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Author(s): Mahmoud Ezzamel and Robert Watson

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MARKET COMPARISON EARNINGS AND THE BIDDING-UP OF EXECUTIVE CASH COMPENSATION: EVIDENCE FROM THE UNITED KINGDOM

MAHMOUD EZZAMEL
University of Manchester

ROBERT WATSON
Leeds University

We argue that compensation committees will pay executives at least at the going rate and that deviations from that rate will influence subsequent pay. In a sample of large U.K. companies, we estimated whether asymmetric responses to pay anomalies explained executive pay. All three of our pay anomaly measures were statistically related to subsequent pay. Moreover, there was significant nonlinear adjustment toward the going rate for underpaid executives.

A much remarked upon feature of both the U.S. and the U.K. corporate sectors over the recent past has been the consistently high rate of growth in the average earnings of senior executives. In a market economy concerned with value creation, exceptionally high pay awards may be justified if senior executives generate significant additional wealth for other stakeholders. A number of studies (e.g., Conyon, Gregg, & Machin, 1995; Conyon & Leech, 1994; Gomez-Mejia, Tosi, & Hinkin, 1987; Gregg, Machin, & Szymanski, 1993; Jensen & Murphy, 1990; Murphy, 1997; O'Reilly, Main, & Crystal, 1988) have, however, found only a weak empirical relationship between changes in executive pay and either accounting or market-based measures of firm performance.

In this study, we argue that, in an informationally efficient executive labor market, it is unrealistic to expect changes in executive pay to be closely related to firm performance measures. This is because, irrespective of firm performance, for motivational, recruitment, and retention reasons, a firm's compensation committee has to ensure that its senior executives are paid at least the going rate, or the compensation level typically paid by similar firms to comparable individuals occupying similar posts.¹ Deviations from the going rate, which we term payment anomalies, can be expected to have a

significant influence upon executives' subsequent cash pay awards. The process by which external labor market comparisons are made has, however, been criticized by shareholder groups as leading to an upward ratcheting—a bidding-up—of executive pay over time (cf. Ezzamel & Watson, 1997b). This study investigated the main empirical implication of this bidding-up hypothesis, namely, that the sensitivity of cash pay awards to apparent underpayment anomalies will be greater than their sensitivity to overpayments.

We empirically estimated the extent to which the annual changes in executive cash compensation for a sample of U.K. companies over the period 1992 to 1995 could be explained in terms of these asymmetric responses to apparent cash payment anomalies relative to the going rate in the external executive labor market. Some U.K. researchers have attempted to control for comparison pay levels. Smith and Szymanski (1995) controlled for the average level of executive cash compensation in their sample, and Cosh and Hughes (1995) created a proxy that exploited the well-known positive relationship between pay levels and firm size. We developed these ideas further by testing three alternative proxies for the comparison level of executive cash compensation using information that was publicly available when the compensation committees would have been considering subsequent-period pay awards. We then examined the extent to which changes in executive cash compensation exhibited significant asymmetric adjustments to apparent under- and overpayment anomalies and whether cash compensation awards responded in a nonlinear manner to our estimated payment anomalies.

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¹ In an informationally efficient executive labor market, what we refer to as the going rate is termed the participation constraint by agency theorists, since it represents the minimum level of compensation required to recruit and/or retain suitable individuals.

EXECUTIVE EARNINGS AND MARKET COMPARISONS: RECENT INSTITUTIONAL DEVELOPMENTS AND PREVIOUS LITERATURE

In the United Kingdom, the desire to make executive pay awards more transparent was one of the main aims of the Cadbury Committee report (Cadbury, 1992), which investigated ways of improving the financial aspects of corporate governance. The report recommended a voluntary code of best practice and that a statement of compliance be reviewed by auditors and published with annual financial accounts by all listed companies reporting after June 30, 1993. The code of best practice stipulated the following: (1) The total emoluments of directors and those of the chairperson and the highest-paid director should be fully disclosed. (2) These emoluments should be split into their salary and performance-related components, and the basis by which the latter was determined should be explained. (3) The remuneration of executive directors (those who are executives of the company on whose board they sit) should be subject to the recommendations of a remuneration committee (made up wholly or mainly of nonexecutive directors), which should ensure that large pay awards were justified by increases in firm performance and shareholders' wealth.

The legitimacy of this pay-setting process relies upon nonexecutive directors' being independent of senior executives. However, U.K. company law does not recognize a distinction between executive and nonexecutive directors. Thus, it has been argued that the independence of nonexecutive directors is structurally compromised since, as directors, they are legally an integral part of the management teams that they are also supposed to be monitoring (Ezzamel & Watson, 1997a). Several writers (Wade, O'Reilly, & Chandratat, 1990; Zajac & Westphal, 1995) have also questioned the independence of nonexecutive directors because there may be close social ties between executive and nonexecutive directors (or what Westphal and Zajac called "generalized norms of reciprocity" [1997: 162] among CEOs) and because compensation committees have tended to award large pay raises unrelated to company performance. Studies by Main (1991), Main and Johnston (1993), and O'Reilly and colleagues (1988), for example, have indicated the presence of strong social influence considerations that affect the pay awards granted by compensation committees, suggesting that the compensation received by nonexecutive directors in their own companies largely conditions what they deem to be a reasonable pay award when

serving on the compensation committees of other companies. Also, as O'Reilly and colleagues stated, "Since the CEO exerts considerable informal influence in selecting new members of the board, it may be also that the selection process itself can raise CEO compensation if new members are selected whose compensation exceeds that of the focal CEO" (1988: 258).

In the United Kingdom, since the implementation of the Cadbury report reforms, the accepted method by which compensation committees make and/or justify decisions on executive compensation has been to rely upon outside pay consultants, whose recommendations are generally based on easily observable comparisons such as company size and sector (Incomes Data Services, 1993). The process by which the compensation of a CEO is determined by a compensation committee of nonexecutive directors, who typically hold similar executive positions in outside firms (Anderson & Anthony, 1981; Kesner, 1988) and who take advice from outside consultants, appears to provide an efficient institutional means by which executive pay awards are kept in line with external pay levels.

