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Executive Compensation in UK Property Companies

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Abstract We study the drivers of executive compensation in the listed UK property sector. The UK provides an excellent opportunity to analyze executive compensation due to high transparency in the different components of executive compensation. We show that company size is the most important variable in explaining the level of executive compensation. We find that absolute and relative share performance significantly explains long-term compensation, that management style has a distinct influence on the level of executive compensation, and that using alternative monitoring mechanisms (institutional shareholders, debtholders, and outside directors) leads to higher levels of long-term incentives. We find only weak evidence of pay-performance sensitivity for both cash and long-term compensation. Executive shareholdings provide a much stronger link between pay and performance than does executive compensation.

Keywords Corporate governance · Executive compensation · Real estate

JEL Classification G34 · G35 · J33

Introduction

Recently, the often very extensive executive compensation packages, which were originally designed to alleviate the agency problem between managers and shareholders, have attracted intense scrutiny by regulators, the general public, and academics. This scrutiny is fuelled by recent corporate scandals at companies such as Ahold and Enron, and by management pay hikes at times of worker lay-offs. Therefore, more emphasis has been put on the structure of executive compensation packages.

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In this paper, we present evidence on executive compensation practices in the real estate sector. However, unlike previous research on executive compensation in the real estate sector, which has been based on US REITs, we focus on the UK property market. A REIT-like structure was only implemented in the UK in January 2007, and thus has not been available until very recently. The lack of a REIT structure implies that unlike their US counterparts, UK property companies were not obliged to distribute at least 90% of income. Therefore, we expect agency problems to be more severe in the UK listed property market than in the US REIT market.

We study a sample of 39 property companies listed in the UK between 1998 and 2003. We use three groups of variables to study the level of executive compensation. These are economic and accounting measures of performance, governance mechanisms, and asset-specific characteristics. We find that size is the most important determinant of executive compensation, and this relation is non-linear. Absolute and relative share performance significantly explains long-term compensation, management style has a distinct influence on the level of executive compensation, and using alternative monitoring mechanisms (institutional shareholders, debtholders, and outside directors) leads to higher levels of long-term incentives.

Next, we analyze changes in executive compensation, also referred to as pay-performance sensitivity or pay-performance elasticity. We document that the pay-performance sensitivity in UK property companies is weak. Executive shareholdings provide a much stronger link between pay and performance than does executive compensation.

To our knowledge, this is the first study to perform a detailed comparison between compensation practices in a non-US property market and the evidence on executive compensation in the US REIT sector. Furthermore, we elaborate on previous US-based research by simultaneously studying the influence of three groups of variables on managerial compensation, using more detailed data for executive compensation and a broader spectrum of governance mechanisms than have been used in the past.

The UK is by far the most transparent of all European listed property markets, with companies publishing an extensive remuneration report in their annual report. The remuneration reports have been published since disclosure rules in the UK were expanded, following the Greenbury report in 1995 and the Hampel report in 1998. They contain extensive information on the composition and magnitude of executive pay, including details on executive shareholdings and stock options. For this latter component of compensation, reporting requirements are even more stringent than are those for US companies, which makes it possible for us to conduct a more in-depth study of the issue. Finally, the 1998–2003 sample period takes both the boom years of the late 1990s and the consequent downturn of the stock market into account.

The paper proceeds as follows. "Literature Review" summarizes the empirical literature on the relation between executive compensation and company performance. "Data" discusses our data, "The Level of Executive Compensation" presents our results for the drivers of executive compensation, while "Changes in Executive Compensation; The Pay-Performance Sensitivity (PPS)" provides evidence on the pay-performance sensitivity in UK property companies. "Summary and Conclusions" concludes.

Literature Review

Corporate Finance

Research on the issue of executive compensation is broad and elaborate. The most influential US-based paper is that of Jensen and Murphy (1990), who study a sample of 1,049 companies for the period 1974–1986. They find that a $1,000 increase in shareholder wealth leads to a $3.25 increase in CEO wealth. Executive stock ownership accounts for most of this pay-performance sensitivity. In their study, the level of executive pay is mostly driven by company size. Size also influences the compensation-performance sensitivity, which is higher for small firms and lower for large firms.

Hall and Liebman (1998) use several different pay-performance measures. Using different methods might explain the difference in findings: when they divide the sample in percentiles according to performance, they find that compensation is positively and significantly related to performance. Moreover, levels of compensation as well as the pay-performance elasticity increase strongly over the sample period (1980–1994), which is almost totally due to the increased use of stocks and stock options in incentive schemes.

Main et al. (1996) study executive compensation in the UK for the 1981–1989 period. They examine executive stock options and find that performance influences executive compensation, and that this influence is stronger and more significant than that found in prior research. They explain the increased sensitivity by the effectiveness of executive stock options. Their pay-size relation is consistent with findings in US-based research. They find that sector performance is not significantly related to executive compensation.

Core et al. (1999) study the effects of corporate governance mechanisms on the level of executive compensation and link compensation to stock performance. They find that weak inside governance, which they define by CEO duality and old, busy, dependent outside directors, leads to additional compensation for the CEO. For performance, Core et al. (1999) present evidence on a significantly negative relation between the predictable component of compensation, which follows from board and ownership structure variables, and stock market performance. This evidence suggests that board and ownership variables can be a proxy for managerial entrenchment, i.e., the absence of active monitoring by the board of directors.

Buck et al. (2003) are the first to study how the introduction of long-term incentive plans (LTIPs) in the UK changes the pay-performance sensitivity. They find that, while the LTIPs increase average total compensation, the presence of LTIPs actually leads to lower pay-performance sensitivity. This finding raises doubt on the effectiveness of LTIPs as a solution to the principal-agent problem.

Conyon et al. (2006) compare executive compensation practices in the USA and the UK and find that US CEOs have higher pay and much higher incentives, but this difference narrows over time. Moreover, the authors attribute a portion of US CEOs' relatively greater pay to the larger amount of risky incentives held.

Real Estate Sector

Research on executive compensation in the real estate sector is limited and focuses solely on the US REIT market. In one of the first sector-specific studies,

Chopin et al. (1995) hypothesize that revenues and unexpected profits positively influence executive compensation. They find that sales have a significantly positive impact on compensation, but that there is little effect of unexpected profits on executive pay.

Pennathur and Shelor (2002) study the determinants of executive compensation in the US REIT industry by using a time frame of eight years (1992–1999). They examine pay changes rather than pure compensation levels, and find no significant relation between company performance and executive payments prior to 1997. But after 1997, the stock return shows a positive influence on executive remuneration. However, the measure of earnings-per-share is not related to raises in executive compensation. These authors introduce an industry-specific variable, and find that it is significantly and positively related to compensation.

Scott et al. (2001) add sector-specific variables of property type to the model. They show that size is more important than performance in explaining total compensation, and moreover, that the type of property investment significantly influences total compensation of REIT executives. Industrial and healthcare REITs are associated with higher levels of executive compensation.

Because board structure and other governance mechanisms are supposed to restrict excessive executive compensation, Ghosh and Sirmans (2005) hypothesize that a well-structured governance system should lead to better monitoring and thus to a more efficient compensation structure. The governance variables they analyse include board size, the number of outside directors, CEO position in the board, and average executive age. Using the 1998–2000 period, they find that, contrary to other research, executive compensation is negatively related to stock performance. With respect to corporate governance, they find that board composition is an important determinant of executive compensation: a large board that includes old directors leads to higher levels of executive compensation, and that also holds for the presence of outside directors. Outside blockowners have a negative influence on executive compensation.

Pennathur et al. (2005) concentrate on option compensation packages rather than cash compensation. For their sample of US REITs, they find that the level of option awards is positively related to accounting measures of performance, variability of returns, and growth opportunities, which is in line with evidence from the corporate finance literature.

