

Say on Pay Vote and CEO Compensation: Evidence from the UK

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June, 2008

Abstract:

In this study, we examine the effect on CEO pay of new legislation introduced in the United Kingdom (UK) at the end of 2002 that requires publicly-traded firms to submit an executive remuneration report to a non-binding shareholder vote (“say on pay”) at the annual general meeting. Based on a large sample of UK firms over the period from 2000 to 2005, we find no evidence of a change in the level and growth rate of CEO pay after the adoption of say on pay. However, we document an increase in the sensitivity of CEO cash and total compensation to negative operating performance, particularly in firms with excessive compensation in the “pre” period (2000-2002) and in firms with high voting dissent. To assess whether the results are driven, respectively, by other governance changes in the UK or global trends in the CEO labor market, we use a control sample of UK firms not subject to the new rule (within-country test) and a control sample of US firms (between-country test). These tests confirm the increase in sensitivity of CEO cash and (more weakly) total pay to negative operating performance. Our findings are consistent with widespread calls for less “rewards for failure” that led to the legislation’s introduction and may be of interest to regulators and investors who are pondering the merits of a similar rule in the US and in other countries.

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We thank Brian Cadman, Joe Gerakos and discussants and participants at the 2007 Shareholders and Corporate Governance Conference at the Said Business School (Oxford University), the 2007 Information Markets & Organization Conference at the Harvard Business School, the 2008 Symposium on International Accounting Research at the Columbia Business School, the 2008 London Business School Symposium on Accounting Research, the 2008 Washington Area Finance Conference, the 6th International Corporate Governance at the University of Birmingham and workshops at the London School of Economics and the Harvard Business School for their comments. We especially thank Sid Balachandran for his comments and help in the early stage of the project. The paper benefited from conversations with Carol Bowie (Riskmetrics), Stephen Davis (Millstein Center for Corporate Governance), Richard Ferlauto (AFSCME) and Sarah Wilson (Manifest). The authors acknowledge a grant from the Millstein Center for Corporate Governance at the Yale School of Management and research support from the Division of Research at Harvard Business School. All errors remain our own.

1. Introduction

In this study, we examine the effect on CEO pay of legislation introduced in 2002 in the United Kingdom (UK)—the Directors’ Remuneration Report Regulations 2002 (DRR 2002). Among other things, the DRR requires UK firms to submit the executive compensation report prepared by the board of directors to an advisory shareholder vote at the annual meeting— often referred to as “say on pay” vote.¹ The DRR was introduced by the UK government to increase “accountability, transparency, and performance linkage” of executive pay (Baird and Stowasser, 2002) after a period of rapid growth in CEO pay and rising investors’ concerns with the adoption of controversial US-style compensation practices (The Economist, 2003). Stories of “fat cat pay” and “rewards for failure” (e.g., generous golden parachutes, option repricings, discretionary bonuses) often made headlines in the British press, involving high-profile firms like GlaxoSmithKline, Marconi and Vodafone (FT, 1998; Independent, 2000; BBC News, 2001, 2002a, 2002b).

Anecdotal evidence suggests that the say on pay vote had an impact on firms’ executive pay policies and processes (Deloitte 2004; Sheehan 2007). For example, in May 2003, during the first proxy season under the DRR, a highly-publicized majority vote against its executive compensation report led the board of GlaxoSmithKline to modify or remove a number of contentious provisions from its executive pay plan and launch an extensive and ongoing consultation process with its shareholders (BBC News, 2003).² Since then, the UK experience with say on pay has captured the attention of

¹ In the UK the term “directors” is used to indicate both executive and non-executive directors.

² In particular, shareholders objected to the large severance arrangement for the CEO (with an estimated value of 22 million UK pounds), the presence of a single performance hurdle target, and rolling retesting. In response to the vote, the company reduced the severance package (from two times salary to one), removed rolling retesting, and introduced a new performance condition (total shareholder return against a global pharmaceutical peer group). Besides, in the year subsequent to the vote, the chair of the remuneration committee met shareholders representing almost half of the firm’s equity capital.

regulators and investors in other countries, resulting in the subsequent adoption of a similar rule in Australia, Netherlands, Norway and Sweden (ISS, 2007).

In the US, where the executive pay debate has raged for years,³ in April 2007, the House of Representatives approved a bill seeking to introduce a say on pay rule similar to the UK (H.R. Bill 1257). Shortly thereafter, an analogous bill was introduced in the Senate (Senate Bill 1811) by Presidential Candidate Barack Obama (Walton, 2007; CFO.com 2008).⁴ Further, between 2006 and 2008, shareholder activists led by AFSCME (a union pension fund) targeted more than 150 US firms with non-binding shareholder proposals requesting the adoption of “say on pay” (Hogan, 2007).⁵

In this study we examine the impact of the DRR on the level, growth rate, and pay-to-performance sensitivity of CEO pay in the UK.

Using data for a large sample of UK firms before (2000-2002) and after (2003-2005) the introduction of the DRR, we find no evidence of a change in the level and growth rate of CEO pay, *after* controlling for firm performance, size and other determinants of CEO pay. However, we find an increase in the sensitivity of CEO cash compensation to negative operating performance and in the sensitivity of CEO total compensation to negative operating and stock performance. This higher sensitivity of pay to poor performance is mostly concentrated i) in firms experiencing substantial voting

³ Critics of CEO pay point to increasing levels of pay, weak and asymmetric pay-to-performance sensitivities and opaque disclosures as evidence of a flawed pay determination process, captured by powerful CEOs (“managerial power” view; see Bebchuk and Fried (2003)). Supporters of the current system cite the strong performance of the US economy and the spread of US-style compensation practices to other parts of the world as evidence of a well-functioning model of managerial remuneration (“efficient contracting” view; see Holmstrom and Kaplan, 2003, and Core, Guay and Thomas (2004) for extensive reviews of the empirical evidence.

⁴ For more details on the events related to “say on pay” in the US, please see Cai and Walkling (2007).

⁵ These proposals have been supported by prominent investors (Council for Institutional Investors, TIAA-CREF), averaging more than 40% of votes in favor—an unusually high degree of support for compensation-related proposals (Johnson and Shackell 1997; Thomas and Martin 1999). A handful of firms have adopted a “say on pay” provision, voluntarily (e.g. Aflac, H&R Block, Riskmetrics) or in response to a majority vote (e.g. Verizon, Par Pharmaceuticals).

dissent against the remuneration report, and ii) in firms characterized by ‘excessive’ CEO pay in the pre-DRR period (excessive relative to its predicted value based on economic determinants)—regardless of the degree of voting dissent—but not in firms with high raw CEO pay in the pre-DRR period.

To determine whether these findings are driven by factors affecting CEO pay around the same time other than the DRR—e.g., changes in the governance environment in the UK or global trends in the CEO labor market—we use a control sample of UK firms not subject to the DRR (within-country test) and a control sample of US firms (between-country test). These additional tests confirm the increase in the sensitivity of CEO cash and (more weakly) total compensation to poor operating performance. The economic relevance of these findings is enhanced by the fact that cash compensation represents about two thirds of CEO pay in UK firms.

