can generate substantial discretionary cash flows for managers of property companies. Additionally, the five largest shareholders cannot hold more than 50 percent of the shares outstanding. These requirements may affect the need for corporate governance structures for REITs, and the restricted legal setting surrounding REITs makes this market an interesting laboratory for analysis.

Several studies have addressed the distinct governance setting in REITs. Han investigates the effect of insider ownership on REIT share performance, and finds a positive, but nonlinear relationship.<sup>xv</sup> Hartzell, Sun, and Titman conclude that higher institutional ownership makes REITs more active in exploiting the investment opportunities surrounding them.<sup>xvi</sup> Ghosh and Sirmans, and Feng, Ghosh and Sirmans study the impact of board structure on stock performance.<sup>xvii, xviii</sup> Both studies document a positive impact of outside directors on performance. Hartzell, Kallberg, and Liu analyze corporate governance in the initial public offerings of REITs.<sup>xix</sup> They find that REITs with better governance structures at the IPO stage have higher operating performance.

In a paper that is most closely related to this study, Bauer, Eichholtz, and Kok test the relationship between corporate governance and operating performance in U.S. REITs, using a broad range of indicators for governance quality.<sup>xx</sup> Contrasting the evidence for the general stock market, they do not find a relation between the strength of company-specific

corporate governance structures and firm valuation or operating performance. The authors explain the lack of this relationship for REITs as a “REIT effect”: REITs operate under such specific legal obligations that managerial freedom is structurally curbed and the agency conflict thereby reduced. However, their analysis is performed in a booming market, and one could argue that investors are less critical with respect to the quality of corporate governance when the market participants are bullish, as the majority of investors in real estate markets were until early 2007. The remainder of this paper aims to analyze this puzzle in more detail.

### **III. Data and Descriptive Statistics**

This section describes the data used in this study and the descriptive statistics of the data sets.

#### **A. The Corporate Governance Quotient**

There are several frequently used proxies for the quality of corporate governance. We employ the Corporate Governance Quotient (CGQ) index, provided by Institutional Shareholder Services. The CGQ index is based on publicly disclosed documents and distinguishes 61 different governance mechanisms on four sets of items: board of directors, charter and bylaw provisions, anti-takeover provisions, and executive compensation. Using an internal scoring system, ratings are calculated for each company.<sup>xxi</sup> What distinguishes the CGQ index from other measures of corporate governance is its relative setting, which ensures cross-sectional variability in the corporate governance scores within an industry.

In addition to the overall governance rating, four different sub-scores are assigned to each company. These sub-scores provide information on four specific governance areas: the board of directors, takeover defences, executive and director compensation and ownership, and auditing. While the overall CGQ index ranges between 1 and 100, the scores on the four

sub-indices range from 1 to 5. In all cases, a high score represents a governance structure that is favourable to shareholders.

The CGQ database starts in 2002, but we restrict our analysis to the 2003 – 2009 ratings, as data on sub-indices are not or only partially available before 2003. We only use the governance scores of equity REITs.<sup>xxii</sup> We match the list of equity REITs in the CGQ database to the list of constituent companies in the NAREIT Equity index.<sup>xxiii</sup> This creates an initial equity REIT sample of 144 companies in January 2003, increasing to 152 in 2005, and subsequently decreasing to 112 property companies in May 2009.

We collect data on executive and institutional stock ownership from the SEC proxy statements (item Def 14-A) for each REIT. To obtain financial information, we match the REIT information in the CGQ database with CRSP data on stock prices. After this matching exercise, we end up with 131 publicly traded equity REITs in January 2003, increasing to 139 REITs in 2005, and then falling to 112 REITs by May 2009.

Table I presents the descriptive statistics for the sample of equity REITs. Panel A shows that the average CGQ ratings increase some 10 points from 2003 to 2004. The average governance scores persistently decline afterwards. An explanation may be the privatization of well-governed REITs during that period. During the turn of the market in 2007, the ratings decreased another 7 points.

The subcategories of the governance index in Panel A, governance quality related to board structure and executive compensation, show a downward trend after 2004. Conversely, governance quality related to takeover defenses increases until 2007, but experiences a sharp decline in 2008. This may be a reaction to the high number of acquisitions in 2007: around 20 REITs disappeared from the market. The annual averages for governance practices related to auditing do not show a clear trend before the crisis, but the strength seems to increase during the downturn, which suggests that equity REITs improve their auditing structures. The

average leverage ratio is slightly increasing before the crisis, and increases more rapidly with the start of the crisis. This may be explained by the sudden decrease in the market value of assets, relative to a more stable level of debt.<sup>xxiv</sup>

Panel B shows the average governance scores of the companies that are delisted and the companies that are first listed during the sample period. The delistings include REITs that were been acquired, that were voluntarily delisted, or went bankrupt.

**Table I.<sup>xxv</sup>**  
**Descriptive Statistics for Governance Scores and Firm Characteristics**

	Panel A. Descriptive Statistics-Annual Averages						
	2003	2004	2005	2006	2007	2008	2009 (Q2)
CGQ Index	59.08	69.73	66.18	64.31	57.69	58.42	55.97
Board Index	3.21	3.69	3.65	3.56	3.41	3.41	3.34
Compensation Index	3.82	3.86	3.66	3.64	3.31	3.42	3.26
Takeover Defenses Index	2.58	3.46	3.55	3.67	3.70	2.94	3.05
Audit Index	3.41	3.67	3.35	3.75	3.66	3.73	3.87
Number of Equity REITs	131	127	139	133	114	113	112
Size	1582.74	2159.51	2212.24	2954.60	2501.92	1558.28	1389.46*
Leverage	50.72	51.46	53.32	52.71	54.91	55.74	-
Panel B. Sample Trends							
<i>Removals from the Sample</i>							
	2004	2005	2006	2007	2008	2009 (Q2)	
Number of Removals	12	11	16	22	6	1	
<i>Average Governance Score of Previous Year</i>							
CGQ Index	59.69	79.14	73.35	61.69	55.48	37.30	
Board Index	3.50	4.27	3.94	3.59	4.00	3.00	
Takeover Index	3.33	3.55	3.13	3.95	3.00	5.00	
Audit Index	4.17	4.09	3.44	3.82	2.67	2.00	
Compensation Index	2.67	4.55	3.94	3.18	2.50	2.00	
<i>Additions to the Sample</i>							
	2004	2005	2006	2007	2008	2009 (Q2)	
Number of Additions	8	23	10	3	6	0	
<i>Average Governance Score</i>							
CGQ Index	88.85	69.93	63.88	52.50	49.32	-	
Board Index	4.50	4.13	3.50	3.67	3.00	-	
Takeover Index	4.00	3.70	3.90	4.33	3.00	-	
Audit Index	3.88	3.17	3.70	4.33	2.33	-	
Compensation Index	3.88	2.87	3.30	3.33	3.33	-	