An important feature of external pay consultants' recommendations is that they tend to impart an upward bias on compensation because their focus is on the earnings levels of executives in the upper half of the size and/or pay distribution. Indeed, the Institute of Directors advised its members serving on compensation committees to "avoid setting remuneration packages which are generous in relation to market levels and beware of pressure always to be in the upper quartile" (1995: 4). The publication of this advice came after considerable public criticism of what were perceived to be excessive pay raises. For instance, Tatton stated this: "Remuneration committees don't control pay at all. They are effectively setting their own pay levels. They talk each other up" (1992: 21). Similarly, the *Financial Times* (1993) wrote of "tame non-executive directors sitting on malleable remuneration committees advised by tame pay consultants." Hence, the suspicion that a cosy collusion exists between executive and nonexecutive directors appears to be widely held (Incomes Data Services, 1993).

However, we argue that irrespective of the degree of independence of the nonexecutive directors serving on compensation committees (see Westphal and Zajac [1997] for some evidence of independence), there are often theoretical and practical reasons why compensation committees award executives generous pay raises unrelated to firm per-

formance. Several researchers have drawn attention to the importance of information regarding comparison levels of pay, such as wage surveys (Baker, Jensen, & Murphy, 1988), in explaining the pay-setting process. The availability of such information reinforces the influence of external labor market comparisons. Fama (1980), for example, argued that in an informationally efficient executive labor market, compensation levels cannot deviate significantly from what the market deems appropriate; otherwise, underpaid executives would be likely to be bid away by competitor firms prepared to pay the market rate. Thus, compensation committees have to strike a balance between providing financial incentives to executives to improve firm performance and avoiding a binding "participation constraint" (Smith & Szymanski, 1995); that is, they need to ensure that executives remain loyal to firms by offering levels of pay comparable to the external labor market alternatives. The often substantial nonwage and adjustment costs associated with executive recruitment create a financial incentive for firms to minimize executive turnover by offering competitive remuneration packages that are at least as generous as the executives could obtain elsewhere.

According to the theory of social comparison processes developed by Festinger (1957), social actors and decision makers of all kinds have to routinely rely upon a whole range of social comparisons to secure equity in the setting up of their expected rewards. Festinger noted that individuals have a need to evaluate their abilities, and this need is fulfilled by choosing for comparison other individuals who are perceived to have similar abilities. It can therefore be expected that nonexecutive directors selected to serve on compensation committees are chosen because of their similarity to those who are involved in the selection process. Similarity between executive and nonexecutive directors in terms of earnings levels ensures that, in order to minimize cognitive dissonance, compensation committee members will tend to base their judgments (Tversky & Kahneman, 1974) regarding the appropriate level of earnings for senior executives on their own earnings. Under Festinger's formulation of social comparison theory, individuals are also assumed to have a need to evaluate their opinions and abilities. As Goodman (1974) noted, such an evaluation can be made by comparing oneself against others who are perceived to have attitudes or abilities similar to one's own. Indeed, O'Reilly and colleagues indicated that "when making comparisons, individuals are likely to select as compar-

isons others who are seen as slightly better or more expert" (1988: 262).²

These arguments suggest that in setting executive cash compensation, members of a compensation committee gather information from two sources: (1) their own experiences, either as serving executives or as nonexecutive directors of other firms, and (2) the analyses provided by external pay consultants concerning similar executives in the most successful comparator firms or in those that provide better-than-average pay (or both). The potential costs (motivation, recruitment, and retention problems and loss of external credibility) associated with paying executives significantly less than competitor firms can also be expected to impart an upward bias to pay awards. The literature reviewed above suggests the following two hypotheses:³

Hypothesis 1. Pay anomalies explain subsequent-period pay changes. Changes in executive i 's cash compensation between time t and time $t + 1$ can be partially explained by an adjustment to reduce the time t pay anomaly experienced by executive i .

Hypothesis 2. Pay anomalies account for asymmetric adjustment, or bidding-up. The strength of the relationship between the $t + 1$ changes in executives' cash compensation and their time t pay anomalies will be significantly greater for executives who were underpaid than for executives who were overpaid relative to the comparative pay measure.

METHODS

Modeling Pay Anomalies and the Bidding-up Process

To investigate the explanatory power of our estimated pay anomaly variables with respect to the changes in executive cash compensation, we estimated for the highest-paid executive director in each firm separate regression equations to explain the $t + 1$ logarithmic changes in total cash compensation (salary plus bonus) and salaries only.⁴ Ini-

² Equity, efficiency wage, signaling, and figurehead theories all in their different ways also suggest an upward bias in executive pay comparisons because payments in excess of the going rate can be expected to minimize internal motivational and retention problems while enhancing a firm's external credibility (see Gomez-Mejia [1994] for a review).

³ The data used to test hypotheses are for the highest-paid directors' pay. We therefore refer to "executive pay" because a firm's highest-paid director may not be its CEO.

⁴ By being in first-difference form, the model excludes the confounding influence of unobservable firm and executive fixed

tially, in order to provide a benchmark model, we replicated what many previous studies have done and estimated the time $t + 1$ pay change relationships ($\ln \text{pay}_{it+1} - \ln \text{pay}_{it}$) with respect to one-period-lagged firm performance variables.⁵ We used a parsimonious model, in which only dummy variables for year (ΣY_t), the logarithmic change in sales ($\Delta \ln \text{sales}_{it}$), and the sector-relative shareholder returns ($\Delta \text{returns}_{it}$) were included as explanatory variables. The error term u_{it} was also included. Though additional size- and sector-relative profitability variables were tested, these did not materially alter the results reported here.