While the interpretation and policy making implications of these results are subject to numerous caveats (see Section 5.4), overall we interpret them as follows. First, it appears that say on pay in the UK neither changed the trajectory of CEO pay nor resulted in a one-time downward “adjustment” in its level—consistent with levels and growth of CEO pay in the UK being by and large the result of market forces. However (and second), say on pay was effective in achieving one of its major goals—to reduce the “rewards for failure” through a stronger link between pay and realizations of poor performance. This finding complements evidence of reductions in guaranteed severance pay in CEO contracts and decrease in the use of rolling retesting (Deloitte 2004)—other two cases of perceived pay for failure. Even more importantly, our finding implies that changes in these provisions were not offset through other mechanisms. Third, it appears

that the effect of say on pay was more pronounced for the intended firms, such as firms with high realizations of voting dissent in the year of adoption of the DRR—a proxy for shareholders’ concerns with CEO pay practices—and firms with excessive CEO pay in the pre-DRR period. Noticeably, we do not find the same result in firms with high (but not excessive) raw CEO pay in the pre-DRR period— a further indication that say on pay was not used to indiscriminately attack large CEO pay packages. Finally, our evidence of an effect in firms with excessive pay in the pre-DRR period but without high voting dissent suggests that a say on pay vote has an impact not only ex post (through firms’ responses to adverse voting outcomes) but also (and maybe mostly) ex ante (through the threat of voting dissent), consistent with practitioners’ claims that say on pay has significantly improved the dialogue between firms and shareholders ahead of the annual meeting (Deloitte 2004; Davis 2007).

Our study offers a number of contributions. First, we provide large-sample evidence on the effects of a controversial new regulation adopted by or being considered for adoption in numerous countries, thereby informing the ongoing policy-making debate on whether and how to reform CEO pay practices (e.g., Buffet 2003; Jensen, Murphy and Wruck 2004; Cook 2005; Immelt 2006) and contributing to the literature on the effect of regulatory intervention on CEO pay and the political dynamics of CEO pay (e.g., Jensen and Murphy 1990; Murphy 1995). Second, our paper adds to an emerging yet limited literature on the role of institutional investors and shareholder activists in executive compensation design (e.g., Hartzel and Starks 2003; Ferri and Sandino 2007), at a time when CEO pay is a major concern for institutional investors in many countries (e.g., Watson Wyatt Worldwide 2004, 2006). Third, our paper extends prior work on pay-for-

performance asymmetries (e.g., Bertrand and Mullainathan, 2001; Garvey and Milbourn 2006; Leone, Wu, and Zimmerman 2006) to an international setting, adding to the limited body of work on executive pay outside the US (e.g., Conyon and Murphy 2000; Conyon, Core and Guay 2006). Finally, we contribute to the growing literature on the effectiveness of shareholder votes (e.g. Gillan and Starks 2002; Ertimur, Ferri and Stubben 2007), extending it to an international setting.

The paper proceeds as follows. Section 2 discusses the institutional background. Section 3 outlines the theoretical basis for the study and develops our empirical predictions. Section 4 describes the research design and the data used in the analysis. Section 5 presents our empirical results and discusses their implications, as well as a number of caveats. Concluding remarks are in Section 6.

2. Institutional background

2.1 The road to “Say on Pay” in the UK

UK legislators’ interest in executive pay began in the early 1990s. At a time of stagnant employees’ salaries and numerous layoffs, rapidly increasing levels of executive pay and examples of tenuous links between pay and performance made headlines in the press and generated an outcry among the public (e.g. FT 1995), with Labour Party politicians calling for legislative reform.⁶ The then-Conservative government ultimately did not take action, relying instead on the “Greenbury” Report, a Code of Best Practice on Executive Pay issued in 1995 by a panel set up by the Confederation of British Industry.⁷ The main

⁶ For a detailed account of these events, see Cheffins and Thomas (2001).

⁷ The 1995 Greenbury report, together with the 1992 Cadbury Report, the 1998 Hempel Reports and the 2003 Higgs report forms the basis of the Combined Code of Principles of Good Governance and Code of Best Practice (usually referred to as ‘Combined Code’), the ‘handbook’ of corporate governance best practices in the UK. A key feature of the Combined Code is its disclosure-oriented focus: listed firms are

theme of the report was greater disclosure of executive pay. Among other things, it recommended that boards would provide shareholders every year with a report on executive pay, including a description of compensation policies and details about each element of the pay package. Consistent with its emphasis on disclosure, the Greenbury Report did not endorse the idea of an annual shareholder vote on executive pay, arguing that shareholders prefer to focus on overall performance rather than the details of pay packages – a position echoed by the 1998 Hampel Report. However, the Greenbury Report recommended that boards would invite shareholders to vote on executive pay at the annual meeting under special circumstances (e.g. changes in remuneration policy, controversial issues)—a recommendation incorporated in the Combined Code but followed only by a handful of firms (DTI 1999).⁸

While the Greenbury Report – widely adopted by UK firms – resulted in greater pay disclosure and firms began to adopt more incentive-based pay schemes, pay levels kept increasing and the sensitivity of pay to performance continued to be questioned. The Labour Party’s victory in the 1997 elections raised the expectations of regulatory reform. However, when the Department of Trade and Industry in 1999 released a consultation paper (hereinafter DTI), the central theme was that shareholders, not government, should impose sensible limits to executive pay. For this purpose, the DTI called for better disclosures to allow shareholders to assess the link between pay and performance. Unlike the Greenbury and Hampel Reports, though, the DTI also favored enhanced power to shareholder votes with respect to executive pay. The DTI reasoned that other mechanisms

encouraged but not obliged to comply with best practices. However, failure to comply must be disclosed and explained (the so-called “comply or explain” approach).

⁸ The Greenbury Report also recommended that shareholders vote on various types of long-term incentive plans—a recommendation eventually embodied in the UKLA Listing Rules.

available to shareholders were practically ineffective⁹ and that a more direct shareholder involvement would benefit the communication between shareholders and boards. Among other options, the DTI put forth the possibility of a mandatory, advisory annual shareholder vote on executive pay. The DTI did not result in any immediate action.

Only in March 2001, the Trade and Industry Secretary announced that disclosure regulation would be restructured and that it would be done through legislation, rather than an amendment of the UKLA Listing Rules (the approach favored by some of the largest institutional investors; Baird and Stowasser, 2002). However, the question of whether to give shareholder more direct involvement in the setting of executive pay was postponed.

2.2 The Director Remuneration Report

In August 2002 the UK government introduced the Directors' Remuneration Report Regulations 2002 (DRR 2002)—a new legislation aimed at increasing “accountability, transparency, and performance linkage of executive pay” (Baird and Stowasser, 2002) – the three guiding principles advocated by the 1995 Greenbury report.