We observe that, before the crisis, the average governance score of delisted companies is higher than the average governance score of all REITs in the same year. In other words, well-governed companies were taken private while more poorly governed REITs were

floated. However, during the crisis, the situation reverses: delisted companies have CGQ scores that are lower than the annual average of all listed property companies.

### **B. The Crisis: A Structural Break in the Listed Property Market**

The upward trend in the listed property market ended abruptly in early 2007. Figure I illustrates how the NAREIT Equity index and the S&P 500 index performed from January 2003 through June 2009. The cumulative return to the NAREIT Equity index corresponds to 191 percent from January 2003 through January 2007, the top observation in the NAREIT index, while it lost 68 percent from January 2007 through February 2009. In the same time period, the S&P 500 index increased by 68 percent and then decreased by 49 percent. The figure shows that the NAREIT index experienced sharper upward and downward trends during the sample period as compared to the S&P 500 index. Moreover, we do not observe a break point in the broader stock market index that is as clear as the break point observed for the property share index. Figure I<sup>xxvi</sup>

To determine the beginning and the end of the crisis, we perform an endogenous break point test, as developed by Zivot and Andrews.<sup>xxvii</sup> We assume that the structural break occurs in the trend term, since the market moves from an upward sloping trend to a downward sloping one. First, using the NAREIT index from January 2003 to December 2009, we determine the beginning of the crisis, which is February 2007. We then replicate the test from that month to the end of the data set, December 2009, to determine the end of the REIT crisis. The second break point is in May 2009. These breakpoints are consistent with the top observation of the series and the end of the downturn in the market.

**Figure I.** <sup>xxviii</sup>  
**Time Patterns of the NAREIT Equity Index and S&P 500 Index**



#### **IV. REIT Returns, Corporate Governance, and the Crisis**

This section provides a detailed investigation of the relationship between REIT returns and the various indexes of corporate governance before and during the financial crisis.

##### **A. Portfolio Analysis**

To analyze the impact of corporate governance on REIT equity returns, we construct two mutually exclusive, value weighted equity portfolios: the “Good Governance” portfolio, which includes the companies that represent the top-30 percent of CGQ-rated REITs, and the “Bad Governance” portfolio, which includes the REITs in the bottom 30 percent of CGQ scores. Then, a difference portfolio is constructed by subtracting the monthly return of the bad

governance portfolio from the good governance portfolio, which resembles a trading strategy buying stocks with a high governance rating and shorting stocks with a low governance rating. We re-rank the portfolios annually using the year-end datasets published by ISS, and we obtain end-of-month value-weighted portfolio returns for 77 months, from January 2003 through May 2009. Companies that no longer appear in the database are excluded.

Panel A of Table II shows the annual average governance scores of the good governance and the bad governance portfolio. In the rising market (until 2006), we find that the average score of companies in the good governance portfolio is around 89 and relatively stable compared to the average governance score of the companies in the bad governance portfolio. In the market downturn, the average governance rating of the good governance portfolio increases to around 91, again relatively stable within the sub-period.

**Table II.** <sup>xxix</sup>  
**Sample Statistics Good and Bad Governance Portfolios**

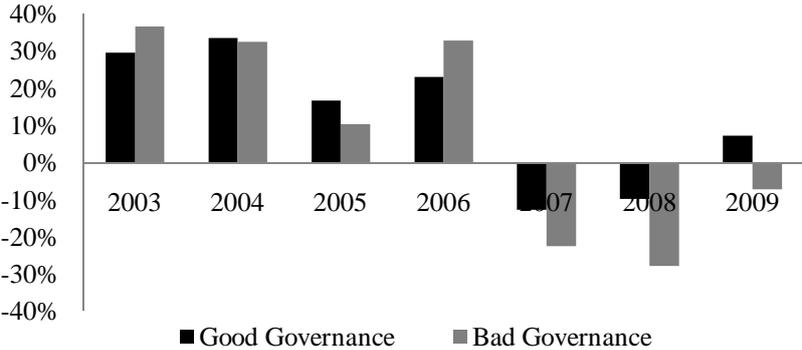
	Panel A. Gov Score - Mean						
	2003	2004	2005	2006	2007	2008	2009
Good Governance	88.91 (7.22)	89.73 (6.58)	89.52 (6.28)	89.28 (6.54)	91.18 (5.37)	91.20 (5.46)	91.05 (5.25)
Bad Governance	21.73 (11.83)	30.17 (12.53)	24.20 (11.64)	25.11 (11.59)	23.81 (11.69)	27.63 (13.39)	30.58 (13.68)
	Panel B. Monthly Portfolio Returns						
	Jan 2003 – Jan 2007			Feb 2007 – May 2009			
	<i>Mean</i>	<i>Max</i>	<i>Min</i>	<i>Mean</i>	<i>Max</i>	<i>Min</i>	
Good Governance	2.27 % (0.61)	8.20%	-13.60%	-0.99% (3.19)	53.7%	-37.58%	
Bad Governance	2.38 % (0.63)	7.96%	-15.74%	-2.06% (2.11)	26.52%	-26.83%	
Difference Portfolio	-0.11 % (0.31)	5.84%	-6.11%	1.07% (1.47)	35.28%	-10.75%	

The annual average CGQ score of the bad governance portfolio is striking, which increases year-by-year during the crisis. It seems like poorly governed companies gradually improved their governance structure after the financial crisis. (However, this could also imply that poorly governed companies may have gone out of business during the crisis.)