In order to incorporate the influence of pay anomalies upon subsequent pay awards, we augmented the initial benchmark model as follows:

$$\begin{aligned} \ln \text{pay}_{it+1} - \ln \text{pay}_{it} = & \alpha_0 + \sum \alpha Y_t \\ & + \beta \Delta \text{returns}_{it} + \beta \Delta \ln \text{sales}_{it} \\ & + \delta (\ln \text{pay}_{it} - \ln \text{pay}^*_{it}) + u_{it}, \quad (1) \end{aligned}$$

where $(\ln \text{pay}_{it} - \ln \text{pay}^*_{it})$ = the time t pay anomaly experienced by executive i given the estimated comparison level of pay ($\ln \text{pay}^*_{it}$).

Later, we define three alternative measures of external comparison levels of pay ($\ln \text{pay}^*_{it}$) that were constructed from publicly available pay and firm-level information. We used all three measures in constructing alternative pay anomaly variables and then empirically evaluated each variable using our sample of U.K. executives and their firms. Irrespective of which definition of the external comparison level of pay is used, if, controlling for other factors, compensation committees attempt to keep executive cash compensation aligned with what comparable executives are paid, then the coefficient (δ) on the pay anomaly variable will be significantly negative (as per Hypothesis 1). Clearly, if there is full adjustment in a single period to the market rate, then $\delta = -1$, and if there is only partial adjustment, δ will be between 0 and -1 (i.e., $0 > \delta > -1$).

Hypothesis 1 assumes that the pay anomaly adjustment coefficient will be the same for both overpaid and underpaid executives. The bidding-up hypothesis (Hypothesis 2) suggests, however, that

there is likely to be asymmetry in the adjustment process and that the sensitivity of subsequent pay changes to prior-period pay anomalies will be significantly greater for executives earning below the estimated going market rate. To empirically test Hypothesis 2, we adapted Equation 1 to separate out the estimation of the adjustment parameters for the under- and overpaid executives as follows:

$$\begin{aligned} \ln \text{pay}_{it+1} - \ln \text{pay}_{it} = & \alpha_0 + \alpha Y_t + \beta \Delta \text{returns}_{it} \\ & + \beta \Delta \ln \text{sales}_{it} + \delta_u (\ln \text{pay}_{it} - \ln \text{pay}^*_{it}) \\ & + \delta_o (\ln \text{pay}_{it} - \ln \text{pay}^*_{it}) + u_{it}, \quad (2) \end{aligned}$$

where

$\delta_o (\ln \text{pay}_{it} - \ln \text{pay}^*_{it})$ = the adjustment process for the overpaid executives—i.e., all i 's where $(\ln \text{pay}_{it} - \ln \text{pay}^*_{it}) > 0$, and 0 otherwise

and

$\delta_u (\ln \text{pay}_{it} - \ln \text{pay}^*_{it})$ = the adjustment process for the underpaid executives—i.e., all i 's where $(\ln \text{pay}_{it} - \ln \text{pay}^*_{it}) < 0$, and 0 otherwise.

Empirical support for the bidding-up hypothesis would imply that $\delta_u < 0$ and $\delta_o > \delta_u$.

However, because our proxies for the comparison rate of cash compensation used for estimating executive pay anomaly variables may be noisy and, moreover, because compensation committees may only adjust executive pay in response to relatively large deviations (positive or negative) from the implied market rate of pay, a quadratic form may be a more appropriate test of the bidding-up hypothesis. In our empirical analysis, therefore, we incorporated an alternative specification of Equation 2 in which the deviations from the implied external comparison level of pay were squared so that the estimated parameters on these variables, in combination with the estimated parameters on the linear terms, would measure the extent to which proportionately larger deviations exhibited proportionately greater adjustments toward the market rate.

Sample

The basis of our sample of firms was all the listed companies in the 1992 *Times* 1,000, which is a ranking by sales revenues of the 1,000 largest U.K. companies with December-January year ends. Initially, these criteria produced a total

effects on the estimated parameters (cf. Conyon, Gregg, & Machin, 1995).

⁵ The use of lagged performance variables rests on the assumption that companies account for executive cash pay on a one-period-lagged rather than a contemporaneous basis. This, however, is clearly an empirical issue, and we tested for this possibility by re-estimating our models using unlagged performance variables.

sample of 223 nonfinancial companies.⁶ The sample was ultimately reduced to 199 companies because some companies did not have full U.K. listings (these were primarily the subsidiaries of non-U.K. companies) and others had lost their listings through mergers and takeovers since the publication of the *Times* 1,000. In addition, because of the presence of lagged performance variables in the equations, a total of three years of accounting data was required to estimate each one-period cash-compensation-change model. Consequently, as we wished to estimate as many pay change relationships as possible, the number of companies for which we were able to obtain the full data required to construct all of the necessary variables varied by year (see Table 1).⁷

As Table 1 shows, both measures of executive cash compensation exhibited large increases over the period 1992 to 1995. The Cadbury report recommended that companies have a minimum of three nonexecutive directors, and this recommendation appears to have had a positive effect upon the percentage of nonexecutive directors, which shows a consistent, though fairly small, year-on-year increase. Also, the Cadbury report recommended that the posts of CEO and chairperson be separated. Although it is not possible in all cases to uniquely identify the highest-paid director as a firm's CEO, this is normally the case, and we found that the percentage of highest-paid directors who were also the company chairpersons showed a significant decline from 29.6 percent to 16.3 percent over the study period.

Cash Compensation and Comparison Measures

Our dependent variable relates solely to cash payments (salary and salary plus bonuses) to a company's highest-paid executive. Clearly, this is

⁶ The restriction of our sample to firms with turn-of-the-year financial year-ends ensured that the $t - 1$ financial data of these firms were in the public realm when the compensation committees considered the time t awards. Our sample contains a slightly (but statistically insignificant) higher proportion of construction firms and stores than does the *Times* 1,000 list. Using the Standard Industrial Classification (SIC) two-digit definition, the sample covers seven sectors accounting for over 70 percent of all nonfinancial firms in the *Times* 1,000.