The DRR, which was effective starting in fiscal years ending on and after December 31, 2002, amended several sections of the Companies Act 1985. In particular, it required companies to: i) include an executive compensation report in their annual filing with enhanced disclosures; and ii) submit such report to a nonbinding shareholder

⁹ Voting against the approval of the company's accounts (which include the remuneration report prepared by the board) at the annual meeting was viewed by investors as an excessive measure to deal with executive pay problems. A more targeted approach—voting against the re-election of directors sitting on the remuneration committee—faced some practical challenges, since usually in UK only one-third of the directors are elected each year (for a three-year term). Besides, voting against the re-election of an otherwise valuable director because of concerns with executive pay policies may not serve well the interest of shareholders. Indeed, pay-related vote-no campaigns against directors' have been rare and not successful in the UK (FT 2001). Another available option (under section 376 of the Companies Act 1985) was for shareholders to submit for a vote at the annual meeting proposals on executive pay issues. However, this option was only available to those few shareholders owing at least 5% of the voting rights. Besides, these proposals are usually non-binding.

vote (by ordinary resolution) at the annual meeting—the first time that the concept of “advisory” vote was used in UK company law (Cheffins and Thomas, 2001).

Appendix 1 describes the new compensation disclosures required by the DRR. The most significant new requirements are the disclosure of the details of executives’ severance contacts (in particular, early termination payments), the disclosure of remuneration consultants (names and any other connection to the company) and a forward-looking statement on future remuneration policy.

The DRR applied to all firms incorporated in the UK and listed on major UK or foreign stock exchanges. Hence, it did not apply to UK firms trading on the Alternative Investment Market (AIM)—a feature that we explore in our empirical analysis.¹⁰ Also, it did not apply to foreign firms listed in the UK, as it had been instead requested by some commentators during the consultation period (Baird and Stowasser 2002).

3. Related Literature and Empirical Predictions

3.1 Theoretical foundations: the role of shareholder voice

Executive compensation plans are formed within a complex system of interrelated constraints that arise due to cognitive, social-psychological, informational, and incentive-compatibility limitations. As a result of these constraints, contracts between a firm and its CEO are inevitably incomplete and the efficiency of CEO pay practices will depend critically on the conditions under which *ex-post* bargaining takes place.

Critics contend that CEO remuneration contracts are often determined under suboptimal bargaining conditions and, as a result, do not reflect shareholders’ best interests (e.g., Jensen and Murphy 1990; Khurana 2002; Bebchuk and Fried 2004).

¹⁰ The Alternative Investment Market is a sub-market of the London Stock exchange which allows smaller companies to float shares with a more flexible regulatory system relative to the Main Market.

According to some of these critics, enhanced shareholder “voice,” as reflected and formalized in an advisory vote on the remuneration report, will alter those conditions in a way that is conducive to “arms-length” bargaining, resulting in more efficient executive compensation contracting (Bebchuk, 2007). In particular, the existence of an advisory shareholder vote may make it easier for boards to overcome social-psychological barriers in negotiating with CEOs on behalf of shareholders.¹¹

In order for advisory votes to affect compensation practices, incentives must be attached to the threat or the realization of an adverse voting outcome. These incentives are likely implicit/reputational (e.g. Fama 1980). By reducing the cost of aggregating and disseminating information regarding shareholders’ discontent, “say on pay” may provide shareholders with an important bargaining lever – the threat of negative public opinion. Such a threat can be highly effective, as no insurance policy can protect a director from reputational penalties (Dyck and Zingales 2002; Fama and Jensen 1983). Consistent with these arguments, a number of studies show that, especially in the post-Enron environment, advisory shareholder votes have a significant impact on corporate decisions as well directors’ reputation in the labor market.¹²

However, the implicit incentives attached to advisory votes may simply result in directors pandering to shareholders and adopting sub-optimal pay practices (Singh, 2006). Hence, an additional condition for advisory votes to result in more efficient CEO pay contracts is that shareholders have the ability to discriminate between “high-quality”

¹¹ A compensation committee’s bargaining power may be constrained by social-psychological factors, namely the desire to build social cohesion in the boardroom (e.g. Bebchuk and Fried, 2004). Former SEC Commissioner Roel Campos has argued that mandatory shareholder advisory votes will give compensation committees the backbone to oppose exorbitant pay packages (Campos, 2007).

¹² Ertimur, Ferri and Stubben (2007) and Del Guercio, Seery and Woidtke (2008) find, respectively, that in recent years directors ignoring shareholder proposals receiving a majority vote and directors subject to vote- no campaigns suffer reputation penalties in the director labor market (Fama, 1980).

and “low-quality” compensation plans as well as a means to aggregate and communicate their preferences to the board. This ability may be limited. For example, dispersed shareholders may lack the required specific knowledge, or the incentives to acquire the knowledge (Bainbridge 2007).¹³ On the other hand, anecdotal evidence from the UK experience suggests that a key effect of an advisory vote is the enhanced communication between compensation committees and shareholders *in advance* of the annual meeting and greater resources devoted by investors to the analysis of compensation plans (Deloitte 2004).¹⁴ Such enhanced communication may lead to more informed voting decisions and to the adoption of superior pay practices supported by shareholders.

Ultimately, whether a mandated advisory shareholder vote on the executive pay report has any impact and the nature of such impact remains an empirical question.

3.2 Empirical Predictions

As discussed in the Introduction, the DRR was introduced largely in response to growing concerns with the levels and the growth rate of CEO pay, as well as a widespread perception that CEO remuneration practices at UK firms were generating significant ‘rewards for failure’, explicitly—e.g. through large severance payments—or implicitly—through reduced sensitivity of pay to negative performance. Hence, a test of

¹³ Shareholders may also engage in strategic voting behavior (Maug and Rydqvist, 2004). Besides, shareholder votes are subject to social choice problems (e.g., Mas-Colell, Whinston, and Green 1995), since different shareholders will have different preferences over alternative remuneration schemes. For example, even shareholders opposing the remuneration report may support it if they expect an adverse voting outcome to result in what they perceive as an inferior remuneration policy advocated by other shareholder groups.

¹⁴ As many board-level decisions, CEO pay decisions require “soft” information which, by definition, may be difficult to communicate to shareholders (Carter and Lorsch, 2004). Dynamic tally-sheets, which compute total CEO compensation under different scenarios, are one mechanism that compensation committee members have begun to use to “harden” soft information and enhance its communication to shareholders.

the effectiveness of the DRR requires an analysis of the relation between pay and performance before and after its introduction.

Anecdotal evidence suggests that some firms responded to the new rule or to an adverse voting outcome by changing or removing specific provisions of the compensation contracts that may increase the likelihood or the magnitude of payouts after poor performance (e.g. severance pay, rolling retesting; see Deloitte 2004, ISS 2007, Sheehan 2007).¹⁵ However, it is not clear whether these changes were accompanied by similar changes in the overall sensitivity of pay to realized poor performance or, alternatively, were “camouflaged” by changes in other elements of CEO pay—essentially nullifying the effect of the DRR.

The purpose of our study is to provide an answer to these questions by analyzing the effect of the DRR on the sensitivity of CEO compensation to firm performance. If the DRR was effective in pressuring boards and in forcing more dialogue with key shareholders (see Section 3.1) we predict that its introduction led to a higher sensitivity of CEO pay to poor performance. Also, we predict that such effect would be more pronounced in firms with more controversial CEO pay packages (e.g. firms with ‘excessive’ CEO pay and firms with high voting opposition to the remuneration report).