Panel B presents some descriptive statistics on the returns of the “Good Governance” and “Bad Governance” portfolio. In the first sub-period, both portfolios generate positive returns, but a trading strategy taking a long position in stocks with a high governance rating and shorting stocks with a low governance rating would not have performed very well, ending up with an average negative monthly return of 0.11 percent. During the crisis, both good governance and bad governance portfolios exhibit negative returns, although the difference portfolio return yields an average positive return of 1.07 percent. The cross-sectional variation within the good governance portfolio is substantial, and the positive performance of the difference portfolio seems to be driven by a few firms with a very high positive return.

In general, the first descriptive statistics suggest that the change in the economic conditions affects the governance structures of REITs, and the stock returns related to those governance structures.

**Figure II. <sup>xxx</sup>**  
**Annual Average Returns of Governance Portfolios**



We further observe the effect of the changing investment climate on the returns of the “good” versus the “bad” governance portfolio in Figure II. The graph shows the annual returns of the respective portfolios. During the rising market, the out performance of the

portfolios is mixed, with poorly governed REITs outperforming their better-structured counterparts in some years. However, during the crisis, well-governed companies consistently outperform poorly governed companies, on average.

## **B. Abnormal Returns and the Structure of Corporate Governance**

To investigate the effects of corporate governance on the returns of equity REIT in more detail, we follow a two-stage approach. In the first stage, alpha is calculated for each company by employing the four-factor model proposed by Fama and French<sup>xxxix</sup> and Carhart<sup>xxxix</sup>:

$$(1) \quad R_{it} = \alpha_i + \beta_{0i}(R_m - R_f)_t + \beta_{1i}(SMB)_t + \beta_{2i}(HML)_t + \beta_{3i}(MOM)_t + \varepsilon_{it}$$

where,

*SMB* = the monthly return on a small minus big factor portfolio in month *t*

*HML* = the monthly return on a high minus low book-to-price portfolio in month *t*

*MOM* = the monthly return on a past months' winners minus past months' losers portfolio in month *t*

The risk factors used in this model have been previously applied to explain returns on REIT stocks.<sup>xxxix</sup> Although there is an ongoing discussion whether the factors used in Carhart model are risk-proxies, we avoid discussion of this issue and view it as a method of performance attribution. Thus,  $\alpha_i$  can be interpreted as the return in excess of what could have been achieved by means of passive investment in the factors. The individual company alphas are calculated for the sub-periods from January 2003 through January 2007 and from February 2007 through May 2009, representing the boom period and the crisis period, respectively. We use the NAREIT Index<sup>xxxix</sup> as a proxy for the market return and the *SMB*, *HML* and *MOM* factors from the Kenneth French Data Library.<sup>xxxix</sup>

In the second stage, the generated alphas are regressed on corporate governance characteristics and company characteristics, using Equation (2), which is estimated using OLS, while correcting for heteroskedasticity.<sup>xxxvi, xxxvii</sup>

$$(2) \quad \alpha_i = \delta_0 + \delta_1 G_i + \delta_2 DEBTRATIO_i + \delta_3 FFO_i + \vartheta_i$$

where,

$G$  = a vector of governance characteristics of equity REIT  $i$

$DEBTRATIO$  = leverage ratio of equity REIT  $i$

$FFO$  = funds from operations over total assets of equity REIT  $i$

**Table III.**<sup>xxxviii</sup>  
**Cross-Sectional Regression of Pre-Crisis Abnormal Returns on Governance Scores**

	(1)	(2)	(3)	(4)	(5)
	<i>Coefficient x 100</i>				
<i>CGQ Index</i>	-0.010 [0.005]				
<i>Takeover Index</i>		0.050 [0.084]			
<i>Audit Index</i>			-0.214 [0.109]		
<i>Board Index</i>				-0.006 [0.119]	
<i>Compensation Index</i>					-0.241 [0.126]
<i>Debt Ratio</i>	0.003 [0.007]	0.002 [0.007]	0.004 [0.007]	0.002 [0.007]	0.001 [0.007]
<i>Funds From Operations</i>	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
<i>Constant</i>	0.774 [0.412]	0.001 [0.004]	0.878* [0.430]	0.288 [0.519]	0.011* [0.005]
N	133	133	133	133	133
Adj. R <sup>2</sup>	0.01	0.02	0.01	0.02	0.03

In Table III, we provide the results of the cross-sectional estimation of Equation (2) for the pre-crisis period.<sup>xxxix</sup> We use the annual averages of the governance scores and financial firm determinants. The explanatory power of the models is low, and we do not find a

statistically significant relation between governance and performance. This may be attributed to the very limited managerial discretion in cash flow spending of REIT management teams, due to the institutional framework surrounding U.S. REITs.<sup>xi</sup>

Alternatively, these findings may indicate that (institutional) investors did not attribute any value to the particulars of REIT governance structures in the boom period that preceded the crisis. This irrational behavior would be fully consistent with the herd investments in securitized debt products, such as CDOs, where the opacity of the investments was so blissfully ignored.<sup>xli</sup>

In Table IV, we estimate the effect of governance scores on abnormal returns during the crisis period, again applying Equation (2).

Contrasting findings for the pre-crisis period, the results show that governance matters for stock performance of REITs during the crisis, *even in the very strict legal setting in which REITs operate*. These findings are in line with Mitton.<sup>xliii</sup> The coefficients for “Board” and “Audit” scores are significantly positive in the regressions, and the overall CGQ score is significantly positive at the 6% significance level. There is no significant effect of the quality of compensation structure on abnormal returns.