⁷ The data sources used to construct our data set included the published annual accounts of individual firms, the *Stock Exchange Year Book*, the *Hambro Corporate Register*, *Directors Guides*, and Datastream, a database of financial information.

TABLE 1
Descriptive Statistics

Variable	Year	N	Mean	Standard Deviation
Salary plus bonus ^a	1992	196	0.24	0.17
	1993	195	0.30	0.22
	1994	188	0.36	0.27
	1995	178	0.39	0.28
Salary only ^a	1992	196	0.22	0.15
	1993	195	0.27	0.18
	1994	188	0.32	0.26
	1995			
Sales ^b	1992	191	1.83	7.89
	1993	192	1.42	4.09
	1994	187	1.56	4.48
	1995	189	1.56	4.39
Industry-relative profit/equity ^c	1992	195	0.06	0.87
	1993	195	0.03	1.03
	1994	196	-0.02	0.35
	1995	193	0.05	0.79
Industry-relative market return ^c	1992	187	-0.06	0.37
	1993	187	-0.03	0.52
	1994	182	-0.04	0.36
	1995	182	0.01	0.30
Nonexecutive members of board ^c	1992	185	0.39	0.14
	1993	188	0.41	0.14
	1994	196	0.42	0.14
	1995	182	0.43	0.13
Highest-paid director is chair ^c	1992	196	0.30	0.46
	1993	196	0.23	0.42
	1994	196	0.16	0.37
	1995	188	0.16	0.37

^a Means are expressed in millions of U.K. pounds.

^b Means are expressed in billions of U.K. pounds.

^c Means are proportions.

only part of the total pay received by executives as it does not include long-term incentive plans (in particular, stock options), or other benefits and perquisites. It could be argued that stock options contain an element of comparison with what other firms offer and hence, that the bidding-up process on which we focus here could be empirically tested for this element. However, in theory long-term incentive plans, such as stock options, are aimed at aligning managerial incentives with shareholders' interests during the period between issue and exercise. Hence, current-period option awards are likely to be noisy indicators of performance-related pay and are more likely to depend upon factors such as how many unexercised options an executive holds (and/or has exercised recently), whether there are other ways of aligning incentives (e.g., internal or external governance mechanisms), and so forth. Moreover, as Gomez-Mejia (1994: 167-168) noted, attempts to specify the timing of generating income from such plans are fraught with se-

rious measurement and information problems.⁸ In addition, in the United Kingdom the ability of compensation committee members to evaluate and compare executive share option awards external to their own firms is extremely limited because of a lack of adequate statutory reporting requirements concerning the disclosure of the details of executive share option awards.

Although we were able to collect information on the split between the highest-paid directors' salaries and cash bonuses from the published financial accounts for the three years from 1992 onward, Datastream, our main source for cash compensation and other financial information, does not make this distinction and simply provides information on total cash compensation (salary plus bonus). Hence, the salary-only change models that included the lagged performance variables could only be estimated for two years (1992–93 and 1993–94).⁹

Construction of our three proxies for the market comparison levels of executive (total cash) pay, $\ln \text{pay}^*_{it}$, is described in the following paragraphs:

The within-sample firm size and performance estimate. This estimate of the comparison level of cash compensation was the predicted pay level at time t derived from empirically estimating an ordinary least squares (OLS) regression on the executives' current cash compensation level using a number of $t - 1$ firm size and performance measures and board characteristics as explanatory variables. Hence, the estimated pay anomaly experienced by each executive at time t was simply the residual from this model.¹⁰ The results of the sensitivity of executive cash compensation changes to these pay anomaly estimates are presented in Table 3 as Models 2a and 3a for the linear and nonlinear adjustment processes, respectively. The top part of Table 3 presents the estimates for total cash compensation (salary and bonus), and the lower half presents the fixed-salary-only definition estimates of executive cash compensation.

The Times 1,000 sector-size-adjusted estimate. We derived this comparison pay level by estimating an OLS regression relationship between cash

pay and firm size for each sector for each year, using all firms in that sector that were on the *Times* 1,000 list. Thus, for each executive at time t , the comparison level was the predicted cash compensation level derived from other firms in the same industrial sector and also on the *Times* 1,000 list, of which only a minority were contained within our sample of 199 firms. Models 2b and 3b in the top portion of Table 3 incorporate the empirical tests of the linear and nonlinear specifications of this pay anomaly measure. Data were collected from Datastream for all firms in the *Times* 1,000 that operated in the same sectors as any of the firms in our core sample of 199 companies. For each year from 1990 to 1995, data relating to sector-average profit/equity, sector-average shareholder returns, and individual firm-level data on sales and the highest-paid executive director's total cash compensation were also obtained.

The Times 1,000 sector-average level of pay. This comparison measure of cash compensation was simply the sector average of all *Times* 1,000 firms in each sector for each year. It is similar to the Smith and Szymanski (1995) model, which simply focused on the implied average cash pay levels of all executives at time t irrespective of any sector-specific or firm size relationships. Models 2c and 3c in the top part of Table 3 respectively show the linear and quadratic adjustment process to pay deviations from this measure of predicted pay. Data were again obtained from Datastream.

The above three measures of the deviations of an executive's actual pay from the estimated comparison level of pay at time t are fairly highly correlated. The zero-order correlation between these measures for the pooled data set over the four years 1991 to 1994 and the subsequent-period changes in executive cash compensation for the years 1992 to 1995 are presented in Table 2 along with the other variables included in the empirical models.