Data

Here, we provide an overview of our sample, which we derive from the listed-property industry in the UK, and of executive compensation practices in that industry. For that purpose we use three separate sources of data. Our main source is company proxy statements, which provide a detailed executive remuneration report; information concerning director's stockholdings, governance mechanisms, and specifics about investment strategy; and the property portfolio. Our second source of data is the GPR Handbook of European listed property companies. The Handbook covers publicly listed property companies in 15 European countries. It also includes financial statistics, management information, and information concerning investment

strategy and property acquisitions. Our third source of data is Datastream, which presents financial information.

We use the GPR universe of listed UK property companies. We select firms only if they are continuously listed for at least three years during the sample period, and if their annual reports are available for analysis. These criteria lead to a final sample of 39 companies over 1998–2003, and a total of 217 observations. Appendix A lists the complete sample.

If we exclude companies that go bankrupt or are delisted during the sample period, doing so might lead to a survivorship bias. When we analyze the excluded companies, we see that approximately half were delisted due to mergers and acquisitions, and the remaining half were excluded due to nonavailability of information. No firms went bankrupt over the sample period. Therefore, we believe the impact of survivorship bias is limited.

The first statistics of our data set reveal several interesting observations. For investment focus, Table 1 indicates that the majority of the companies in the sample invest in property in the retail and office sector, and that 72% of the companies in the sample invest in more than one sector. Companies that invest in more than two different property sectors represent 26% of the sample. International diversification of UK property companies is rare: only 10% of the companies in the sample invest more than 25% of the portfolio in countries other than the UK. These findings are consistent with Boer et al. (2005), who find that European real estate companies prefer investing locally to investing internationally, and prefer to diversify by sector.

Table 2, Columns 1 through 3 show the percentages of firms that adopt different incentive plans over time. Initially, bonus plans are the most popular incentive payment, but executive stock options gain heavily in importance and by 2001, are used by most companies. Other long-term incentives, such as share appreciation rights

Table 1 Investment focus within the sample

Focus	No. of firms	% of sample
Sectoral diversification		
1 sector	11	28.2
2 sectors	18	46.2
3 sectors	9	23.1
4 sectors	1	2.6
Property type		
Office	32	82.1
Retail	24	61.5
Industry	12	30.8
Residential	5	12.8
Other	5	12.8
International diversification		
International	4	10.3
National	35	89.7

Table 1 presents the investment focus for the sample of UK property companies for 1998–2003. Sectoral diversification shows the number of property types a company invests in, where we define property type as office, retail, industry, residential, hotel, healthcare, or other. We define a company as investing internationally if at least 25% of its portfolio is invested in a foreign market.
Sources: Annual Reports, Global Property Research

Table 2 Incentive plans implemented (1998–2003)

Year	Bonus %	LTIP %	Options %	Compensation £1,000
1998	74.0	35.3	65.0	769.5
1999	77.9	41.2	82.4	1013.7
2000	80.3	44.1	89.0	1226.6
2001	88.2	44.1	91.2	1511.1
2002	74.4	47.1	79.5	1340.1
2003	79.4	49.8	79.5	1418.9

Columns 1 through 3 of Table 2 provide statistics on the percentage of companies that implement an incentive plan over time. Bonus represents the variable part of cash compensation, which is annually determined by the remuneration committee. LTIP is cash payments related to long-term stock plans, and options represent option plans implemented. Column 4 reflects the sample-average of total compensation per executive

(SARs) and restricted share plans, are not as commonly used as cash bonuses or stock options. Nevertheless, almost half of the companies in the sample use stock-based compensation as a managerial incentive. We note especially the decreased use of both bonus and option plans after 2001. This decrease could indicate that the downturn in the stock market triggered companies to reward executives in alternative ways.

In Table 2, column 4 shows that the level of total compensation initially grows strongly during the sample period, which is mainly due to the influence of stock options. The lower average compensation level in 2002 reflects the downturn of the stock market, followed by a slight increase in 2003 when the stock market picks up again.

Figure 1 shows the development of the compensation structure over time. The relative importance of base cash compensation, including benefits and pension payments, first decreases and then slightly increases over time. The effects of the downturn in the stock markets become clear in year 2002, when the relative influence of executive stock options on total compensation decreases. The decrease in value of stock options is caused not only by depreciating stock prices, but also by the decreasing number of stock options issued. At the same time, the use of stocks as a compensation tool increases.

The diminishing popularity of stock options and the increasing importance of stock-based compensation in compensation schemes are contrasting developments in the USA, where stock options have gained in relative importance compared to compensation in shares (Conyon and Murphy 2000).

Table 3 presents the statistics for our main variables. The yearly average of executive base salary is £203,460 ($328,690).[1] This average is similar to the average level of base compensation found by Pennathur and Shelor (2002), who document a value of $332,482 for the US REIT sector in 1999. We find that the value of cash compensation, including bonus, is £408,810 ($660,436), which is slightly lower than the $761,595 found by Ghosh and Sirmans (2005) for the year 2000. However, the value of stock options is £391,840 ($633,021), which is almost equal to findings in US-based research: Pennathur et al. (2005) find average option awards of $627,120 for the 1997–2000 period. The similarity in levels of executive compensation

[1] We convert pound-denominated values to US$ using the exchange rate at 01/01/2000, which was 0.619£/$.

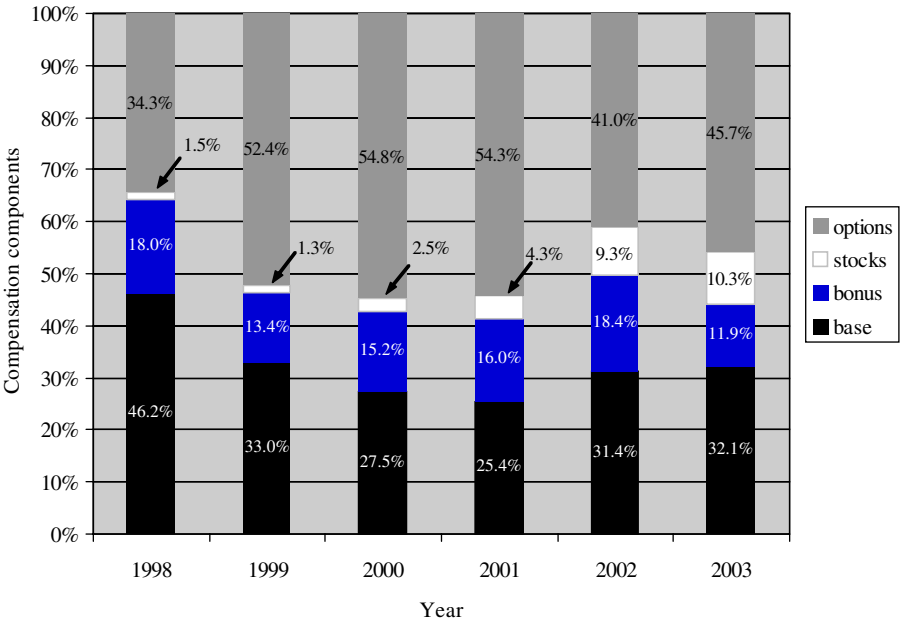

Fig. 1 Structure of executive compensation over time (%). Figure 1 illustrates the structure of executive compensation plans and the relative importance of its elements to total compensation over time. Base compensation includes base salary, benefits and pension plans. Bonus is the amount of annually determined cash bonuses. Stocks reflect the sum of stock-based long-term compensation, including share appreciation rights (*SARs*). The variable Options includes previously granted stock options, currently granted options, and profits on exercise

between the US REIT sector and the UK listed-property sector is in line with findings by Bruce et al. (2006) for the United States and the UK in general. Furthermore, the process of globalisation and the homogeneity of the listed property sector may explain our results.