We can explain this in three ways. First, the “REIT effect” may be diminished during the crisis. REITs have to distribute 90 percent of income. However, this excludes depreciation. In times of crisis, the property portfolio of REITs will likely drop in value, so marking the value of the property holdings to market will imply a depreciation that is far more severe than the depreciation in normal periods. Since the depreciation expense is deducted from taxable income, this means that less cash has to be distributed to shareholders, leaving more free cash flows to the discretion of the managers, thereby increasing the need for good governance. In effect, the crisis makes REITs more like regular corporations and diminishes the “REIT-effect” that results from the otherwise strong governance setting. This explanation

is in line with a finding by Bauer, et al., who show that the “REIT effect” is stronger for cash-constrained REITs and weaker for those REITs that have abundant free cash flows.<sup>xliii</sup> This may also explain why especially the quality “Audit” is a significant and valuable aspect of corporate governance during the crisis.

**Table IV.**<sup>xliv</sup>  
**Cross-Sectional Regression of Crisis Abnormal Returns on Governance Scores**

	(1)	(2)	(3)	(4)	(5)
	<i>Coeff. x 100</i>				
<i>CGQ Index</i>	0.011 [0.006]				
<i>Takeover Index</i>		0.188 [0.152]			
<i>Board Index</i>			0.265* [0.128]		
<i>Audit Index</i>				0.270* [0.127]	
<i>Compensation Index</i>					0.081 [0.115]
<i>Debt Ratio</i>	-0.011 [0.011]	-0.004 [0.011]	-0.010 [0.011]	-0.009 [0.011]	-0.007 [0.012]
<i>Funds From Operations</i>	0.229** [0.072]	0.269** [0.071]	0.233** [0.070]	0.253** [0.069]	0.247** [0.068]
<i>Constant</i>	-0.955 [0.558]	-1.4* [0.7]	-1.260* [0.568]	-1.537* [0.663]	-0.870 [0.570]
N	112	112	112	112	112
Adj. R <sup>2</sup>	0.13	0.13	0.14	0.13	0.11

A second explanation for the finding that firm-level corporate governance matters during the crisis, is that the expected returns to managers declines, since executive payment packages are likely to include bonuses that are based on absolute stock performance. That means executives may be more likely to become entrenched as compared to the pre-crisis situation.<sup>xlv</sup>

Third, it may well be that (institutional) investors in real estate equities did not take corporate governance structures into account before the market collapsed. Corporate governance seemed to be ineffective in the listed real estate market and investors unrealistically revalued the stock price of the poorly governed companies. This implies that

poorly governed companies were overvalued relative to well-governed property companies. The crisis lead investors to scrutinizing their securitized real estate holdings more intensively. As investors recognized the influence of corporate governance on REIT management and operational performance, a difference in share returns developed, related to the underlying corporate governance structure of property companies.

We observe that there is a time-specific effect in the relation between abnormal returns of real estate equity investments and governance structures: the effects of governance on stock performance change in direction and significance during the crisis. Overall, our results show that the relationship between abnormal returns and corporate governance is sensitive to time and the investment climate. These findings support the ideas of Gompers, Ishii, and Metrick<sup>xlvi</sup> and Core, Guay, and Rusticus<sup>xlvii</sup> that the relationship may be time specific and depends on the (irrational) exuberance of the investors. Additionally, and most important, the results for the crisis period show that corporate governance may become more important in a market downturn. The quality of governance matters during a crisis.

### **C. Abnormal Returns and Ownership Structure**

For a more thorough understanding of the importance of governance during the crisis, we also investigate how ownership concentration influences share performance after January 2007. If internal governance mechanisms are complemented by external governance mechanisms, such as block-holdings by institutional investors, the outperformance of well-governed companies strengthens, according to Cremers and Nair.<sup>xlviii</sup> We address the ownership concentration separately for share ownership of executives and institutional ownership concentration.<sup>xlix</sup> We exploit a similar econometric setup as in the previous analysis, but we now use ownership concentration data from the annual reports of the REITs, instead of the

CGQ data as the main explanatory variable. We again control for annual financial characteristics.

The results are presented in Table V. Model 1 analyzes the effect of executive ownership concentration on abnormal returns of real estate equities. However, as it is unlikely that executive stock ownership has a simple linear relation with stock performance, Model 2 includes the square of executive ownership. We find a convex and statistically significant relationship. At first, executive stock ownership affects abnormal returns negatively, which is in line with Ghosh and Sirmans, who document that CEO ownership negatively affects REIT performance.<sup>1</sup> This may be explained by executive stock ownership increasing executive power at the cost of the other shareholders (a “power effect”), which leads to increased entrenchment and could negatively affect operational performance. On the other hand, executives who own company stocks also directly feel the financial pain of weak stock performance. It may be that the power effect plays a dominant role at low degrees of executive share ownership, while if executives have a lot of skin in the game, underperformance would hurt them more than the possible benefits of expropriation. Indeed, executive stock ownership seems to have a negative performance effect up to a certain threshold, and a positive effect thereafter. It seems that beyond a certain level of insider ownership concentration, the interest of managers aligns with that of the existing shareholders. This is an important finding for (institutional) investors in property companies.

In Models 3 and 4, we document that larger concentration of institutional stock ownership positively affects performance of property companies. The monitoring effect of institutional ownership over managers seems to be effective during the crisis. So, institutional investors in REITs seem to be able to influence the operations of these property companies. However, these results mainly hold if there is at least one large shareholder in the investor base. For total institutional ownership, the results are economically less powerful and only

statistically significant at the 10% level. These results are consistent with the findings of Mitton.<sup>li</sup>

**Table V.**<sup>lii</sup>  
**Cross-Sectional Regression of Crisis Abnormal Returns on Ownership Concentration**

	(1)	(2)	(3)	(4)
	<i>Coefficient x 100</i>			
<i>Executive Ownership</i>	-2.345*	-6.637*		
	[1.127]	[2.568]		
<i>[Executive Ownership]<sup>2</sup></i>		6.971*		
		[0.297]		
<i>Largest Blockholder Ownership</i>			0.140**	
			[0.016]	
<i>Total Blockholder Ownership</i>				0.001
				[0.000]
<i>Debt Ratio</i>	-0.008	-0.003	-0.007	-0.004
	[0.011]	[0.011]	[0.010]	[0.010]
<i>Funds From Operations</i>	0.215**	0.235**	0.256**	0.263**
	[0.066]	[0.069]	[0.067]	[0.068]
<i>Constant</i>	-0.014	-0.142	-0.675	-0.850
	[0.662]	[0.680]	[0.565]	[0.573]
N	112	112	112	111
Adj. R <sup>2</sup>	0.14	0.16	0.13	0.11