In estimating the empirical models of the relationship between cash compensation changes, payment anomalies, and firm performance, we used sector-relative measures of firm performance by deducting the sector-average (for all *Times* 1,000 firms) shareholder returns and profit/equity ratios from the actual shareholder returns and profit/equity ratios of each company in each time period. As was noted, U.K. financial reporting regulations only require a firm to publish the compensation received by the chairperson of its board and by its highest-paid director, who is normally the CEO. Our analysis focused on the cash compensation received by the highest-paid executive director since, in the majority of cases, the chair was a part-time director who was not an executive of the

⁸ Similar informational problems have also proved to be a major inhibition to research into many of the other noncash benefits and perquisites received by executives.

⁹ Though we re-estimated the models without lagging the returns and sales variables, for our main hypotheses these unlagged results were statistically identical to the lagged model results.

¹⁰ The precise specification of the pay level model used for estimating the comparison level of pay, along with the results of the estimated parameters using the pooled data set, can be obtained from the authors.

TABLE 2
Zero-Order Correlation Coefficients of the Variables in the Cash-Compensation-Change Models^a

	1	2	3	4	5
Salary-plus-bonus cash compensation models ^b					
1. Logarithm of change in sales					
2. Industry-relative market return _{<i>t</i>}	.01				
3. Within-sample pay anomaly	.16**	-.1			
4. Sector size pay anomaly	.15**	-.03	.96**		
5. Sector-average pay anomaly	.03	-.02	.69**	.77**	
6. Logarithm of change in compensation	.01	.13**	-.30**	-.32**	-.25**
Salary-only cash compensation models ^c					
1. Logarithm of change in sales					
2. Industry-relative market return _{<i>t</i>}	-.05				
3. Within-sample pay anomaly	.22**	-.12*			
4. Logarithm of change in compensation	.00	.02	-.26**		

^a Variable definitions are as follows:

Logarithm of change in compensation = $\ln(\text{pay}_{t+1}) - \ln(\text{pay}_t)$, where pay_{t+1} and pay_t are the actual cash compensation payments to executives reported at times $t+1$ and t , respectively.

Logarithm of change in sales = $\ln(\text{sales}_t) - \ln(\text{sales}_{t-1})$.

Industry-relative market return_{*t*} = $R_{it} - R_{st}$, where R_{it} and R_{st} are respectively the total market return for firm i and for the sector as a whole at time t . Returns are calculated as $\ln(\text{share price}_t + \text{dividend}_t) - \ln(\text{share price}_{t-1})$.

Within-sample pay anomaly = $\ln \text{pay}_t - \ln \text{pay}^*_t$ = actual pay at time t minus predicted pay of executive i at time t using our sample and separately estimating annual equations.

Sector-size pay anomaly = $\ln \text{pay}_t - \ln \text{pay}^*_t$ = actual pay at time t minus predicted pay of executive i at time t using a pay-level model in which pay is a function of firm size. The parameters of the model are separately estimated using all *Times* 1,000 firms in each sector and re-estimated each year.

Sector-average pay anomaly = $\ln \text{pay}_t - \ln \text{pay}^*_t$ = actual pay at time t minus predicted pay of executive i at time t based upon the *Times* 1,000 sector-average pay of highest-paid directors.

^b $N = 693$.

^c $N = 344$.

* $p \leq .05$

** $p \leq .01$

focal firm. Where possible, we analyzed both total cash compensation (salary and bonus) and salary only. Because salary and bonus amounts are not separated in Datastream and the *Times* 1,000-based measures were obtained from Datastream, we could only estimate the within-sample measure of pay anomalies for the salary-only models. Hence, in the lower part of Table 3 we only present model 1, which does not include payment anomaly variables, and models 2a and 3a, which use the within-sample pay anomaly variable to estimate the influence of external pay comparisons upon subsequent salary awards.

RESULTS

As noted, Table 3 presents the empirical estimates of the changes in executive cash compensation models for both total cash compensation and salary only. As a benchmark to indicate the difference that our pay anomaly variables made in the ability to explain changes in executive compensation (that is, to test Hypothesis 1), we estimated the initial compensation model, which does not in-

clude any of our measures of pay anomalies (model 1 in both parts of Table 3).

First, the total cash compensation models show clearly that the explanatory power of the models in respect to pay changes is greatly improved by the inclusion of any of our three measures of comparison pay anomalies; these results suggest strong empirical support for Hypothesis 1. Indeed, it is only when the pay anomaly variables are introduced that changes in executive compensation and changes in firm size (i.e., sales) become significantly and positively related. Comparing the linear models (2a, 2b, and 2c) against model 1, we obtained F s for the new variables (underpayment and overpayment) included in these models of 14.0 for the salary-only variable and ranging from 23.9 to 42.2 for total cash compensation ($p \leq .01$ throughout). Also, the two measures that directly incorporate the positive relationships between compensation level and firm size explain the subsequent period's change in pay significantly better than the measure that simply uses the sector-average pay level (models 2c and 3c). As might be expected, given the high correlation between the within-