The level of average bonus payments does not exceed the average level of base salary, which is consistent with the best-practices recommendations in corporate governance that have been published by some governments in the past, and more recently by the EPRA (2004). On the other hand, the average value of stock options greatly exceeds the value of average base level compensation.

The variables representing financial characteristics of the sample indicate that average stock return is relatively high (10.88 %) as compared to the FTSE100 index, which had an average annual return of −2.5% over the 1998–2003 period. The overall outperformance of the listed-property sector in the UK is not reflected in the market-to-book ratio, which averages 0.81. This discount contrasts with US REITs, which on average trade at a premium during our sample period.

For corporate governance, Table 3 shows that in 20% of the property companies in our sample, the CEO is also chairman of the board. As it is generally perceived that the dual role of CEO and chairman may result in a conflict of interest, this number seems high. However, we note that among US REITs, more than half of the companies still have a combined CEO-chairman in place in 2000 (Ghosh and Sirmans 2005).

Table 3 Descriptive statistics (1998–2003)

		Median	Mean	SD	Min	Max
Executive compensation variables						
Salary	(£1,000)	195.00	203.46	84.40	38.57	434.50
Bonus	(£1,000)	86.75	135.54	206.73	0.00	1600.00
Benefits	(£1,000)	15.33	17.84	17.92	0.00	160.33
Pensions	(£1,000)	23.50	51.97	86.12	0.00	389.00
Stocks	(£1,000)	0.00	29.03	77.41	0.00	493.66
Options	(£1,000)	145.33	391.84	1076.96	0.00	8791.84
Financial characteristics						
Market value	(£m)	213.18	569.93	955.54	2.63	6163.05
Shareholder return	%	13.38	10.88	2.08	−91.65	116.32
Earnings-per-share	(£pence)	11.64	23.05	38.96	0.00	345.01
Market-to-book ratio		0.75	0.81	0.30	0.37	2.35
Leverage ratio		0.44	0.46	0.16	0.00	0.95
Governance variables						
CEO=Chair	dummy	0.00	0.15	0.36	0.00	1.00
Shares hold by executives	%	5.63	2.20	4.17	0.00	23.33
Number of outside directors	%	44.44	45.64	9.63	0.00	75.00
Institutional Investors	dummy	0.00	0.36	0.48	0.00	1.00
Ownership concentration	%	37.25	37.11	15.77	6.26	87.21

Table 3 provides a summary of statistics. Salary, bonus, benefits, and pensions are retrieved directly from the proxy statements. The value of stock-based compensation includes the value increase of restricted executive shares and share appreciation rights (SARs). Options are valued using the Black and Scholes (1973) option pricing formula plus gains made on exercise. We obtain financial characteristics from Datastream. Market capitalization is the number of shares outstanding times the stock price at year end. We measure company performance by continuous shareholder return, which we calculate by using the formula: $\ln((p_t+\mathrm{div}_t) / p_{t-1})$ where P and div are company share price and dividend, respectively. Earnings-per-share (EPS) are total earnings divided by the number of shares outstanding. We define the market-to-book ratio as the market value of the common equity divided by the balance sheet value of the common equity in the company. We calculate the leverage ratio by dividing total debt by total equity. We collect data on governance characteristics from annual reports. CEO=Chair is a dummy, set equal to one if the CEO is chairman of the board, and zero otherwise. Shares held by executives is the average number of shares per executive relative to the number of shares outstanding. Outside directors are non-executive board members, not necessarily independent. The institutional investor dummy is one if insurance companies or pension funds are major shareholders. Shares owned by five largest investors reflect total percentage of shares held by five major shareholders
Sources: Annual Reports, Datastream, Global Property Research

The average percentage of total shares held by executives is 2.2%, which is lower than average CEO stockholdings in US REITs. However, our study investigates the average for all executives rather than only the CEO. Institutional investors are, on average, present in less than half of the sampled firms. This finding is counterintuitive, as we would expect institutional investors to be well represented in listed property firms. However, traditionally, institutional investors in Europe prefer direct rather than indirect real estate investments, a trend that has started to change only recently.

The Level of Executive Compensation

To calculate executive compensation, we use the average instead of the total remuneration of the executive directors, including the CEO. The reason for using

average executive compensation instead of only CEO compensation is that it is the board that collectively acts on behalf of the shareholders. The detailed data for our sample provides insight into the compensation of all executives individually. However, because we focus on the average executive compensation of all executives rather than on just the CEO's compensation, comparing our results with those in other studies should be done with caution.

We measure the average level of executive compensation by using two variables. REMCASH is the sum of base salary, bonus, benefits, and pension payments. REMLT is the sum of grants of executive share options, compensation in shares and long-term cash incentives. In REMLT we value grants of options using the Black and Scholes (1973) option-pricing formula. We value and revalue all options granted at the end of each fiscal year, and if options are exercised during the year, we add up the profits on exercise.

We value stock-based compensation by calculating the yearly increase in the value of incentive-based executive shares. During the past few years, the practice of granting options and shares with additional performance requirements has developed. Since options and share-plans vest in the unforeseeable future, we follow Core et al. (1999) and assume that firms set performance targets equal to expected performance. Therefore, we include the full expected value of options and shares.

Economic- and Accounting Measures of Performance

To measure performance, we introduce five variables. We use all variables in a current and a lagged term to account for the influence of past performance on current compensation.

First, we calculate the total stock performance (PERF). Second, we repeat the analysis with the Jensen α, which we calculate against both the FTSE Small Cap Index and the FTSE Real Estate Index. Earnings per share (EPS) is our third performance measure. An accounting measure of performance might be able to explain executive compensation better than could an economic measure of performance, as it is less affected by exogenous factors (Pennathur and Shelor 2002). Fourth, we include dividend yield (DIV), and finally, we include the discount/premium at which a company trades (1-MTB). Ling and Ryngaert (1997) show that REIT stock prices can differ substantially from their underlying real estate prices (Net Asset Value, NAV). Closed-end fund studies often interpret this premium/discount as a sign of management quality (Dimson and Minio 1999). Therefore, we test for the impact of the discount on managerial compensation. Appendix B presents the correlation matrix for the independent variables and the dependent variables of executive compensation.

Table 4 presents the results of the full multivariate regression of the elements of executive compensation on company characteristics. The results are robust for time and size. "Financial characteristics" shows that absolute stock performance is negatively but insignificantly related to the level of cash compensation. We repeat the analysis using the Jensen α and obtain similar results.[2] The relation between stock performance and the level of long-term compensation is significantly positive, which is due to the strong

[2] Results for regressions with Jensen α instead of absolute performance are not reported, but are available from the authors on request.