## V. Concluding Remarks and Practical Implications

Real estate has been at the forefront of the financial crisis, but thus far, investment research has mostly focused on the transparency and performance of securitized debt products, such as CMBS and CDOs. Listed property companies (REITs) offer an interesting insight about the role of transparency in the performance of real estate equity investments and the behavior of investors therein. Previous evidence has shown that the agency conflict between managers and investors is reduced in REITs, as managerial freedom is curbed following legal requirements regarding obligatory payout and investment strategies. This may substitute the need for alternative corporate governance mechanisms and raise industry-wide governance standards. However, the limited effect of company-specific governance structures on the corporate performance of REITs has only been documented in rising or even booming market

circumstances, and under bullish such conditions, governance may well receive less attention from investors.

Starting in 2007, the property market has shifted from boom to distress, with a very distinct break point. The legal restrictions regarding REIT cash flows might not be sufficient to decrease agency conflicts during the market downturn. In other words, under crisis circumstances, corporate governance may again become of importance to investors. Our results seem to suggest that the structure of firm-level corporate governance mechanisms became more critical during the crisis.

Using a sample of U.S. equity REITs during the 2003 – 2009 period, we find that governance practices did not significantly affect abnormal stock returns during the market boom. But during the crisis, the relation between governance and performance in REITs rapidly became positive and significant. Our results show that the results are mostly driven by the quality of corporate governance that is related to board composition and audit quality. Additionally, we document a positive, convex relationship between abnormal returns and executive ownership concentration during the crisis period. Insider ownership affects stock performance negatively below a threshold and positively above that threshold. Our results also show that abnormal returns are positively affected by the ownership concentration among the largest institutional shareholders during the crisis.

The previously documented “REIT effect”, resulting from the strong industry-wide governance framework, seems to disappear during the crisis. We explain this by the fact that the crisis increases depreciation in REITs, thus reducing the required cash distribution, and leaving more cash at the discretion of management. The second explanation is that the crisis decreases managers’ performance-based compensation, thus increasing the incentives for entrenchment. As a result, the effectiveness of the governance setting surrounding REITs is weakened, and REITs more closely resemble regular corporations in the importance of firm-

level governance for share performance. Third, these findings may indicate that (institutional) investors did not attribute any value to the governance structure of REITs in the boom period that preceded the crisis. This irrational behavior would be fully consistent with the investments in securitized debt products, such as CDOs, where opacity of the investments was ignored as well.

An important implication of our findings concerns the possibility for mandatory payout rules and other institutional limitations on managerial discretion. Our pre-crisis results support the earlier findings of Bauer et al., suggesting that the institutional design of REITs alleviates the need for company-specific governance measures.<sup>liii</sup> This may be viewed as an argument to introduce such measures in a wider set of industries. However, we have some serious doubts as to whether the institutional lessons from the REIT market can be simply applied to improve the institutional infrastructure for investments in other industries.

First, the real estate industry is all heavily income-focused, but many other industries are not. In the high-tech sector, for example, dividend payments are rare. Shareholders accept low or no dividend payments, since they may view the internal reinvestment of retained earnings as value enhancing in the long run. Introducing mandatory payout to these industries would probably do more harm than good. Second, our empirical results for the crisis suggest that the manner in which the payout rule is defined is not crisis-proof. It may be better to set the payout requirements relative to the free cash flow rather than relative to the income, leaving less discretionary cash for managers. This would diminish the importance of depreciation and decrease the possibility of agency problems and earnings managements. Last, the payout rule was never designed as a governance mechanism, but as a guarantee that the tax authorities would receive their taxes (If not at the corporate level, then at the shareholder level.) This implies that mandatory payout may just be accepted as a quid pro quo for a zero corporate tax rate.

Our results do have important implications for institutional investors that invest in real estate equity via intermediate property companies. In “regular” times, investors can rely on the beneficial governance setting derived from the institutional framework surrounding REITs. Attention to firm-level corporate governance may be of less importance under these circumstances, which is one of the main benefits of investing in REITs as compared to investing directly in real property or in private property funds, where governance is a far more problematic issue.<sup>liv</sup> This implies that the costs of monitoring REIT portfolios are substantially lower as compared to the cost of managing portfolios of directly held real estate. This is illustrated by the fact that the human capital required for the portfolio management of REIT assets is substantially smaller as compared to the management of a portfolio of real property, even if the actual property management is outsourced.

However, our results also suggest that the quality of firm-level governance matters, especially during times of crisis. These periods are arguably the times that investors are most concerned about, especially from a risk-management perspective. This implies that institutional investors should always focus on the quality of the firm-level corporate governance of the REITs they invest in, regardless of the economic circumstances. This ensures the best all-weather approach towards real estate equity investments.<sup>lv</sup>

We consider this research as just a step towards a better insight into the corporate governance of REITs. For future research on this topic, some interesting and important issues remain. First, there is the question whether REITs – or property companies in general – should be managed internally or externally. In the last ten years or so, the capital markets have shown diverging trends regarding this issue. For example, out of the 23 property companies listed on the Alternative Investment Market in London during 2005 and 2006, only three were internally managed.<sup>lvi</sup> On the other hand, externally managed REITs have almost disappeared in the U.S. Before 1986, U.S. REITs were all externally managed, but since the

law changed in that year, REITs have been allowed to make their investment decisions internally and to manage property in-house.