TABLE 3
Changes in Highest-Paid Directors' Cash Compensation^a

Variable	Within-Sample Pay Anomaly			Sector Size Pay Anomaly		Sector-Average Pay Anomaly		
	Model 1	Model 2a	Model 3a	Model 2b	Model 3b	Model 2c	Model 3c	
Logarithm of change in total (salary plus bonus) compensation, 1992–95 ^b								
Constant	0.06** (3.03)	0.06* (2.16)	0.09** (2.98)	0.04 (1.38)	0.08* (2.16)	0.04 (1.28)	0.03 (0.70)	
Logarithm of change in sales	0.02 (0.70)	0.07* (2.18)	0.09* (1.90)	0.07* (2.29)	0.09* (2.05)	0.07 (1.12)	0.03 (1.15)	
Industry-relative market return	0.07* (2.02)	0.06* (1.89)	0.06* (1.99)	0.06* (1.99)	0.07* (2.22)	0.07* (2.11)	0.07* (2.13)	
Underpayment		-0.24** (2.19)	-0.24 (1.03)	-0.23** (2.84)	-0.19 (0.85)	-0.11** (2.96)	-0.09 (0.65)	
Overpayment		-0.27** (3.55)	-0.22 (1.49)	-0.30** (3.32)	-0.24 (1.26)	-0.22* (2.57)	0.05 (0.29)	
Underpayment squared			0.69* (1.79)		0.55 [†] (1.80)		0.03 (0.27)	
Overpayment squared			-0.12 (0.75)		-0.15 (0.68)		-0.30 (1.48)	
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Adjusted R^2	.03	.13	.15	.14	.16	.09	.10	
Equation F	5.7**	15.3**	14.7**	16.7**	15.4**	11.2**	9.4**	
F for new variables		37.8**	10.8**	42.2**	9.5**	23.9**	2.7 [†]	
Logarithm of change in salary, 1992–94 ^c								
Constant	0.18** (7.17)	0.14** (3.86)	0.18** (5.41)					
Logarithm of change in sales	0.01 (0.22)	0.09 (1.65)	0.14** (3.05)					
Industry-relative market return	0.02 (0.38)	0.00 (0.01)	0.03 (0.60)					
Underpayment		-0.37 [†] (1.76)	-0.35* (2.24)					
Overpayment		-0.13 (1.30)	0.00 (0.02)					
Underpayment squared			0.83** (7.24)					
Overpayment squared			-0.30 (1.49)					
1994 year dummy	Yes	Yes	Yes					
Adjusted R^2	<0	.07	.16					
Equation F	0.2	5.8**	10.2**					
F for new variables		14.0**	19.5**					

^a White (1980) heteroskedasticity-consistent t -statistics are in parentheses.

^b $N = 693$.

^c $N = 344$.

[†] $p \leq .10$

* $p \leq .05$

** $p \leq .01$

sample pay anomaly measure and those based on the *Times* 1,000 sector estimates (Table 2), these two measures produce similar results, with the *Times* 1,000 measure being able to explain executive pay changes marginally better than the within-sample measure. In all the estimates shown in Table 3, the quadratic formulations (models 3a, 3b, and 3c) perform better than the linear models, with statistically significant F s (ranging from 2.7 to 10.8) relating to the addition of the quadratic terms to the linear specifications of models 2a, 2b and 2c.¹¹ This pattern implies that proportionately large pay anomalies—deviations of actual cash compensation from the estimated comparison pay level—are

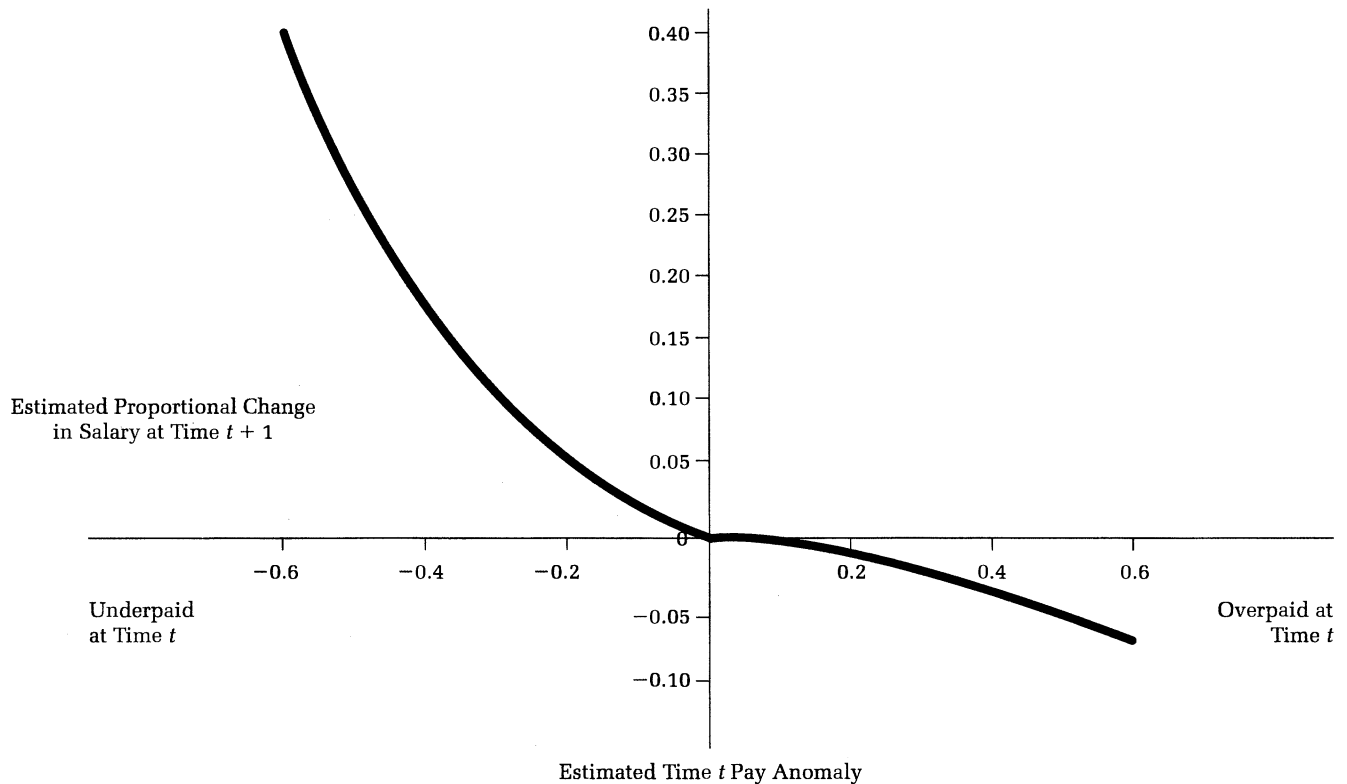
associated with proportionately larger pay adjustments toward the comparison level in the subsequent period. We conducted Wald tests for all the total cash compensation models and could not reject the null hypothesis of no difference in the coefficients for the under- and overpaid executives. These results offer little empirical support for Hypothesis 2 concerning the asymmetric adjustment of executive compensation to previous-period pay anomalies (bidding-up) for total cash compensation.¹²

The situation with regard to the salary-only estimates was somewhat different. Although a priori it

¹¹ Because of the high correlations between the pay anomaly variables and their squared terms in the model 3 estimates, the statistical significance of the individual variables is low even though, as indicated by the F s, the addition of the new variables added considerably to the explanatory power of the model.