Table 4 Explaining the level of executive compensation

		REMCASH log		REMLT log	
Intercept		2.50	(6.98)[a]	−3.50	(−3.21)[a]
Financial characteristics					
Share performance	$(PERF)_t$	−0.02	(−0.18)	1.42	(4.15)[a]
Share performance lagged	$(PERF)_{t-1}$	−0.01	(−0.11)	1.00	(3.01)[a]
Earnings per share	$(EPS)_{t-1}$	0.00	(0.80)	−0.01	(−1.61)
Dividend yield	$(DIV)_{t-1}$	−0.04	(−2.37)[a]	−0.06	(−1.19)
Discount to asset value	$(1-MTB)_t$	0.19	(1.39)	−0.80	(−1.88)[b]
Governance characteristics					
Ownership concentration	$(BLOCK)_t$	−0.02	(−0.09)	−0.50	(−0.74)
Institutional shareholdings	$(INSTI)_t$	−0.03	(−0.47)	0.67	(2.89)[a]
Number of outside executives	$(OUTS)_t$	0.58	(2.62)[a]	2.71	(3.89)[a]
CEO as chairman	$(CEOOWN)_t$	−0.10	(−1.04)	−1.49	(−4.87)[a]
Shares hold by executives	$(SHRDIR)_t$	2.39	(2.50)[a]	6.10	(2.01)[a]
Leverage ratio	$(DEBT)_t$	0.80	(3.45)[a]	2.01	(2.74)[a]
Asset characteristics					
Investment focus	$(QUALITY)_t$	0.10	(1.39)	0.46	(2.11)[a]
Internationalization	$(INT)_t$	−0.63	(−4.66)[a]	−0.98	(−2.28)[a]
Office sector	$(OFFICE)_t$	0.10	(1.20)	0.05	(0.18)
Industrial sector	$(INDUS)_t$	−0.21	(−3.02)[a]	−0.56	(−2.58)[a]
Residential sector	$(RES)_t$	0.02	(0.16)	−0.85	(−2.17)[a]
Other sector	$(OTHER)_t$	−0.37	(−3.42)[a]	0.35	(1.03)
Control variables					
Capitalization	$\log(CAP)_t$	0.86	(7.90)[a]	1.61	(4.69)[a]
Capitalization^2	$\log(CAP2)_t$	−0.06	(−5.86)[a]	−0.10	(−3.11)[a]
Year 1999	(YEAR99)	0.13	(1.32)	0.76	(2.38)[a]
Year 2000	(YEAR00)	0.23	(2.29)[a]	0.75	(2.38)[a]
Year 2001	(YEAR01)	0.31	(3.05)[a]	0.67	(2.09)[a]
Year 2002	(YEAR02)	0.37	(3.66)[a]	0.89	(2.77)[a]
Year 2003	(YEAR03)	0.37	(3.52)[a]	0.64	(1.88)[b]
R^2 adj.		0.59		0.64	
No. of observations		217		217	

Table 4 presents the results of the multivariate OLS regression that explains the level of executive compensation. REMCASH includes base compensation, benefits, pension plans, and cash bonuses. REMLT includes long-term incentives stocks and options. PERF is the continuous shareholder return. EPS are earnings divided by the number of shares outstanding. DIV is the dividend per share divided by the share price. (1-MTB) represents the discount/premium calculated by one minus market value over book value of assets. BLOCK reflects the total percentage of shares held by the five largest shareholders. INSTI is an institutional investor dummy, set to one if institutional investors are among the major shareholders, and zero otherwise. OUTS is the percentage of non-executives, not necessarily independent, directors on the board. CEOOWN is a dummy set equal to one if the CEO is also the chairman of the board, and zero otherwise, SHRDIR are shares held by executives and is calculated by the average number of shares per executive relative to the number of shares outstanding. We calculate LEVERAGE by dividing total debt by total equity. The QUALITY dummy is one if a company invests in high quality property, which can be assessed through analysis of the proxy statements of a company, and by explicit managerial statements with respect to corporate focus on quality. INT defines the company as investing internationally if at least 25% of its portfolio is invested in a foreign market. The SECTOR dummies represent the sector in which a company invests, with RETAIL as the base dummy. CAP is a company's market capitalization. CAP^2 is an interaction term capturing the nonlinear relation between company size and compensation. YEAR is a control dummy that captures the time effect. White's (1980) heteroskedasticity robust *t*-statistics are in parentheses

[a] Indicates significance at the 5% level or less

[b] Indicates significance at the 10% level or less

sensitivity of the elements of long-term compensation to market movements. Lagged share performance also shows a significantly positive relation with the level of long-term compensation. This delayed effect might be due to executives being eager to exercise their stock options immediately after a successful previous year.

Our findings partially contrast with studies on US REITs: the link between pay and performance seems to be weaker for REITs as compared to non-REITs. However, it should be noted that we study more recent time frame than most REIT compensation studies.

EPS is not significantly related to either cash or long-term compensation. This is consistent with Pennathur and Shelor (2002), but contrasting expectations that bonuses are based on accounting measures of performance.

We find that dividend yield is significantly and negatively related to cash compensation. This finding might indicate that high dividend payouts reduce the free cash flow problem, which otherwise could lead to exaggerated compensation of executives. Moreover, companies with high dividend payouts might lack the opportunity of positive NPV investments, which signals possible lower future profits to investors and leads to lower current compensation.

Our results show a negative relation between the discount at which property companies trade and the level of long-term compensation. This suggests that managers of badly performing companies receive lower compensation, which confirms the view in closed-end fund studies that the discount is a measure of managerial quality.[3]

Governance Mechanisms

Our second set of explanatory variables contains governance and board structure variables. First, we include a variable representing the percentage of shares owned by executives (SHRDIR). We measure SHRDIR by the average percentage of shares owned by the executives. The second variable is the relative proportion of outside directors on the board (OUTS). We define directors as outsiders if they are non-executives, thereby including board members who are appointed by the current CEO. Thus, outside directors are not by definition independent. We measure ownership concentration among shareholders (BLOCK) by calculating the percentage of shares owned by the top five shareholders. If the CEO of a company is also the chairman of the board, we introduce a binary dummy (CEOOWN) in the model. We add a dummy for the presence of institutional investors among shareholders (INSTI). This variable is set equal to one if institutional investors are present among shareholders. Our last governance mechanism is debtholders, for which we use the debt-to-equity ratio (DEBT) as our proxy. We measure this ratio by dividing the book value of total debt by common equity.

"Governance characteristics" in Table 4 presents the empirical results for the effects of governance mechanisms on executive compensation. Large stockholders do not seem to be efficient in governing executives. This result is contrasting REIT studies, which document a negative relation between the presence of block holders and the level of CEO compensation (Ghosh and Sirmans 2005). Because block ownership formation in REITs is restricted by the 5–50 rule, large shareholders might be encouraged to intensify monitoring.

[3] See for instance Berk and Stanton (2007).

The presence of institutional investors is positively related to long-term executive compensation. This finding could be because institutional investors prefer incentive-based compensation, which witnessed a huge increase in value during the end of the 1990s. However, Webb et al. (2003) argue that institutional investors are less efficient in monitoring than is widely assumed.

As do compensation studies on REITs (Ghosh and Sirmans 2005) and non-real estate firms (Core et al. 1999), we question the functionality of outside directors as a monitoring mechanism. We do so because we find that the number of outside directors is significantly and positively related to both short- and long-term executive compensation. Furthermore, we find that in a situation in which the CEO is also chairman of the board, long-term executive compensation is lower than it is when the tasks of CEO and chairman are separated. This finding is counterintuitive, as the dual role of the CEO creates the opportunity for abuse of power, which could lead to higher compensation levels. This relation might indicate that stakeholder monitoring becomes more intense when the CEO has a dual role, leading to lower compensation levels.

Executive stock ownership is positively related to both cash and long-term compensation. The positive relation might indicate that executives with large shareholdings have a strong incentive to boost stock performance, which would not only lead to higher values of their stockholdings, but simultaneously increase the value of long-term compensation packages.

We find a significant positive relation between the debt-to-equity ratio and the level of cash executive compensation. Ghosh and Sirmans (2005) suggest that debtholders act as a monitoring device, such that managers are paid more in current compensation and less in long-term benefits. However, our results show a positive influence of the debt-equity ratio on long-term compensation as well. This finding leads to the question of whether debtholders are in fact an effective substitute monitoring mechanism.