The academic evidence suggests that this shift has been beneficial for the creation of shareholder value, due to reduced agency problems. Howe and Shilling document that externally managed U.S. REITs experience negative abnormal returns over the period from 1973 through 1987.<sup>lvii</sup> Using data from 1987 through 1992, Cannon and Vogt show that REITs with internal management significantly outperform externally managed REITs.<sup>lviii</sup> Capozza and Seguin find that REITs managed by external advisors underperform internally managed REITs by an astonishing 7 percent per year.<sup>lix</sup> Importantly, property-level cash flow yields are similar between the two managerial forms, but corporate-level expenses and especially interest expenses are responsible for lower levels of cash available to shareholders in externally advised REITs. Obviously, compensating managers based on either assets under management or on property level cash flows creates incentives for managers to increase the asset base by issuing debt, even if the interest costs are not favorable. Ambrose and Linneman also document that internally-advised REITs dominate externally-advised REITs, mainly because of reduced conflicts of interest.<sup>lx</sup>

In sum, the U.S. REIT industry provides a natural experiment regarding the merits of external versus internal management for property companies. The results of this experiment show that internal management is the preferred choice, creating management incentives for optimizing share performance. However, this issue has not been investigated as thoroughly for property companies and REITs outside of the U.S., and this is clearly a promising avenue for future research.

Another aspect of governance is the effect of ownership restrictions. In many countries with REIT structures in place, property companies opting for these structures are obliged to adhere to certain requirements regarding their ownership. In the U.S., for example, REITs

need to have at least 100 shareholders, with the five largest shareholders owning a maximum of 50 percent of the shares. These rules are meant to ensure that REITs are easily accessible for retail investors, but they have some negative implications for corporate governance, since they lead to more dispersed ownership. The rules make it difficult for blockholders to acquire ownership stakes, and for shareholders in general to form alliances and pose a takeover threat. Since hostile takeovers are very rare in the listed property sector, some scholars have argued that this is evidence for a non-functioning market for corporate control.<sup>lxi, lxii</sup> However, hostile takeovers are also absent in non-REIT property share markets outside of the U.S., and poorly performing property companies face a higher takeover likelihood as compared to well-performing property companies.<sup>lxiii</sup>

Nevertheless, the requirements regarding ownership structure are likely to hinder the monitoring role of large shareholders and their possibility to diversify investments substantially into real estate. Indeed, prior to the 1993 change in U.S. regulations regarding the holdings of REIT shares by institutional investors, these investors were underrepresented in REIT stocks.<sup>lxiv</sup> Since this hindered blockholder monitoring, it weakened the governance of REITs. U.S. regulators realized this and changed the regulations in such a way that institutional investors were no longer treated as a single investor, but rather as an investor representing numerous individual investors. Following the change in REIT regulation, U.S. REITs have attracted more institutional investors.<sup>lxv</sup> This has also been beneficial to retail investors. Wang et al. show that the participation of institutional investors increases the control and monitoring ability of shareholders, thereby increasing the value of REIT stocks.<sup>lxvi</sup> In 2007, the Netherlands also revised its REIT legislation, and, following the U.S. example, has eliminated most of the shareholder requirements that previously applied.

In sum, the academic literature strongly suggests that restrictions regarding the ownership structure of a REIT lead to weaker governance and inferior performance, and are

therefore not recommended, even if these rules seem to protect smaller investors. This is underlined by the fact that the two countries with the longest experience with tax-transparency for property companies – the U.S. and the Netherlands –both abolished the previously existing restrictions regarding ownership. Again, this issue has not been addressed as extensively for countries outside of the U.S. and ownership restrictions remain in place for many of the countries that have more recently introduced REIT structures. More research is needed on this issue.

Besides the aspects of governance discussed in this paper, the legal infrastructure surrounding REITs offers another interesting aspect of governance. The dominant organizational structure in the U.S. REIT is the umbrella partnership REIT, or UPREIT. This structure was created to postpone or avoid capital gains tax for the owners of real estate that sell their holdings to a REIT, but it also has important consequences for corporate governance. The disposition of properties to a REIT leads to “umbrella partnership” units, which can be converted into the ordinary shares of the REIT. Subsequently, these shares can be sold on the market. The conversion triggers the payment of capital gains tax, so unit holders are less likely to “vote with their feet” on unwanted management actions, which weakens their influence on management. The UPREIT structure may thus affect the functioning of corporate governance mechanisms. This raises the question how UPREITs perform relative to other REITs: if the tax benefits of the structure outweigh the detrimental effects of weaker corporate governance, the result will be better shareholder performance. Hartzell, Sun and Titman do not find a significant effect of the UPREIT status on the degree to which REITs’ investments affect their valuations.<sup>lxvii</sup> More recently, Hartzell, Kallberg and Liu investigated this effect by looking at REIT valuations surrounding IPOs, and they document a positive relation between UPREIT status and firm valuation.<sup>lxviii</sup> These results suggest that the potential detrimental effects resulting from weaker governance are not very

strong, but this is an aspect that has not received a lot of attention in the literature yet. Given the importance of the UPREIT structure for the REIT industry, more research is clearly needed.

Concluding, the legal structure surrounding REITs offers a highly interesting natural experiment for the study of corporate governance. This paper offers insight into the effects of corporate governance structure on REIT performance, but some open questions remain, providing a promising venue for further research.