¹⁵ Two practices affected by the DRR are severance payments and performance retesting. Among the FTSE 100 firms, the percentage of executive directors with 24-month notice periods fell from 32% in 2001 to 1% in 2004 (Deloitte, 2004). In other words, almost all firms eliminated severance provisions exceeding one year’s basic salary. Also, according to the same study, between 2001 and 2004, provisions banning retesting increased from 10% to 43% of the new plans in FTSE 100 companies. Retesting occurs when a firm fails to meet the performance target in the set timeframe (say, 3 years) and the Board extends the test for additional years while adjusting the performance target.

4. Sample Selection and Research Design

4.1 Sample Selection

Our sample is based primarily on a compensation and governance database compiled by BoardEx, an independent, UK-based, corporate research company.¹⁶ From this database, we obtain CEO compensation, CEO ownership and other corporate governance data (board independence and institutional ownership) for about 700 UK firms (including firms traded on the AIM) and 1,800 US firms over the period from 2000 to 2005. We supplement the BoardEx file with financial data (Worldscope for UK firms, Compustat for US firms), stock returns data (Datastream for UK firms, CRSP for US firms) and institutional ownership data.¹⁷

4.2 Research Design

To examine the effect of the DRR on CEO pay we analyze the determinants of CEO pay for a large sample of (non-AIM) UK firms before (2000-2002) and after (2003-2005) the introduction of the DRR. In other words, the introduction of the DRR represents the “event” of interest to test for structural changes in the sensitivity of CEO pay to its economic determinants. In particular, we estimate the following model using an ordinary least squares (OLS) regression:

$$CEO Pay_{i,t} = f(Post, Performance_{i,t}, Performance_{i,t} * Post, Controls_{i,t}, Controls_{i,t} * Post, Firm Fixed Effects) \quad (1)$$

¹⁶ BoardEx collects detailed information on corporate governance for approximately 8,000 firms, including 5,000 US firms and 3,000 European firms. For a subset of these firms, BoardEx also collects remuneration data for both executive and non-executive directors.

¹⁷ As a result of differences in mandatory disclosure requirements between US and UK, BoardEx reports the collective shareholdings of all institutional investors that individually hold more than 5% of shares outstanding for US firms, and 3% of shares outstanding for UK firms. To construct a comparable measure of institutional investor concentration, we collect information on the institutional holdings of US firms from Thomson Financial’s database of 13-F filings and compute the cumulative shareholdings of institutional investors that individually hold more than 3% of shares outstanding.

where *Post* is a dummy variable equal to 1 for the years 2003-2005 (i.e. after the introduction of the DRR Regulations), 0 for the years 2000-2002

In essence, equation (1) is equivalent to running a separate regression for the Pre and the Post period and, thus, it allows for all the coefficients to differ across the two periods. However, ‘stacking’ the Pre and Post regressions and estimating them simultaneously enables us to test for changes in the coefficients between the two periods.

To ensure consistency in the sample composition between the Pre and Post period, we restrict the analysis to firms with relevant data (at least) in both 2002 and 2003. Also, we exclude firm-year observations in which there was a change in CEO, to avoid the effect of the confounding events that typically accompany CEO turnover¹⁸ and to maintain a clearer link between firm performance and the compensation of a single CEO. Finally, we estimate heteroskedasticity-robust standard errors clustered by firm to account for the fact that we have multiple observations for each company (Froot 1989).

Next, we discuss the variables used to estimate (1) (see Appendix 2 for details).

4.3 Description of Variables

*Dependent Variable: CEO Compensation*¹⁹

¹⁸ CEO turnover years have been shown to be characterized by abnormal compensation arrangements (e.g. Yermack, 1995)—such as make-whole mega-grants for new CEOs, severance payments for outgoing CEOs, etc.—and distortions in *reported* measures of firm performance (e.g income-reducing accounting method changes, asset write-offs, downward earnings management, divestitures of previous acquisitions; see Hallock and Murphy, 1999).

¹⁹ We focus on CEO compensation as opposed to top executives’ compensation because the DRR requires compensation disclosures only for executives sitting on the board (rather than, say, for the CEO and the highest paid executive officers, the so-called “Named Executive Officers” under the US proxy rules). Thus, in theory, the DRR may have led to changes in the identity of non-CEO executives sitting on the board, possibly affecting a comparison between Pre and Post period. Besides, most of the debate centers around CEO pay. Interestingly, during the UK government’s consultation process, some commentators requested that the DRR cover the most highly paid officers, whether or not sitting on the board (Baird and Stowasser 2002).

As in prior studies (e.g., Murphy 1985; Core, Holthausen and Larcker 1999), the dependent variable in equation (1) is the natural log of either CEO cash compensation (Ln Cash Compensation) or CEO total direct compensation (Ln Total Comp).²⁰

In drawing our inferences on the effect of DRR on pay-to-performance sensitivity we rely mostly on the analysis of CEO cash compensation. Due to the nature of most cash-based bonus plans, there is typically a direct structural link between *realized* cash pay and realized performance (e.g. Murphy, 1999). Instead, the link between the value of equity awards (the major component on non-cash total direct compensation) and realized performance is not clear.²¹ A positive relation would be observed if firms used award equity grants mostly or only for compensatory purposes (i.e. to reward good performance and penalize bad performance)—for example through the use of “fixed-number” stock option plans (Hall, 1999). However, the grant-date value of equity awards usually represents an *ex-ante* compensation opportunity, rather than realized compensation, since firms use equity-based pay mostly to re-align incentives for future performance (Core and Guay, 1999), to attract and retain executives (Oyer and Schaefer 2005), and for liquidity, accounting and tax-related reasons (Core, Guay and Larcker 2003). As a result, the

²⁰ Cash compensation is defined as the sum of salary and annual bonus, while total direct compensation also includes pensions, the value of equity grants, and the value of long-term incentive payouts and other benefits.

²¹ Prior studies find no significant association between equity grants and accounting performance (e.g. Baber, Janakiraman and Kang, 1996; Barber, Kang and Kumar, 1998). Similarly, Yermack (1995) finds that the association between incentives from new option grants and *contemporaneous* stock performance is ‘virtually zero’. Core and Guay (1999) find a positive relation, but they warn that the relation is “potentially spurious”, due to the mechanical correlation between stock returns and the grant date stock price (which affects the incentives value of the award). Besides, they note, contemporaneous returns may proxy for changes in the optimal incentive level during the year of the grant. Core and Guay (1999) also find no relation between *lagged* returns (less subject to these problems) and incentives from new options grants.

relation between the value of equity grants and realized performance can be null or even negative.²²

Hence, we view the analysis of total direct compensation mostly as a robustness test to check whether the effects documented for the CEO cash compensation analysis are generally offset by other elements of compensation. It is important to note, however, that relative to US-based compensation studies, cash compensation is especially relevant in UK firms since over the sample period it represents on average two thirds of CEO total pay—twice as much as in US firms (67% versus 34%, see Table 1).