Asset Characteristics

Many studies document a relation between managerial style and the level of executive compensation (Bertrand and Schoar 2003). Although we have no data on manager-specific characteristics, our data set contains detailed information on the asset base of the property companies in our sample. We use the data on asset characteristics as a proxy for managerial style, because the right property and investment strategy can lead to superior performance (Myer and Webb 2000). Also, the riskiness of the investment style can have a direct impact on the pay-performance relation (Aggarwal and Samwick 1999). We relate the investment style of a property company to the level of cash and long-term compensation, assuming that managers are financially rewarded for strategies that lead to higher risk-adjusted returns.

We include several variables to account for the investment style of a property company. First, we introduce an international investment dummy (INT), which we set equal to one if a company invests internationally, and zero otherwise. To qualify as international, a company must have invested at least 25% of its portfolio in one or more foreign countries. Second, we distinguish between different property types, categorized as office (OFFICE), retail (RETAIL), residential (RES), industrial (INDUS), and other investments (OTHER). Third, we define an investment focus on high- or low-quality property by the variable QUALITY. We can assess whether a

company invests in high- or low-quality property by analysing the proxy statements of that company, and by the company's explicit managerial statements corporate focus on quality. Finally, we control for size and time by introducing market capitalization (CAP), its interaction term $(CAP)^2$, and year dummies.

"Asset characteristics" in Table 4 provides the results for the multivariate regression of the asset-specific variables on the two measures of executive compensation. A management style that opts for international diversification of investments results in both lower cash and long-term compensation levels. This finding is consistent with Eichholtz et al. (2001), who show that property companies with an international investment style underperform property companies that focus on a single market.

The sector dummies, which are relative to the retail sector, show that investing in residential and industrial property leads to lower compensation levels, but an investment style that focuses on office property does not lead to significantly different compensation levels. Our findings support other evidence that residential and industrial real estate underperform the office and retail sector on a risk-adjusted basis (Lee 2001; Myer and Webb 2000), which leads to lower compensation levels. Moreover, we hypothesize that residential and industrial property investments can be regarded as 'non-glamourous.' The retail and office sector are generally more 'glamourous' investments, with key projects that garner a lot of media attention, which leads to more exposure for the management and the need for high-profile executives.

Finally, property companies with a focus on quality property have higher managerial rewards. This finding confirms our expectations, because high-quality real estate is generally regarded as low risk, but well performing (Baum 1994).

On size, the consensus in the corporate finance and real estate studies predicts a positive influence of company size on executive compensation. The relation between size (CAP) and compensation is also strongly positive in the UK listed-property sector. We are interested to note that this relation is not monotonically positive. When we insert an interaction term, $(CAP)^2$, we see a significantly negative coefficient for this variable. This non-monotonic relation indicates that executive compensation quickly increases in small companies, but for executives in large companies, the increase is much weaker and even becomes negative if a company gets too large. A calculation shows us that, ceteris paribus, REMCASH maximizes at a market capitalization of £1.2bln. ($1.9bln.).

The control dummy for time clearly reflects the upward trend in executive compensation, as the coefficients for YEAR all show significantly positive signs. We note that we assume that our regression coefficients are stable over time. Although we control for time-period differences by including time dummies, we also check that our results are robust over time. We do so by performing regressions for all years separately. The coefficients prove to be consistent over the years, indicating that they are time-robust. Overall, the explanatory power of our models is high, with adjusted R-squares varying from 0.59 to 0.64 for REMCASH and REMLT, respectively.

In previous research on executive compensation, several authors raise the issue of endogeneity. Among others, Agrawal and Knoeber (1996), Ghosh and Sirmans (2005), and Mishra and Nielsen (2000) show that compensation, performance, and corporate governance are interrelated, which might lead to biased OLS results. Like Mishra and Nielsen (2000), we use a 2SLS approach within a simultaneous system of equations, where stock performance, executive stockholdings and compensation are the endogenous variables. The total system includes three equations and 17 exogenous variables.

Our performance equation includes CEO duality, insider holdings, board independence, ownership concentration, presence of institutional investors, pay-related incentives, and control variables. We follow the agency theory, expecting that a well-structured board, high insider ownership, and the presence of alternative governance mechanisms enhance performance. On the other hand, CEO duality leads to entrenchment, which is detrimental to performance.

Incentives through executive compensation might have a positive effect on performance. Thus, the insider-holding equation includes performance, pay-related incentives, the governance variables, and control variables. Executives of well-performing firms are more willing to hold shares of their company. We expect that the use of long-term compensation packages, especially stock awards, leads to higher insider holdings. Moreover, an independent board and the presence of alternative governance mechanisms might lead to stronger alignment of interest through more insider holdings. Finally, the compensation equation includes performance, insider holdings, the discount to asset value, variables on the style of the property company, a selection of governance mechanisms, year dummies, and control variables. We also use cash compensation and long-term compensation as dependent variables in the compensation equation. All three equations include firm size and the debt-equity ratio. We drop at least two exogenous variables from each equation and structure each equation such that we can exploit the 2SLS method to estimate the system.

We do not report the results of our robustness check here, since we find that our results on the drivers of cash and long-term compensation are consistent with those reported above. Governance and asset characteristics are the main explanatory variables of executive compensation, but performance only explains long-term compensation levels.[4]

For the drivers of performance, we show that all the corporate governance variables except CEOOWN have a nonsignificant influence on the performance of property companies in our sample.

For insider holdings, we find that the presence of large stockholders and a high leverage ratio have a positive impact on the size of insider holdings. This finding indicates that alternative governance mechanisms increase the alignment of interest between managers and shareholders.

Changes in Executive Compensation; The Pay-Performance Sensitivity (PPS)

Most of the studies on executive compensation focus on the relation between executive pay and company performance. To gain a deeper insight into the pay-performance relation, we examine the influence of performance on changes in executive payment. This method follows Jensen and Murphy (1990), Pennathur and Shelor (2002), and Zhou (2000), who find that a model that measures changes has advantages in capturing factors that influence the pay-performance relationship over time.

Unfortunately, there is no consensus among studies on the appropriate model specification. Coughlan and Schmidt (1985) and Gibbons and Murphy (1992) prefer the elasticity specification, but Jensen and Murphy (1990) use the arithmetic

[4] Extensive discussion of all results falls outside of the scope of this paper. However, the results are available from the authors on request.

sensitivity approach. Zhou (2000) includes both model specifications in his study, and Rosen (1992) documents the differences between all models.

The different model specifications do not yield similar results, but neither the sensitivity nor the elasticity approach strictly dominates the other. One advantage of the sensitivity approach is its clear economic interpretation; further, this method enables us compare the PPS results to executive shareholdings. Because executive shareholdings are directly related to shareholder wealth and represent the most powerful link between corporate performance and executive wealth, we use the PPS approach and exploit the elasticity approach as a robustness check. The model specification for the PPS is

$$\Delta(\text{Compensation})_{it} = \alpha + \beta \times \Delta(\text{Shareholder} \cdot \text{Wealth})_{it} + \varepsilon_{it} \quad (1)$$

where $\Delta(\text{Compensation})_{it}$ is the annual change in cash or long-term compensation, $\Delta(\text{Shareholder}{\cdot}\text{Wealth})_{it}$ is the rate of return realized by shareholder multiplied by the company market value at $t-1$, and ε_{it} represents the error term.For the pay-performance elasticity (PPE) the model specification is

$$\Delta\ln(\text{Compensation})_{it} = \alpha + \beta \times \Delta\ln(\text{Shareholder} \cdot \text{Wealth})_{it} + \varepsilon_{it} \quad (2)$$

where $\Delta\text{In}(\text{Compensation})_{it}$ is the annual change in the natural logarithm of cash or long-term compensation, $\Delta(\text{InShareholder}{\cdot}\text{Wealth})_{it}$ is the natural logarithm continuous return including dividends, and ε_{it} represents the error term.