## Endnotes

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- <sup>i</sup> **Eichholtz, P.M.A. and Kok, N.** "The Eu Reit and the Internal Market for Real Estate," European Property Federation, Brussels, 2007.
- <sup>ii</sup> **Bauer, Rob; Eichholtz, Piet M.A. and Kok, Nils.** "Corporate Governance and Performance: The Reit Effect." *Real Estate Economics*, 2010, 36(1), pp. 1-29.
- <sup>iii</sup> **Jensen, M.C.** "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers." *American Economic Review*, 1986, 76(2), pp. 323-29.
- <sup>iv</sup> **La Porta, Rafael; Lopez-De-Silanes, Florencio; Shleifer, Andrei and Vishny, Robert.** "Agency Problems and Dividend Policies around the World." *Journal of Finance*, 2000, 55(1), pp. 1-33.
- <sup>v</sup> **Johnson, Shane A.; Moorman, Theodore C. and Sorescu, Sorin.** "A Reexamination of Corporate Governance and Equity Prices." *Review of Financial Studies*, 2009, 22(11), pp. 4753-86.
- <sup>vi</sup> **Rajan, Raghuram and Zingales, Luigi.** "Which Capitalism? Lessons from the East Asian Crisis." *Journal of Applied Corporate Finance*, 1998, 11(3).
- <sup>vii</sup> **Mitton, Todd.** "A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis." *Journal of Financial Economics*, 2002, 64(2), pp. 215-41
- <sup>viii</sup> **Gompers, P.A.; Ishii, J. and Metrick, A.** "Corporate Governance and Equity Prices." *Quarterly Journal of Economics*, 2003, 118(1), pp. 107.
- <sup>ix</sup> **Drobetz, W.; Schillhofer, A. and Zimmermann, H.** "Corporate Governance and Expected Stock Returns: Evidence from Germany." *European Financial Management*, 2004, 10(2), pp. 267-93.
- <sup>x</sup> **Bauer, R.; Guenster, N. and Otten, R.** "Empirical Evidence on Corporate Governance in Europe: The Effect on Stock Returns, Firm Value, and Performance." *Journal of Asset Management*, 2004, 5, pp. 91-104.

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<sup>xi</sup> **Bauer, Rob; Frijns, Bart; Otten, Roger and Tourani-Rad, Alireza.** "The Impact of Corporate Governance on Corporate Performance: Evidence from Japan. ." *Pacific-Basin Finance Journal*, 2008, 16(3), pp. 236-51

<sup>xii</sup> **Core, John E.; Guay, Wayne R. and Rusticus, Tjomme O.** "Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations." *Journal of Finance*, 2006, 61(2), pp. 655-87.

<sup>xiii</sup> **Johnson, Shane A.; Moorman, Theodore C. and Sorescu, Sorin.** "A Reexamination of Corporate Governance and Equity Prices." *Review of Financial Studies*, 2009, 22(11), pp. 4753-86.

<sup>xiv</sup> The increasing recognition of corporate governance as a driver of firm value could explain the contrasting results between early studies on corporate governance and performance, and those studies published more recently. However, alternative explanations for the results of Gompers, Ishii, and Metrick are risk and the investment environment surrounding the market, thereby influencing stock returns. See: **Gompers, P.A.; Ishii, J. and Metrick, A.** "Corporate Governance and Equity Prices." *Quarterly Journal of Economics*, 2003, 118(1), pp. 107.

<sup>xv</sup> **Han, Bing.** "Insider Ownership and Firm Value: Evidence from Real Estate Investment Trusts." *Journal of Real Estate Finance and Economics*, 2006, 32(4), pp. 471-93.

<sup>xvi</sup> **Hartzell, Jay C.; Sun, Libo and Titman, Sheridan.** "The Effect of Corporate Governance on Investment: Evidence from Real Estate Investment Trusts." *Real Estate Economics*, 2006, 34(3), pp. 343-76.

<sup>xvii</sup> **Ghosh, C. and Sirmans, C. F.** "Board Independence, Ownership Structure and Performance: Evidence from Real Estate Investment Trusts." *Journal of Real Estate Finance and Economics*, 2003, 26(2-3), pp. 287-318.

<sup>xviii</sup> **Feng, Z.; Ghosh, C. and Sirmans, C. F.** "How Important Is the Board of Directors to Reit Performance?" *Journal of Real Estate Portfolio Management*, 2005, 11(3), pp. 281-93.

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<sup>xix</sup> **Hartzell, Jay C.; Kallberg, Jarl G. and Liu, Crocker H.** "The Role of Corporate Governance in Initial Public Offerings: Evidence from Real Estate Investment Trusts." *Journal of Law & Economics*, 2008, 51, pp. 539-62.

<sup>xx</sup> **Bauer, Rob; Eichholtz, Piet M.A. and Kok, Nils.** "Corporate Governance and Performance: The Reit Effect." *Real Estate Economics*, 2010, 36(1), pp. 1-29.

<sup>xxi</sup> See <http://www.issproxy.com> for a detailed description of the Corporate Governance Quotient and its underlying scoring system.

<sup>xxii</sup> There are three types of Real Estate Investments Trusts: equity REITs, which purchase, own and manage real estate properties (they may also develop properties); mortgage REITs, which invest in loans secured by real estate; and hybrid REITs, which generate income from rent and capital gains, like an equity REIT, as well as interest, like a mortgage REIT.

<sup>xxiii</sup> The NAREIT Index is the leading benchmark for listed property companies in the United States.

<sup>xxiv</sup> Recent market reports have documented price drops of more than forty percent in the largest commercial property markets (New York Times, January 16, 2010).

<sup>xxv</sup> Descriptive statistics for governance scores both for CGQ index and subcategories, and additional firm characteristics.

<sup>xxvi</sup> The time patterns of NAREIT Equity and S&P 500 indices for the period from January 2003 through December 2009. The beginning of the series are rescaled to 100.

<sup>xxvii</sup> **Zivot, Eric and Andrews, Donald W.K.** "Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis." *Journal of Business & Economic Statistics*, 1992, 10(3), pp. 251-70.

<sup>xxviii</sup> The time patterns of NAREIT Equity and S&P 500 indices for the period from January 2003 through December 2009. The beginning of the series are rescaled to 100.

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<sup>xxxix</sup> Table II presents sample statistics for portfolios of good governed and poorly governed companies using CGQ industry ratings. The difference portfolio is established with a trading strategy that buys the “Good Governance” portfolio and shorts the “Bad Governance” portfolio. The values in parentheses are standard deviations.

<sup>xxx</sup> Figure II shows the annual average returns of governance portfolios. The “Good Governance” portfolio includes the companies that represent the top-30 percent of CGQ industry ratings, and the “Bad Governance” portfolio includes the companies that represent the bottom 30 percent of CGQ industry scores provided by Institutional Shareholder Services.

<sup>xxxix</sup> **Fama, E.F. and French, K.R.** "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, 1993, 33(1), pp. 3-56.