Independent Variables: Firm Performance

Predictions that CEO compensation varies directly with firm performance follow from the standard agency model (Jensen and Meckling, 1976; Holmstrom, 1979).²³ As in prior studies, we include both price-based (stock returns) and accounting-based (return on operating assets, ROA) measures of firm performance.²⁴

²² For example, poor past performance may be followed by larger, rather than smaller, grants in an attempt to realign incentives going forward and retain the executives. This can be accomplished ex ante—through a “fixed value” option plan (Hall 1999)—or ex post, through special grants or the repricing of existing grants (e.g. Brenner, Sundaram and Yermack, 2000). As noted by some practitioners (e.g., O’Byrne 1995; Reilly and Enright 2007), the dominant approach to setting equity-based pay—calibrating total compensation opportunity to, say, the 75th percentile of a size-based comparator group, and then varying the pay mix in order to provide the desired incentive strength—seems mostly driven by retention concerns and by construction affords little opportunity to link ex ante target pay opportunity to realized performance.

²³ Since management’s actions are unobservable, shareholders will offer contracts based on observable performance indicators presumed to be correlated with management’s actions.

²⁴ Many empirical studies document a statistically significant positive association between executive compensation and both accounting- and price-based performance measures (e.g., Murphy, 1985; Lambert and Larcker, 1987; Jensen and Murphy, 1990; Sloan, 1993; Core, Holtausen and Larcker, 1999; Core, Guay and Verrecchia, 2003). The theoretical justification for including price-based performance measures in compensation contracts is that stock returns reflect both the short-run and the long-run impact of all value-relevant management actions, and are less affected by accounting distortions. The argument for the use of accounting-based measures is that, because stock prices are affected by factors beyond management’s control, accounting information can be more informative with respect to management’s actions (Gjesdal, 1981). Moreover, because accounting returns are the lower variance measure, their use as performance indicators promotes efficient risk-sharing among contracting parties (Sloan, 1993). The use of accounting measures in bonus plans is well documented (e.g. Murphy, 1999; Murphy, 2001).

Critics of CEO pay practices point to two empirical features of the pay-to-performance relation as *prima facie* evidence of rent extraction. The first is the asymmetric response of pay to good and poor performance realizations. While handsomely rewarded for positive performance, the argument goes, CEOs are often insulated from the effects of negative performance through special option grants, severance payments, golden parachutes, repricing of out-of-the-money stock options, discretionary bonuses and other forms of insurance (e.g. Bebchuk and Fried, 2004). Even CEO cash compensation has shown to be less sensitive to “bad news items”—e.g. losses, pension expense—than the corresponding “good news items”—e.g. gains, pension income (Gaver and Gaver, 1998; Comprix and Muller, 2006).²⁵

The second feature is the evidence that—contrary to predictions of simple models of the contracting view—CEO pay is as sensitive to own performance (“skill”) as it is to “luck”, defined as observable shocks to performance beyond the CEO’s control (Bertrand and Mullainathan, 2001) and often operationalized as sector performance.²⁶ Combining the “asymmetry” and the “luck” argument, Garvey and Milbourn (2006) go one step further and document an asymmetry also in the sensitivity of pay to “luck”—with CEOs rewarded for “good luck” (i.e. good sector performance) more than they are penalized for “bad luck”.

²⁵ Hall and Liebman (1998), however, document that the explosion in the use of stock options during the 1990s has significantly strengthened the relation between CEO wealth and negative performance, through the effect of stock price decreases on the value of option *holdings*. Also, Leone, Wu and Zimmerman (2006) find that CEO *cash* compensation (but not equity compensation) is actually more sensitive to negative returns (viewed as a proxy for unrealized losses) than to positive returns (viewed as a proxy for unrealized gains).

²⁶ According to standard agency models (Holmstrom 1979) it is more efficient for firms to filter common risk out of the measures of executive performance, so that pay will be only tied to controllable factors. However, a number of arguments have been provided over time to explain the relation between CEO pay and ‘uncontrollable’ performance (e.g. sector performance; see Core, Guay and Larcker 2003). For example, Oyer (2004) develops a model where it can be optimal to pay CEOs for industry-level performance (“luck”) if industry performance is correlated with the executives’ outside opportunities. Rajgopal, Shevlin and Zamora (2006) find empirical support for Oyer’s prediction.

To account for the potentially different sensitivity of CEO pay to positive and negative performance, as well as to sector performance (viewed as a proxy for “luck”) and firm-specific performance, we include the following variables as determinants of both cash and total CEO compensation:²⁷

- *Positive (Negative)-Sector>Returns*: defined as the sector return, if sector returns are positive (negative), zero else;
- *Positive (Negative)-Firm-Specific>Returns*: defined as firm-specific stock returns (i.e. sector-adjusted), if firm-specific returns are positive (negative), zero else;
- *Positive (Negative) ROA*: defined as return on assets (operating income divided total assets).

Note that we do not split ROA into sector- and firm-specific components, because accounting-based performance measures have been shown to filter out common shocks (Sloan 1993).

Independent Variables: Controls and Firm Effects

Following previous studies, we include a number of control variables to capture the financial characteristics of the firm and its governance structure.

In terms of financial characteristics, we employ the natural log of sales ($\ln(\text{Sales})$)—a proxy for size—and the ratio of market-to-book value of equity (*Market to Book*)—a proxy for growth opportunities. The robust cross-sectional and time-series association between executive pay and size is one of the “best stylized facts” in the

²⁷ Similar to previous studies (e.g. Leone, Wu and Zimmerman, 2006) we include stock returns among the determinants of CEO cash compensation even though bonus contracts are usually written based on accounting earnings and not explicitly on stock returns (Murphy, 1999). The rationale is that stock returns may proxy for (omitted) non-accounting-based measures of performance explicitly used in compensation contracts (individual performance measures and non-financial measures; e.g. Bushman and Smith, 2001) or implicitly used in determining discretionary bonuses (e.g. Murphy and Oyer, 2003).

executive pay literature (Rosen, 1992)²⁸ and is consistent with the notion that larger firms are more complex and, thus, require better skilled executives, who will require a more attractive compensation package (e.g. Gabaix and Landier 2008).²⁹ Prior studies have also documented higher levels of executive pay in firms with higher growth options (e.g. Smith and Watts, 1992), consistent with the notion that these firms require higher quality managers and make greater use of risky pay (requiring a higher risk premium).

As proxies for the governance structure of the firm and the agency costs associated with the separation of ownership and control, we use three variables: *board independence* (the percentage of board members classified as independent by Boardex), *institutional ownership concentration* (the cumulative percentage ownership by all institutional investors holding more than 3% of the firm equity) and *CEO percentage ownership* (the percentage of equity held by the CEO). While their choice is partly dictated by data availability, all these variables have been shown to be associated with CEO pay. In particular, some studies find that the level of CEO pay is lower in firms with greater board independence (e.g. Core, Holthausen and Larcker, 1999; Chhaochharia and Grinstein, 2006), higher concentration of institutional ownership (e.g. Hartzell and Starks, 2003) and higher CEO ownership (e.g. Core, Holthausen and Larcker, 1999).

To control for any time-specific trends affecting growth in CEO pay (e.g. managerial labor market conditions, market for corporate control, etc.), we include a

²⁸ Baker, Jensen, and Murphy (1988) observe that the use of size as the primary determinant of CEO pay in compensation consultant surveys may have contributed to induce a pay-for-scale relationship that does not necessarily reflect pay-for-skill.