Table 5 summarizes the results for model 1. "All firms" provides the estimated PPS for the entire sample. In "Company size", we control for size by including a dummy variable for large firms. In "Blockholders", "Outsiders", "Debtholders", and "Institutional investors", we examine the influence of different governance mechanisms on the PPS. We note that although the *R*-squares seem to be low, they are comparable to findings in similar studies.

"All firms" in Table 5 shows that for the sensitivity of cash compensation to shareholder wealth, β equals 0.00004; for every £1,000 increase in shareholder wealth, the cash compensation paid to the executives increases by £0.04. This value is comparable to findings by Murphy (1999), who documents cash PPS-figures ranging from 0.008 for the industry sector to 0.073 for the utility sector during 1990–1996. Zhou (2000) also includes the lagged increase in shareholder wealth in the model and finds a cash PPS of 0.08 for the Canadian market during 1994–1996, slightly higher than we find in our sample. The sensitivity between long-term compensation and shareholder wealth is £0.20 per £1,000, which is higher than the sensitivity of cash compensation to performance, a finding that is consistent with the consensus in other studies on PPS. Long-term compensation yields a higher PPS than cash compensation, because long-term compensation is in the form of options and stocks, which are more closely linked to stock performance. The total PPS of executives in the UK property sector is the sum of cash compensation PPS and long-term compensation PPS: for every £1,000 increase in shareholder wealth, executive wealth increases £0.24.

We also perform three robustness checks. First, we investigate the PPS over time and find that the PPS trends upwards over the sample period, indicating that executives are increasingly paid on the basis of performance. The PPS of cash compensation is consistently lower than the sensitivity of long-term compensation to performance, and has negative coefficients during the downturn of the stock market

Table 5 The pay-performance sensitivity

	Δ(REMCASH)		Δ(REMLT)	
All firms				
Intercept	33.34	(2.87)[b]	38.95	(1.27)
Δ(Shareholder wealth)	3.59E−05	(0.96)	2.00E−04	(2.02)[b]
R^2 adj.	0.005		0.023	
Company size				
Intercept	22.48	(1.33)	45.83	(1.02)
Size dummy	22.24	(0.96)	−9.79	(−0.16)
Δ(Shareholder wealth)	2.39E−04	(1.33)	6.82E−04	(1.44)
Dummy*Δ(Shareholder wealth)	−2.12E−04	(−1.16)	−5.04E−04	(−1.04)
R^2 adj.	0.019		0.029	
Blockholders				
Intercept	36.16	(2.26)[b]	40.61	(1.01)
Ownership concentration dummy	−5.96	(−0.25)	−12.03	(−0.20)
Δ(Shareholder wealth)	3.79E−05	(0.92)	2.57E−05	(0.25)
Dummy*Δ(Shareholder wealth)	−9.65E−06	(−0.09)	1.12E−03	(4.28)[b]
R^2 adj.	0.006		0.116	
Outsiders				
Intercept	22.40	(1.29)	15.82	(0.35)
Outsider dummy	20.17	(0.86)	39.88	(0.65)
Δ(Shareholder wealth)	−1.26E−05	(−0.18)	5.90E−04	(3.21)[b]
Dummy*Δ(Shareholder wealth)	6.91E−05	(0.83)	5.42E−04	(2.49)[b]
R^2 adj.	0.013		0.059	
Debtholders				
Intercept	37.97	(2.34)[b]	28.39	(0.66)
Debt dummy	−11.65	(−0.50)	21.96	(0.35)
Δ(Shareholder wealth)	−2.03E−05	(−0.39)	1.99E−04	(1.43)
Dummy*Δ(Shareholder wealth)	1.18E−04	(1.57)	−1.44E−06	(−0.01)
R^2 adj.	0.021		0.023	
Institutional investors				
Intercept	68.78	(1.70)[a]	35.21	(0.90)
Insitutional investor dummy	6.17	(0.09)	7.91	(0.12)
Δ(Shareholder wealth)	1.89E−04	(1.39)	1.70E−04	(1.29)
Dummy*Δ(Shareholder wealth)	1.13E−04	(0.54)	7.12E−05	(0.35)
R^2 adj.	0.007		0.007	

"All firms" in Table 5 presents the pay-performance sensitivity (PPS) of the sample. The first part of the PPS is the result of regressions between the increase in shareholder wealth, Δ(Shareholder wealth), and the increase in cash compensation, Δ(REMCASH). We calculate the increase in shareholder wealth by multiplying the return to shareholders at time t by the market value at time t−1. The increase in cash compensation equals the sum of increases in base salary, benefits, pension plans, and bonuses, respectively. The second part of the PPS equals the sensitivity between the increase in long-term compensation Δ(REMLT) and the increase in shareholder wealth, where Δ(REMLT) is the sum of annual increase in the value of stock and option plans. In "Company size" we introduce a dummy, LARGE, and an interaction term, LARGE* Δ(Shareholder wealth), to capture the effect of size on the PPS. The dummy is set to one for companies with a market capitalization above the median. "Blockholders," "Outsiders," "Debtholders," and "Institutional investors" present evidence on the effect of block ownership, outside directors on the board, debtholders, and institutional stockholders, on the PPS, respectively. We capture the effects of the governance mechanisms on PPS by introducing dummies in the model. White's (1980) heteroskedasticity robust *t*-statistics are in parentheses

[a] Indicates significance at the 5% level or less

[b] Indicates significance at the 10% level or less

in 2001 and 2002. These negative coefficients show that the basic salary of executives is robust to the volatility of the stock performance.

Second, we use the elasticity approach described in model 2. Although the *t*-statistics improve slightly—most notably, we document a significant cash compensation-performance elasticity—the sign of all results is similar to the PPS analysis and the explanatory power of the models is approximately the same. However, the elasticity approach does not have a straightforward interpretation in terms of 'absolute' incentives, so we do not report further on these results. Here, we discuss only the results of the pay-performance elasticity analysis.

Third, the comparison between small and large firms in "Company size" indicates that the PPS is lower in larger firms, although the interaction coefficients lack statistical significance. Therefore, we split the sample into small and large firms and repeat the PPS analysis. The (unreported) results confirm that the PPS is stronger in small firms. Our finding is consistent with Jensen and Murphy (1990) and Zhou (2000), both of which studies find that small, rather than large, companies drive the PPS in the sample. The inverse relation between size and the PPS may indicate that large firms encounter problems in bridging the agency gap between managers and owners. On the other hand, the absolute values of changes in market capitalization of large companies are usually so large that they ensure significant changes in executive wealth.

"Blockholders", "Outsiders", "Debtholders", and "Institutional investors" present the results on the influence of different governance mechanisms on the PPS. In "Governance Mechanisms", we found no evidence that the presence of large blockholders was related to the level of executive compensation. However, the PPS results show that the presence of blockholders increases the long-term PPS and thus aligns interests of owners and managers of a company. This relation indicates that blockholders act as an effective monitoring mechanism.

Based on evidence presented in "Governance Mechanisms", we questioned the effectiveness of outside directors on the board, because the level of executive compensation increases with the number of outside directors. However, when we look at the changes in executive compensation, we find evidence of an increasing PPS when the number of outside directors on the board increases. An explanation for this result might be the preference of outside directors for long-term incentives, which turns out to be an efficient link between pay and performance.

The presence of debtholders does not significantly influence the PPS. As a robustness check, we split the sample into high- and low-leverage firms and find that the cash PPS is significant for the subsample of highly levered companies, but it is not significant for the subsample of low-levered companies. This finding is intuitive: debtholders have an incentive to reduce cash compensation, because it might affect the ability of a company to service debt. This incentive increases the necessity for debtholders to take over the monitoring task traditionally performed by shareholders.