¹² In the case of the quadratic models, the high correlation between the linear and squared terms necessarily increases the probability of not rejecting the null hypothesis. However, even after we re-estimated the salary-plus-bonus models excluding the linear pay anomaly terms, the Wald test statistics remained insignificant.

FIGURE 1
Estimated Change in Salary as a Function of Pay Anomalies



seemed likely that the relationships between changes in compensation and deviations from external pay comparisons would be stronger in respect to the salary-only models, we also expected that the relationship of the dependent variable to firm performance measures would be much weaker than it was in the case of the compensation measure that includes cash bonuses. It should also be recalled that, because of data limitations, we were only able to test the explanatory power of the within-sample measure of pay anomalies and that we only had sufficient data for the lagged variables to estimate two years (1992–93 and 1993–94) of salary-only pay changes. Even so, Hypothesis 2 received some support in that the signs and relative sizes of the coefficients on the underpayment variable for both the linear and quadratic models indicated that subsequent pay changes attributable to our estimated pay anomalies were greater for underpaid executives than for overpaid executives. However, in the case of the linear model (2a), although the coefficient of -0.37 on the underpayment variable is almost three times the size of the coefficient on the overpayment variable (-0.13), a Wald test indicated that only in the case of the quadratic model were the differences in the coefficients statistically significant at the 5 percent level.

The nonlinear estimates for the adjustment of cash compensation to payment anomalies appeared to be a better-specified model, with an F of 19.5 ($p \leq .01$) for the added quadratic terms.

What the nonlinear adjustment factor estimates imply is not only that the subsequent changes in salary were more pronounced in the case of the underpaid executives, but also that large deviations (in either direction) from the estimated comparison pay levels resulted in a greater proportionate change in salary levels than small deviations. The implied relationships between pay anomalies and subsequent pay changes taken from model 3a are presented in graphical form in Figure 1. For example, it can be seen from the figure that for an executive currently earning 10 percent less than the market comparison level, the following period's expected percentage change in salary attributable to the pay anomaly will be in the region of +3.5 percent. For an executive currently being paid a salary some 50 percent less than the comparison level, the estimated change in salary in the following period will be approximately +38 percent. For the overpaid executives, the coefficients on the two variables imply that 10 percent and 50 percent positive payment anomalies can be expected to re-

sult in falls in the subsequent-period salary level of only 0.3 percent and 7.2 percent, respectively.

DISCUSSION AND CONCLUSIONS

In this study, we examined the process by which executive cash pay in large, publicly listed U.K. companies is determined by isolating the influence of prior-period pay anomalies. Minimization of pay deviations from the going rate is likely to be an important consideration for compensation committees; otherwise, firms would face motivational, retention, and recruitment problems, and their external credibility could be compromised. Since the compensation committee members who are not executives of the firms on whose boards they sit are usually senior executives elsewhere, comparisons with their own pay levels are probably inevitable. When coupled with the advice of external pay consultants, external pay comparisons will likely have an important impact on compensation committee decisions about executive pay.

We developed and empirically tested two hypotheses relating to the adjustment process by which subsequent cash compensation changes could be related to prior-period pay anomalies. We tested the possibility that the adjustment process was asymmetric in respect to positive and negative pay anomalies, expecting a stronger relationship to subsequent pay changes for underpaid than for overpaid executives. This is an issue of some importance, given the fairly widespread complaints of shareholder groups that compensation committees exhibit a strong tendency to simply bid up executive pay without aligning it any more closely with changes in shareholder wealth.

Our results show that the explanatory power of the cash compensation models was significantly improved by the addition of the pay anomaly variables. Compared to the total cash compensation models, the salary-only models provided stronger evidence of the bidding-up process since the estimated coefficients (for both the linear and quadratic formulations of the adjustment process) on the underpaid executive pay anomalies indicated a much greater sensitivity of subsequent cash pay changes than they did for the overpaid executives. However, only the coefficient differences for the quadratic formulation were statistically significant, implying that large cash pay anomalies resulted in proportionately larger changes in pay the following year, but small pay anomalies (both positive and negative) tended to have relatively little effect upon subsequent pay changes. Overall, these results provide empirical evidence consistent with the expectations of social comparison theory (Festinger,

1957; Goodman, 1974; O'Reilly, Main, & Crystal, 1988), labor market theory (Fama, 1980), and cognitive dissonance theory (Tversky & Kahneman, 1974), since the empirical estimates indicate that executive pay awards are partially explained by prior-period pay anomalies based upon social comparisons or the going market rate. Also, the results are consistent with the argument that there is an upward bias in executive pay offered in equity, efficiency wage, signaling, and figurehead theories (Gomez-Mejia, 1994). We have also suggested that executive pay adjustments to reduce apparent pay anomalies can be expected to impart an upward bias in executive pay. Though this may appear to produce bidding-up, it does not imply any collusion between compensation committee members and the executives whose pay they are setting, nor does it necessarily imply indifference to shareholder demands to render pay more dependent upon firm performance measures. There may be good motivational, recruitment, and retention reasons for such adjustments and, therefore, irrespective of the performance of a firm, its compensation committee may not shy away from taking these important considerations seriously (cf. Murphy, 1997).