²⁹ In particular, Gabaix and Landier (2008) develop a simple equilibrium model of CEO pay where CEOs have different talents and are matched to firms in a competitive assignment model and show that, in market equilibrium, a CEO's pay will depend on both the size of his firm and the aggregate firm size in the market. The empirical calibration of their models shows that the "the sixfold increase of US CEO pay between 1980 and 2003 can be fully attributed to the sixfold increase in market capitalization of large companies during that period".

linear *Trend* variable, equal to the fiscal year minus 1999 (i.e. a variable equal to 1 in the fiscal year 2000, 2 in the fiscal year 2001, etc.). We also include an indicator variable (*Post Period*) denoting the period after the introduction of the DRR (2003-2005).

Finally, we include firm fixed effects. The firm-effects specification controls for omitted firm-specific characteristics that are constant through time, such as firm-specific differences in compensation policies and monitoring technology (Murphy, 1985).

As discussed in Section 4.2, our research design allows for the coefficients on all the independent variables to vary between the period before and after the introduction of the DRR. By doing so, we account for the possibility that either the DRR or other simultaneous events affected the relation between these variables and CEO pay.³⁰ However, we do not make specific predictions about the impact of the DRR on the sensitivity of CEO pay to all these variables. As discussed in Section 3.2, our main focus is on the potential effect of the DRR on CEO pay level (*Post Period* dummy), growth rate (*Trend*) and pay-to-performance sensitivity measures—particularly the sensitivity of CEO pay to negative performance.

5. Empirical Results

5.1 Descriptive Statistics

Table 1, Panel A shows the trend in CEO cash and total compensation for our sample of UK firms subject to the DRR rule over the period from 2000 to 2005. CEO pay was relatively flat in the Pre period, and then increased steadily in the Post period, particularly in terms of total compensation. This is likely a reflection of the change in the

³⁰ For example, by estimating a different coefficient on *TREND* in the Pre and Post period, we allow for the possibility of a different trend in the down market of 2000-2002 (around the burst of the dot-com bubble and September 11) relative to the robust economy over the years 2003 to 2005.

economic environment—the dotcom burst and a stagnant economy in the Pre period, followed by a strong economic recovery in the Post period. Indeed, as shown in Table 2, Panel A, stock returns for UK firms were much higher in the Post period, resulting in higher market-to-book ratios. In both tables, Panel B shows similar patterns for a sample of US firms, except that the Pre period in the US is characterized by declining rather than flat levels of total pay, possibly due to the impact of lower equity prices on the value of equity grants.

Consistent with evidence in prior studies (e.g. Conyon and Murphy, 2000; Conyon, Core and Guay, 2006) Table 1 also shows that CEOs in US firms are paid significantly more than their UK peers. Gabaix and Landier (2008) note that size explains a large portion of cross-country variability in CEO pay. However, the difference in pay between UK and US CEOs remains substantial even when UK firms are matched to US firms of similar size in the same industry (see Figure 1), and is particularly pronounced in the top quartile of the total pay distribution—a reflection of the larger use of equity-based pay in US firms.³¹

5.2 Multivariate Results

5.2.1 Determinants of Cash and Total CEO Compensation in the UK Pre- and Post-DRR

Table 3 provides the results of the analysis of the determinants of the level of CEO cash compensation (left side) and total compensation (right side) in the UK in the Pre and Post period.³²

³¹ Conyon, Core and Guay (2006) show that most of the difference in CEO total pay between the US and the UK represents a risk premium for the larger amount of risky incentives (e.g. stock options) held by CEOs of US firms. Conyon and Murphy (2000) argue that the larger use of stock options in US firms reflects both cultural and institutional differences.

³² As discussed in Section 4.2, we run the analysis jointly for the Pre and Post period using interaction terms but for ease of exposition we present the results as if we ran two separate regressions.

The analysis of CEO cash compensation yields two main insights. First, there is a marked increase in the sensitivity of CEO cash pay to negative operating performance (*Negative ROA*) after the introduction of the DDR. In particular, the coefficient on *Negative ROA*—negative and insignificant in the Pre period (-0.379, p-value=0.23)—becomes significant and positive in the Post period (p-value=0.08)—a statistically significant increase (p-value=0.02; see column ‘Difference’). One interpretation of this finding is that CEO cash pay was insured against negative outcomes in the Pre period and the DDR resulted in higher accountability for negative performance—consistent with calls for less “rewards for failure”. Second, *after* controlling for size, performance and other determinants, there does not appear to be a change in level and growth rate of CEO cash pay after the introduction of the DDR. Indeed, the coefficient on the *Post Period* dummy is insignificant and the coefficient on *Trend*—while significantly positive in both periods (reflecting a general increase in CEO cash pay over time)—does not change significantly different after the DDR.

With respect to the other variables, in both the Pre period and Post period, as expected and consistent with prior studies, CEO cash pay shows a significantly positive association with size (*Ln Sales*), positive operating performance (*Positive ROA*) and negative stock performance (*Negative Firm Specific Returns*), while the coefficient on positive stock performance (*Positive Firm Specific Returns*) is positive but insignificant.³³ The positive coefficient on *Ln Sales* decreases in the Post period,

³³ Leone, Wu and Zimmerman (2006) explain the asymmetry in the relation between cash pay and positive and negative returns as evidence of an efficient contract response to Fama’s (1980) “ex-post settling up” problem. Penalizing managers for unrealized losses (proxied by negative returns) provides an incentive to avoid those losses and prevents managers from evading the negative compensation consequences of their actions by leaving the firm before the losses materialize. At the same time, not rewarding manager for unrealized gains (proxied by positive returns) avoids the cost of recouping compensation paid in case the

suggesting less pay-for-scale after the DRR. Instead, there is no association with *Positive Sector Returns* and *Negative Sector Returns*—consistent with significant use of relative performance evaluation—except for a significantly positive coefficient on *Positive Sector Returns* in the Post period. However, its increase is not significant at conventional levels (p-value =0.15).

Although operating performance is typically more relevant in cash compensation plans, the total compensation analysis in Table 3 (right side) confirms the key findings of the cash compensation analysis: i) a positive and significant increase in the coefficient on *Negative ROA*; ii) no evidence of a one-time downward shift in the level of CEO total pay (the coefficient on the *Post Period* dummy is negative but insignificant; p-value=0.153); no evidence of a reduction in growth rate of CEO pay (on the contrary, the coefficient on *Trend* is significantly higher in the Post period, possibly due to higher sensitivity of equity-based pay to the economic recovery of the Post period).

In both the Pre period and Post period, CEO total pay shows a significantly positive association with size (*Ln Sales*), positive operating performance (*Positive ROA*) and negative firm returns (*Negative Firm Specific Returns*), although the coefficients on *Positive ROA* and *Negative Firm Specific Returns* are barely significant in the Pre period (respectively, p-value=0.107 and p-value=0.114). Unlike CEO cash pay, CEO total pay (which includes equity-based pay) is positively associated with *Positive Firm Specific Returns*, but only in the Pre period.