Although executive compensation provides a direct way to link executive wealth to shareholder wealth, our results show that this link is weak at best. On the other hand, the value of executive stock ownership is perfectly correlated with changes in shareholder wealth and is therefore often referred to as the most powerful incentive to align the interest of executives and shareholders (Jensen and Murphy 1990). The percentage of a firm's total shares outstanding owned by executives is a direct estimate of the executives' sensitivity to performance. In Table 6, we summarize

Table 6 Executive stockholdings

	Mean (%)	Median (%)
Full sample		
	2.26	0.58
Company size		
Small	2.46	1.09
Large	2.05	0.38
Ownership concentration		
High	2.75	1.29
Low	1.77	0.44
Number of outside directors		
High	2.01	0.43
Low	2.51	1.23
Leverage ratio		
High	3.42	1.07
Low	1.09	0.46
Institutional investors		
Yes	2.41	0.87
No	2.03	0.43

Table 6 shows the mean and median executive stockholdings in our sample. First, we calculate these values for the full sample. Second, we distinguish between executive shareholdings in small and large companies by creating two subsamples, companies under and above the median market capitalization. We apply the same procedure using ownership concentration, the number of outside directors, leverage ratio, and institutional investors as the sorting variables

executive stockholdings and how these holdings vary under the influence of various governance mechanisms.

Table 6 shows that the average executive stockholding in our sample is 2.26%, which implies that if the executive holds an average percentage of the firm's stock, then for every £1,000 increase in stock value, his wealth from stock ownership increases by £22.60. Compared to the total PPS from executive compensation that we documented earlier—that a £1,000 increase in shareholder wealth leads to a £0.24 increase in executive wealth—this result clearly illustrates the extremely powerful incentive of executive stockholdings.

Furthermore, Table 6 shows that executive stockholdings are negatively related to firm size and, with the exception of outside directors,—executive stockholdings are higher in firms with alternative governance mechanisms in place. This latter finding indicates that alternative monitoring mechanisms increase the alignment of interest between managers and stakeholders.

Summary and Conclusions

In this paper we study the drivers of executive compensation in the UK listed-property sector. The UK market is especially important to study, as the tax-efficient REIT structure was not available in the UK during our sample period. The lack of the REIT structure implies that the usual restriction of 90% income distribution does not hold, which in turn might increase agency conflicts.

The UK is also ideally suited to executive compensation research, since the publication of remuneration reports in the proxy statements, which contain detailed

information on previously granted options, makes it possible for us to create a clear and full insight into compensation practices. Using three sets of variables (economic and accounting performance, governance mechanisms, and asset characteristics) we study both the level and changes in executive compensation.

Our main conclusions are fivefold. First, consistent with previous research on US REITs (Ghosh and Sirmans 2005), we find that company size is the most important variable in explaining the level of executive compensation. However, we find that the relation between company size and compensation is nonlinear. This observation indicates that executive compensation quickly increases in small companies, but for executives in large companies, the increase is much weaker and may even turn negative.

Second, both absolute and relative measures of performance can explain the level of long-term executive compensation, but these measures are not related to cash compensation. These findings contrast US REIT research, which shows mixed results for the relation between compensation and performance.

Third, we document results for the influence of governance mechanisms on executive compensation. We find evidence that institutional investors, debtholders, and outside directors prefer long-term incentives. This preference leads to higher long-term compensation levels when there is a bull market, but also to a stronger link between pay and performance. CEO duality does not lead to increased entrenchment, which contrasts with findings for US REITs. This difference might be explained by the unrestricted legal environment in which UK property companies operate, as opposed to the US REITs. The stringent rules that apply to REITs have resulted in highly complex organizational structures, which might in turn lead to the entrenchment of senior management (Ghosh and Sirmans 2005). On the other hand, the restrictions on block ownership that apply to REITs seem to lead to increased investor scrutiny, as block ownership negatively influences compensation levels in REITs (Ghosh and Sirmans 2005). This finding contrasts with the nonsignificant relationship between block ownership and compensation levels that we document for UK property companies.

Fourth, we introduce asset-specific variables into our model as our proxy for managerial style. We find that geographical diversification leads to lower levels of executive payment, but investing in high-quality property is positively related to compensation. Executives of companies investing in the 'glamorous' retail and office property earn more than do their colleagues investing in 'non-glamour' industrial and residential property. This finding can be partly explained by the risk-adjusted performance of the respective sectors.

Fifth, we present evidence on the changes in executive compensation by adopting the pay-performance sensitivity (PPS) approach. To our knowledge, this approach has not been used before in real estate studies on executive compensation. We show that a £1,000 increase in shareholder wealth leads to an average £0.24 increase in executive wealth for our sample of companies. The pay-performance sensitivity is stronger and more significant for smaller firms, a finding that is consistent with Jensen and Murphy (1990) and Zhou (2000). Although executive compensation provides a direct link between shareholder wealth and executive wealth, we find that executive shareholdings provide a much more powerful incentive for executives to create shareholder wealth.

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Appendix A

Table 7 Sample overview

Company name	Years in sample
A&J Mucklow Group	1998–2003
Benchmark Group	1998–2003
British Land Company	1998–2003
Brixton Plc	1998–2003
Canary Wharf Group	1999–2003
Capital & Regional	1998–2003
Chelsfield	1998–2003
CLS Holdings	1998–2003
Countryside Properties	1998–2003
Daejan	1998–2003
Derwent Valley Holdings	1998–2003
Development Securities	1998–2003
Freeport	1998–2003
Grainger Trust	1998–2003
Great Portland Estates	1998–2003
Grosvenor Land Holdings	2000–2002
Hammerson	1998–2003
Hampton Trust	1998–2003
Helical Bar	1998–2003
International Real Estate	1998–2002
Land Securities	1998–2003
Liberty International	1998–2003
London & Associated Properties	1998–2003
London Merchant Securities	1998–2003
Marylebone Warwick Balfour Group	1999–2003
McKay Securities	1998–2003
Merivale Moore	1998–2002
Minerva	1998–2003
NHP	2000–2003
Pillar Property	1998–2003
Quintain Estates and Development	1998–2003
Regus	2000–2003
Rugby Estates	1999–2002
Shaftesbury	1998–2003
Slough Estates	1998–2002
St. Modwen Properties	1998–2003
Town Centre Securities	2000–2003
Warner Estate	1999–2003
Workspace Group	1998–2003

Appendix A presents our sample of 39 UK property companies, created from the UK universe and provided by Global Property Research for the 1998–2003 period. We include companies in the final sample if (a) they were listed on a continuous basis for at least 3 years during the sample period, and (b) if necessary data was available. The excluded companies are: Ashtenne Holdings, Bourne End Properties, Bradford Properties Trust, Burford Holdings, Capital Shopping Centre, Chorion, Delancey, Estates & General, Frogmore, Moorfield Group, Mountview Estates, Peel Holdings, Smith Estates, Stockbourne, The Unite Group, Tops Estates, Warnford Investments, and Wates City of London