This study thus provides strong evidence of the importance of external pay comparisons in explaining executive pay changes. More research is needed, however. Our models explain only a relatively small percentage of the variance in the dependent variables, and future researchers could extend our work by incorporating additional explanatory variables. Another possible extension would be to examine the arguments relating to pay anomalies and the bidding-up hypothesis in the context of long-term incentive plans, even though such a link is likely to be weak theoretically and the measures are likely to be very noisy. Other future extensions could usefully build on the work of Zajac and Westphal (1995), who advanced the thesis of a symbolic perspective in the determination of executive compensation, and the insights of Murphy (1997), who argued that executive compensation should reflect the ability of executives to exploit the new opportunities for wealth creation that are now emerging in business.

REFERENCES

- Andersen, C. A., & Anthony, R. N. 1981. *The new corporate directors: Insights for board members and executives*. New York: Wiley.
- Baker, G. P., Jensen, M. C., & Murphy, L. J. 1988. Compensation and incentives: Practice vs. theory. *Journal of Finance*, 43: 593-616.

- Cadbury, A. 1992. *Report of the committee on the financial aspects of corporate governance*. London: Gee.
- Conyon, M., Gregg, P., & Machin, S. 1995. Taking care of business: Executive compensation in the United Kingdom. *Economic Journal*, 105: 704–714.
- Conyon, M., & Leech, D. 1994. Top pay, company performance and corporate governance. *Oxford Bulletin of Economics and Statistics*, 56: 229–247.
- Cosh, A., & Hughes, A. 1995. *Executive remuneration, executive dismissal and institutional shareholdings*. Working paper no. 19, Cambridge University.
- Ezzamel, M., & Watson, R. 1997a. Wearing two hats: The conflicting management and control roles of non-executive directors. In K. Keasey, S. Thompson, & M. Wright (Eds.), *Corporate governance: Economic, management, and financial issues*: 54–79. Oxford: Oxford University Press.
- Ezzamel, M., & Watson, R. 1997b. Executive remuneration and corporate performance. In K. Keasey & M. Wright (Eds.), *Corporate governance: Responsibilities, risks and remuneration*: 61–92. New York: Wiley.
- Fama, E. G. 1980. Agency problems and the theory of the firm. *Journal of Political Economy*, 88(2): 280–307.
- Festinger, L. 1957. A theory of social comparison processes. *Human Relations*, 7: 117–140.
- Financial Times*. 1993. Over-the-top pay. April 20: 23.
- Gomez-Mejia, L. R. 1994. Executive compensation: A reassessment and a future research agenda. In G. R. Ferris (Ed.), *Research in personnel and human resources management*, vol. 12: 161–222. Greenwich, CT: JAI Press.
- Gomez-Mejia, L., Tosi, H., & Hinkin, T. 1987. Managerial control, performance, and executive compensation. *Academy of Management Journal*, 30: 51–70.
- Goodman, P. S. 1974. An examination of referents used in the evaluation of pay. *Organizational Behavior and Human Performance*, 12: 170–195.
- Gregg, P., Machin, S., & Szymanski, S. 1993. The disappearing relationship between directors pay and corporate performance. *British Journal of Industrial Relations*, 31(1): 1–9.
- Incomes Data Services. 1993. *Setting pay at the top*. London: Incomes Data Services.
- Institute of Directors. 1995. *The remuneration of directors: A framework for remuneration committees*. London: Institute of Directors.
- Jensen, M. C., & Murphy, K. J. 1990. Performance pay and top management incentives. *Journal of Political Economy*, 98: 225–264.
- Kesner, I. F. 1988. Directors' characteristics and committee membership: An investigation of type, occupation, tenure, and gender. *Academy of Management Journal*, 31: 66–84.
- Main, B. G. M. 1991. Top executive pay and performance. *Managerial and Decision Economics*, 12: 219–229.
- Main, B. G. M., & Johnston, J. 1993. Remuneration committees and corporate governance. *Accounting and Business Research*, 23: 351–362.
- Murphy, K. J. 1997. Executive compensation and the modern industrial revolution. *International Journal of Industrial Organization*, 15: 417–425.
- O'Reilly, C. A., Main, B., & Crystal, G. 1988. CEO salaries as tournaments and social comparisons: A tale of two theories. *Administrative Science Quarterly*, 33: 257–274.
- Smith, R., & Szymanski, S. 1995. Executive pay and performance: The empirical importance of the participation constraint. *International Journal of the Economics of Business*, 2: 485–495.
- Tatton, A. 1992. Top people's pay is called to account. *Independent on Sunday*, September 20: 21.
- Tversky, A., & Kahneman, D. 1974. Judgment and uncertainty: Heuristics and biases. *Science*, 185: 1124–1131.
- Wade, J. B., O'Reilly, C. A., & Chandratat, I. 1990. Global parachutes: CEOs and the exercise of social influence. *Administrative Science Quarterly*, 35: 587–603.
- Westphal, J. D., & Zajac, E. J. 1997. Defections from the inner circle: Social exchange, reciprocity, and the diffusion of board independence in U.S. corporations. *Administrative Science Quarterly*, 42: 161–183.
- White, H. 1980. A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity. *Econometrica*, 48: 817–828.
- Zajac, E. J., & Westphal, D. J. 1995. Accounting for the explanation of CEO compensation: Substance and symbolism. *Administrative Science Quarterly*, 40: 283–308.

Mahmoud Ezzamel is a professor of accounting and finance at the University of Manchester. He received his Ph.D. in accounting and finance from the University of Southampton. His current research interests are corporate governance and executive compensation, management accounting and control systems, and accounting history.

Robert Watson is a professor of finance and accounting at the University of Leeds. He received his Ph.D. in finance and accounting at the University of Manchester. His current research interests are corporate governance and executive compensation, managerial labor markets, and financial statement analysis.