Interestingly, in comparing the Post and the Pre period, we observe at the same time a significant increase in the coefficient on *Negative Firm Specific Returns* and a

gains do not materialize. See Dechow (2006), however, for alternative explanations based on the design of bonus plans and the effect of tax rules.

significant decrease in the coefficient on *Positive Firm Specific Returns*— that is, less pay-to-performance sensitivity (PPS) on the upside and more PPS on the downside after the introduction of the DRR. An interpretation of this result is that CEO compensation contracts (particularly in their equity component) provided lower risk-taking incentives in the Post period, possibly a reflection of a more cautious environment after the dot-com bubble and the ensuing high-profile scandals.

As in the case of cash compensation, there is no association with *Positive Sector Returns* and *Negative Sector Returns*—consistent with significant use of relative performance evaluation—except for a significantly positive coefficient on *Positive Sector Returns* in the Post period. But unlike the case of CEO cash pay, this time the increase is significant and suggests either greater rewards for “good luck” (Garvey and Milbourn, 2006) in the Post period or greater sensitivity of pay to outside employment opportunities (Rajgopal, Shevlin and Zamora, 2006) in the stronger economy of the Post period.

Overall, Table 3 indicates a significant increase in the sensitivity of CEO pay to poor performance after the introduction of the DRR, while there is no evidence of a one-time downward revision in pay levels or of a moderating effect on the growth in pay. However, these findings may be driven by changes in other factors affecting CEO pay in the UK that occurred at the same time as the DRR. In the following sections, we assess this possibility through a number of additional tests.

5.2.2 Are the effects of the DRR more pronounced in firms with certain characteristics?

If the results documented in Table 3 are the result of the DRR rather than other factors affecting CEO pay around the same period, we would expect them to be more pronounced (or exist only) in sub-samples of firms ex ante more likely to be affected by

the DRR. Besides, if the DRR only affected certain firms, the analysis in Table 3—focused on average effects across all firms—is biased against detecting any effect.

Given the objectives behind the DRR, it seems reasonable to expect its impact on CEO pay practices (if any) to be stronger in firms with controversial CEO pay practices in the Pre period. To identify such firms, we use two proxies. The first is the degree of voting dissent against the remuneration report in the 2003 proxy season (the first one under the say on pay rule). The second is a regression-based measure of excessive CEO pay in the Pre period.

With respect to the voting dissent test, we obtain voting data for 2003 for a subset of UK firms – the firms in the FTSE 350 index – from Manifest, a UK proxy voting service firm.³⁴ We measure voting dissent as the sum of votes against and abstention votes. The mean (median) voting dissent in 2003 is 14.1% (11%). Based on these figures, we classify as *High Dissent* firms where the sum of ‘against’ and abstention votes exceeded 20% of the votes cast in the 2003 proxy season (press and activists consider 20% a significant amount of dissent), resulting in about one-fourth of the firms being classified as *High Dissent* and the remaining firms classified as *Low Dissent*). Then, we compare the changes in the sensitivity of CEO pay to its determinants from the Pre to the Post period across the two sub-samples, similar in spirit to a “difference-in-differences” test (Chhaochharia and Grinstein, 2006). As shown in Table 4, in the CEO cash compensation regression we find a positive and significant increase in the coefficient on *Negative ROA* only in the *High Dissent* sub-sample and the increase is significantly higher (p-value <0.001) than the (insignificant) increase for the *Low Dissent* group.

³⁴ Note that for the purpose of this test we do not split the sector returns in positive and negative as we did in Table 3. This is because, due to the smaller sample size, there is only one observations with negative sector returns in the Post period.

Noticeably, the magnitude of the increase in the coefficient is much larger than in the overall sample reported in Table 3. Similar results occur when the dependent variable is CEO total compensation (untabulated).

To test whether say on pay had a different effect on firms with excessive CEO pay in the Pre period, we define a sub-sample of *Excessive Compensation* firms as follows: i) we run the regression in Equation (1) (without fixed effects) over the Pre period only, using the natural log of total compensation as dependent variable; ii) for each firm, we compute an average residual over the Pre period (i.e. across the yearly residuals); and, iii) we define as *Excessive Compensation* firms those with an average residual value in the top 20% of the distribution, while labeling as *No Excessive Compensation* all the other firms.

As shown in Table 5 in the CEO cash compensation regression we find a significantly negative coefficient on *Negative ROA* in the Pre period for *Excessive Compensation* firms, suggesting substantial insurance against poor operating performance. The coefficient, however, turns positive in the Post period, a statistically significant increase (p-value= 0.001). Most importantly, the increase is significantly higher (p-value= 0.021) than the (insignificant) increase for *No Excessive Compensation* firms.³⁵ The result is qualitatively similar but weaker (p-value =0.327) when the dependent variable is CEO total compensation (untabulated).

³⁵ Note that since our measure of Excessive Compensation is based on residuals from a regression, a firm can be classified as having Excessive Compensation for a number of reasons—abnormally high sensitivity to sales, insufficient penalty for poor performance, etc. While we do not formally present tests for differences in coefficients between the *Excessive Compensation* firms and *No Excessive Compensation* firms, the fact that *Excessive Compensation* firms had a more negative and significant coefficient on *Negative ROA* in the Pre period suggests that a form of “reward for poor performance” was (at least) one reason for their classification as *Excessive Compensation* firms. Hence, the finding of a change in the coefficient on *Negative ROA* becomes even more significant. Incidentally, it also appears that *Excessive*

In untabulated analyses, we perform a similar test splitting firms based on total rather than excessive compensation (i.e. we classify as *High Compensation* firms those with an average value of CEO total compensation in the Pre period in the top 20% of the distribution, with the remaining firms classified as *Low Compensation*). Interestingly, we find no difference in the change of the coefficient on Negative ROA between the two sub-samples. Indeed, we observe a decrease (rather than an increase) in the coefficient over time for the Total Compensation sub-sample. We infer that our Excessive Compensation result is not driven by an indiscriminate over-reaction against firm paying high levels of CEO pay. Rather, it is consistent with say on pay having an effect on firms where levels of CEO pay are higher than warranted based on economic determinants.

Also, we perform another test where we repeat the analysis for the sub-sample of firms with *Low Dissent*, to ensure that our result on the *Excessive Compensation* sub-sample is not driven by the fact that these firms are more likely to experience high voting dissent. The analysis (untabulated) still shows a significant increase in the coefficient on *Negative ROA* only for the sub-sample of *Excessive Compensation* firms. This finding is of great interest in that it implies that an advisory shareholder vote may affect CEO pay not only ex post (through firms' response to high voting dissent) but also ex ante (through the threat of high voting dissent).

Overall, the above analyses suggest that the increase in CEO pay sensitivity to negative operating performance documented in Table 3 is most pronounced in firms more likely to have questionable compensation practices, thus lending some support for our interpretation of the finding as reflecting the impact of the DRR.

Compensation firms had higher pay sensitivity to sales in the Pre period and experienced a more pronounced reduction in pay sensitivity to sales after the DRR, though not significantly so ($p=0.225$).

Finally, we also examine whether say on pay had a differential impact based on two other firms characteristics of interest—firm size and institutional ownership concentration.