Appendix B

Table 8 Correlation matrix

	REMCASH	REMLT	PERF	PERFt-1	EPS	DIV	DISCOUNT	BLOCK	INSTI	OUTS
ln(REMLT)	**0.53**									
PERF	−0.06	**0.22**								
PERFt−1	0.02	**0.18**	−0.06							
EPS	**0.19**	−0.04	0.10	0.08						
DIV	**−0.25**	**−0.23**	**0.21**	−0.10	0.00					
DISCOUNT	**−0.20**	**−0.37**	**−0.29**	**−0.17**	**−0.36**	**0.29**				
BLOCK	**−0.26**	**−0.23**	**−0.12**	−0.11	**−0.16**	−0.04	**0.11**			
INSTI	0.11	**0.37**	0.06	0.05	0.09	**−0.21**	−0.11	**−0.19**		
OUTS	**0.15**	**0.17**	0.00	−0.02	0.10	**0.17**	**−0.12**	0.01	−0.02	
CEOOWN	**−0.16**	**−0.50**	**−0.13**	**−0.13**	0.10	**0.13**	**0.23**	0.09	**−0.32**	0.08
SHRDIR	0.10	**0.12**	−0.10	**−0.13**	−0.10	**−0.26**	−0.03	**0.16**	−0.04	−0.07
DEBT	−0.10	**−0.14**	**−0.16**	**−0.17**	0.01	**−0.12**	**−0.12**	**0.31**	−0.08	0.02
QUALITY	0.03	**0.31**	0.03	0.04	**−0.14**	**−0.12**	0.02	0.02	**0.35**	0.00
INT	**−0.24**	0.01	0.00	−0.05	−0.08	0.05	0.07	**0.14**	**0.14**	**0.17**
OFFICE	−0.03	−0.04	−0.08	−0.03	**0.14**	**−0.16**	−0.10	0.06	−0.09	−0.02
INDUS	**−0.12**	**−0.22**	−0.01	−0.05	−0.03	**0.15**	0.07	0.00	−0.10	0.05
RES	0.09	**−0.14**	0.08	0.05	**0.54**	0.06	**−0.24**	−0.02	**−0.14**	−0.01
OTHER	−0.07	0.06	−0.08	−0.03	**−0.15**	0.03	0.07	**0.21**	**−0.22**	−0.11
CAP	**0.55**	**0.52**	0.01	0.05	0.10	−0.08	**−0.25**	**−0.44**	**0.19**	**0.14**
CAP2	**0.46**	**0.46**	0.00	0.03	0.07	−0.07	**−0.24**	**−0.42**	**0.19**	**0.13**

	CEOOWN	SHRDIR	DEBT	QUALITY	INT	OFFICE	INDUS	RES	OTHER	CAP
ln(REMLT)										
PERF										
PERFt−1										
EPS										
DIV										
DISCOUNT										
BLOCK										
INSTI										
OUTS										
CEOOWN										
SHRDIR	−0.10									
DEBT	**0.16**	**0.25**								
QUALITY	**−0.15**	−0.04	−0.13							
INT	−0.01	**0.51**	0.22	**0.13**						
OFFICE	−0.01	**0.17**	0.12	**−0.33**	**0.17**					
INDUS	0.08	−0.05	0.12	**−0.23**	**−0.22**	0.07				
RES	0.10	−0.03	0.11	−0.09	**−0.11**	**−0.19**	−0.06			
OTHER	**−0.14**	**0.21**	0.15	−0.05	0.10	−0.05	**−0.19**	0.08		
CAP	−0.10	−0.03	−0.37	**0.24**	−0.05	0.04	**−0.18**	−0.08	−0.07	
CAP2	−0.04	−0.08	−0.32	**0.26**	−0.03	0.06	**−0.20**	**−0.12**	−0.10	**0.98**

Appendix B provides the total correlation matrix for all variables. Figures in **bold** are significant at the 5% level

References

Aggarwal, R. K., & Samwick, A. A. (1999). The other side of the trade-off: The impact of risk on executive compensation. *Journal of Political Economy, 107*, 65–105.

Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial & Quantitative Analysis, 31*, 377–397.

Baum, A. (1994). Quality and property performance. *Journal of Property Valuation and Investment, 12*, 31–46.
Berk, J. B., & Stanton, R. (2007). Managerial ability, compensation, and the closed-end fund discount. *Journal of Finance*, *62*, 529–556.
Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm Policies. *Quarterly Journal of Economics, 118*, 1169–1208.
Black, F., & Scholes, M. S. (1973). The pricing of options and corporate liabilities. *Journal of Political Economy, 81*, 637–654.
Boer, D., Brounen, D., & Op 't Veld, H. (2005). Corporate focus and stock performance: International evidence from listed property markets. *Journal of Real Estate Finance and Economics, 31*, 263–281.
Buck, T., Bruce, A., Main, B. G. M., & Udueni, H. (2003). Long term incentive plans, executive pay and UK corporate performance. *Journal of Management Studies, 40*, 1709–1727.
Chopin, M. C., Dickens, R. N., & Shelor, R. M. (1995). An empirical examination of compensation of REIT managers. *Journal of Real Estate Research, 10*, 263–277.
Conyon, M. J., Core, J. E., & Guay, W. R. (2006). How high is US CEO pay? A comparison with UK pay. Working Paper, University of Pennsylvania.
Conyon, M. J., & Murphy, K. J. (2000). The prince and the pauper? CEO pay in the United States and United Kingdom. *Economic Journal, 110*, 640–671.
Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics, 51*, 371–406.
Coughlan, A. T., & Schmidt, R. M. (1985). Executive compensation, management turnover, and firm performance: An empirical investigation. *Journal of Accounting and Economics, 7*, 43–66.
Dimson, E., & Minio, C. (1999). Closed-end funds: A survey. *Financial Markets, Institutions & Instruments, 8*, 1–41.
Eichholtz, P. M. A., Koedijk, K., & Schweitzer, M. (2001). Global property investment and the costs of international diversification. *Journal of International Money & Finance, 20*, 349–366.
Ghosh, C., & Sirmans, C. F. (2005). On REIT CEO compensation: Does board structure matter?. *Journal of Real Estate Finance and Economics, 30*, 397–428.
Gibbons, R., & Murphy, K. J. (1992). Optimal incentive contracts in the presence of career concerns: Theory and evidence. *Journal of Political Economy, 100*, 468–505.
Hall, B. J., & Liebman, J. B. (1998). Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics, 113*, 653–691.
Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy, 98*, 225–264.
Lee, S. L. (2001). The relative importance of property type and regional factors in real estate returns. *Journal of Real Estate Portfolio Management, 7*, 159–167.
Ling, D. C., & Ryngaert, M. (1997). Valuation uncertainty, institutional involvement, and the underpricing of IPOs: The case of REITs. *Journal of Financial Economics, 43*, 433–456.
Main, B. G. M., Bruce, A., & Buck, T. (1996). Total board remuneration and company performance. *Economic Journal, 106*, 1627–1644.
Mishra, C. S., & Nielsen, J. F. (2000). Board independence and compensation policies in large bank holding companies. *Financial Management, 29*, 51–69.
Murphy, K. J. (1999). Executive compensation. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics, vol. 3*. Amsterdam: Elsevier.
Myer, F. C. N., & Webb, J. R. (2000). Management styles of REIT funds. *Journal of Real Estate Portfolio Management, 6*, 339–348.
Pennathur, A. K., Gilley, O. W., & Shelor, R. M. (2005). An analysis of REIT CEO stock-based compensation. *Real Estate Economics, 33*, 189–202.
Pennathur, A. K., & Shelor, R. M. (2002). The determinants of REIT CEO compensation. *Journal of Real Estate Finance and Economics, 25*, 99–113.
Rosen, K. (1992). Contracts and the market for executives. In: L. Wender & H. Wijkander (Eds.), *Contract Economics*. Oxford: Blackwell.
Scott, J. L., Anderson, R. I., & Loviscek, A. L. (2001). Are REIT CEOs rewarded for performance? Another look. *Journal of Real Estate Portfolio Management, 7*, 247–252.
Webb, R., Beck, M., & McKinnon, R. (2003). Problems and limitations of institutional investor participation in corporate governance. *Corporate Governance: An International Review, 11*, 65–73.
White, H. L. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*, 817–838.
Zhou, X. (2000). CEO pay, firm size, and corporate performance: evidence from Canada. *Canadian Journal of Economics 33*, 213–251.