<sup>xxxix</sup> **Carhart, M.M.** "On Persistence in Mutual Fund Performance." *Journal of Finance*, 1997, 52(1), pp. 57-82.

<sup>xxxix</sup> **Peterson, J.D. and Hsieh, C.** "Do Common Risk Factors in the Returns on Stocks and Bonds Explain Returns on Reits?" *Real Estate Economics*, 1997, 25(2), pp. 321-45.

<sup>xxxix</sup> Our results are robust to using GPR Global 250 Index.

<sup>xxxix</sup> Data obtained from [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

<sup>xxxix</sup> **White, Halbert.** "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica*, 1980, 48(4), pp. 817-38.

<sup>xxxix</sup> Karafiath evaluates the performance of OLS, weighted least squares, FGLS, and corrected least squares using Monte Carlo simulations, for cross-sectional regression that use abnormal returns. He finds that the ordinary least squares (OLS) estimator of abnormal returns is well-specified and performs as expected if the sample size is larger than 75 observations. See: **Karafiath, Imre.** "On the

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Efficiency of Least Squares Regression with Security Abnormal Returns as the Dependent Variable." *Journal of Financial & Quantitative Analysis*, 1994, 29(2), pp. 279-300

<sup>xxxviii</sup> Table III presents the results of the cross-sectional OLS regression of abnormal returns obtained from Equation (2). In the first stage, alpha is calculated for each company applying the four-factor Carhart (1997) from Jan 2003 to Jan 2007. In the second stage, those alphas are regressed on company corporate governance characteristics, leverage, and funds from operations over total assets. White's (1980) heteroskedasticity-robust standard errors are in brackets. \* indicates significance at the 5 percent level. \*\* indicates significance at the 1 percent level.

<sup>xxxix</sup> We also estimate the model including and controlling for delisted companies. The results are robust for existing REITs. The governance quality has no significant effect in these estimations, as well.

<sup>xl</sup> **Bauer, Rob; Eichholtz, Piet M.A. and Kok, Nils.** "Corporate Governance and Performance: The Reit Effect." *Real Estate Economics*, 2010, 36(1), pp. 1-29.

<sup>xli</sup> Market equilibrium may be another explanation for the lack of a relation between governance and performance. However, given the flux in real estate markets preceding the crisis, this seems unlikely.

<sup>xlii</sup> **Mitton, Todd.** "A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis." *Journal of Financial Economics*, 2002, 64(2), pp. 215-41

<sup>xliii</sup> **Bauer, Rob; Eichholtz, Piet M.A. and Kok, Nils.** "Corporate Governance and Performance: The Reit Effect." *Real Estate Economics*, 2010, 36(1), pp. 1-29.

<sup>xliv</sup> Table IV presents the results of the cross-sectional OLS regression of abnormal returns obtained from Equation (2). In the first stage, alpha is calculated for each company applying the four-factor Carhart (1997) from Feb 2007 to May 2009. In the second stage, those alphas are regressed on company corporate governance characteristics, leverage, and funds from operations over total assets. White's (1980) heteroskedasticity-robust

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standard errors are in brackets. \* indicates significance at the 5 percent level. \*\* indicates significance at the 1 percent level.

<sup>xlv</sup> **Johnson, Shane A.; Moorman, Theodore C. and Sorescu, Sorin.** "A Reexamination of Corporate Governance and Equity Prices." *Review of Financial Studies*, 2009, 22(11), pp. 4753-86.

<sup>xlvi</sup> **Gompers, P.A.; Ishii, J. and Metrick, A.** "Corporate Governance and Equity Prices." *Quarterly Journal of Economics*, 2003, 118(1), pp. 107.

<sup>xlvii</sup> **Core, John E.; Guay, Wayne R. and Rusticus, Tjomme O.** "Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations." *Journal of Finance*, 2006, 61(2), pp. 655-87.

<sup>xlviii</sup> **Cremers, .M. and Nair, V.B.** "Governance Mechanisms and Equity Prices." *Ibid.* 2005, 60(6), pp. 2859-94.

<sup>xliv</sup> The ownership concentration data are collected for 2006 in order to have the last point of observation before the crisis, following **Mitton, Todd.** "A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis." *Journal of Financial Economics*, 2002, 64(2), pp. 215-41

<sup>i</sup> **Ghosh, C. and Sirmans, C. F.** "Board Independence, Ownership Structure and Performance: Evidence from Real Estate Investment Trusts." *Journal of Real Estate Finance & Economics*, 2003, 26(2-3), pp. 287-318.

<sup>ii</sup> **Mitton, Todd.** "A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis." *Journal of Financial Economics*, 2002, 64(2), pp. 215-41

<sup>iii</sup> Table V presents the results of the cross-sectional OLS regression of abnormal returns obtained from Equation (2). In the first stage, alpha is calculated for each company applying the four-factor Carhart (1997) from Feb 2007 to May 2009. In the second stage, the estimated alphas are regressed on corporate governance and financial

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characteristics of the company. The ownership concentration data are the last available observations before the crisis. White's (1980) heteroskedasticity-robust standard errors are in brackets. \* indicates significance at the 5 percent level. \*\* indicates significance at the 1 percent level.

<sup>liii</sup> **Bauer, Rob; Eichholtz, Piet M.A. and Kok, Nils.** "Corporate Governance and Performance: The Reit Effect." *Real Estate Economics*, 2010, 36(1), pp. 1-29.

<sup>liv</sup> **Brounen, D.; Op 't Veld, H. and Raitio, V.** "Transparency in the European Non-Listed Real Estate Funds Market." *Journal of Real Estate Portfolio Management*, 2007, 13(2), pp. 107-18.

<sup>lvi</sup> **Citigroup.** "Real Estate Ipos: More to Come," C. G. M. E. Research, 2006.

<sup>lvii</sup> **Howe, John S. and Shilling, James D.** "Reit Advisor Performance." *American Real Estate and Urban Economics Association Journal*, 1990, 18(4), pp. 479-500.

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