Prior literature has argued that public scrutiny and political costs increase with the size of the firm (e.g. Watts and Zimmerman, 1986). If the DRR is a substitute mechanism relative to other sources of scrutiny (e.g. press coverage), then the political cost argument would predict a stronger effect in small firms, where arguably a mandatory shareholder vote would raise the level of scrutiny on CEO pay more than in large firms (presumably already high). On the other hand, if the DRR is a complementary mechanism (further raising political costs through the embarrassment of a negative shareholder vote) and has an effect only where scrutiny and political costs are already high ‘enough’, then one may expect a stronger effect in large firms.³⁶

Prior studies of US firms also show that higher institutional ownership concentration results in higher monitoring of executive compensation practices (e.g. Hartzell and Starks, 2003). In the UK, the high concentration and stability of institutional ownership is often credited for the tradition of collective engagement and behind-the-scene dialogue between firms and shareholders—a key feature of the UK corporate governance environment. Similar to the discussion on size, the substitution argument would then predict a stronger impact of the DRR in firms with lower concentration of institutional ownership, while the complementarity argument (e.g. DRR effective only when a dialogue exists already) would lead to the opposite prediction.

³⁶ For example, on one extreme, the threat of a negative shareholder vote may not be a concern for a small firm with limited analysts’ and press coverage, since there would be limited consequences in terms of political costs (the vote would not even be reported in the business press). On the other extreme, a negative shareholder vote may bring to the spotlight the CEO pay practices of a small firm usually operating ‘below the radar’.

To examine these issues, we perform two tests. The first compares “Large” and “Small” firms, where Large (Small) firms are those with revenues above (below) the sample median in 2002. The second compares firms with “High” and Low” concentration of institutional ownership—defined as the percentage of the firm’s equity held by institutional investors with at least a 3% block holding. Again, firms are classified as High (Low) based on the sample median as of the end of 2002.

In both cases, our tests (untabulated) indicate no significant difference in the changes of the regression coefficients from Pre to Post across these sub-samples, with two exceptions. First, there is a significant decrease in the level of CEO cash and total compensation in Large firms from the Pre to the Post period (as reflected in the significantly negative coefficient on the *Post Period* dummy), both in absolute terms and relative to Small firms; this is consistent with a one-time downward revision of pay levels in large firms possibly as a way to manage political costs. Second, the positive association between CEO cash compensation and *Negative Firm Specific Returns* shows a larger increase (from the Pre to the Post period) in firms with High concentration of institutional ownership than in firms with Low concentration. If anything, these findings provide some support for the view of the DRR as a complementary monitoring mechanism.

5.3 Alternative explanations

5.3.1 The effect of contemporaneous changes in the UK governance environment

A major problem in studies focused on regulatory events is the possibility that the findings are not due to the event of interest—the introduction of the DRR— but to other events occurring around the same time. Our evidence that the effects are concentrated in

Excessive Compensation and *High Dissent* firms (Section 5.2.2) alleviates this problem but only to some extent. In fact, it is possible that those other events affect especially *Excessive Compensation* and *High Dissent* firms.

Other initiatives related to executive pay took place around the time of the DRR. First, in response to some highly publicized cases of large severance payments, the UK government launched an investigation resulting in the release of the “Rewards for Failure” report in June 2003 (DTI, 2003). Second, in December 2002, two of the most influential institutional investor groups in the UK—the National Association of Pension Funds (NAPF) and the Association of British Insurers (ABI)—released a handbook of “best practice” guidelines on executive remuneration.

While these documents mostly summarize executive remuneration principles already codified in previous reports,³⁷ their publication may have affected CEO pay practices—particularly in firms with controversial compensation practices.

To account for this possibility, and more generally for other country-level changes affecting all UK firms (e.g. other governance reforms, trends in the managerial labor market in the UK), we employ a control sample of UK firms traded on the Alternative Investment Market (AIM),³⁸ and, thus, as discussed in Section 2, not subject to the DRR (a “within-country” test).

Table 6, reveals that UK firms traded on the AIM exchange did not experience the significant increase in CEO cash pay sensitivity to *Negative ROA* documented in Table 3. In particular, while for UK firms not traded on AIM the coefficient on *Negative ROA* went from -0.379 (insignificant) to 0.615 (significant)—a statistically significant increase

³⁷ The NAPF-ABI handbook was compiled in large part as a response to the DRR—to provide firms and shareholders with guidelines on best practices as benchmark to choose and assess remuneration packages.

³⁸ About 75 firms traded on the AIM meet all our data requirements and the criteria set in Section 4.2.

(as shown already in Table 3)—for firms traded on AIM the coefficient remained stable at approximately -0.6 (insignificant). Although the difference in the change in the coefficient (‘Difference in Difference’ column) is not significant at conventional levels (p-value=0.198), its magnitude and direction are consistent with the findings in Table 3 being due to the DRR rather than to other contemporaneous changes affecting all UK firms.³⁹

Similarly, untabulated tests show that UK firms traded on the AIM exchange did not experience the significant increase in CEO total pay sensitivity to *Negative ROA* and *Negative Firm Specific Returns* documented in Table 3 for the other UK firms. This time, in the case of *Negative ROA*, the difference in the increase in the coefficient across the two sub-samples is statistically significant (p-value=0.025).

5.3.2 *The effect of contemporaneous changes in global CEO pay practices*

To account for the possibility that our findings reflect trends in CEO pay and in the CEO labor market affecting all firms, rather than the DRR, we also employ a control sample of non-UK firms (a “between-country” test). We choose to focus on US firms because the CEO labor market in the US is likely to affect the CEO labor market in the UK; thus, trends in CEO pay in the US may be a reasonable proxy for factors (other than the DRR) that affected CEO pay in the UK. Besides, US and UK firms operate in a broadly similar governance environment and were both subject to high scrutiny of CEO practices.⁴⁰

³⁹ The weaker result may be due to the fact that some firms traded on the AIM exchange chose to voluntarily comply with the DRR regulations. More generally, any change in compensation practices due to the “say on pay” rule might have influenced AIM firms as well, due to their need to be competitive in the managerial labor market or an imminent plan to list on non-AIM exchanges. These factors bias against finding any difference between AIM firms and firms not traded on AIM.

⁴⁰ Note that US firms in our control sample are generally larger and more visible than the UK firms. AIM firms, on the other hand, are significantly smaller and less visible than non-AIM UK firms. Prior research

With respect to CEO cash compensation, Table 7 shows that the increase in the coefficient on *Negative ROA* for UK firms from the Pre to the Post period (documented in Table 3) is much greater than for US firms (where the coefficient is positive but insignificant in both the Pre and Post period). The difference is statistically significant (p-value=0.084). With respect to CEO total compensation (untabulated), the increase in the coefficient on *Negative ROA* for UK firms is again larger than for US firms (where the coefficient is positive but insignificant in both the Pre and Post period), but the difference in the change is not significant (p-value=0.264). Interestingly, the increase in sensitivity of CEO total pay to *Negative Firm Specific Returns* documented in Table 3 is matched by a similar increase for US firms.

Overall, the analysis is consistent with the notion of a significant increase in the sensitivity of CEO cash and (more weakly) total pay to negative operating performance.

Another interesting result in Table 7 is the greater increase in the coefficient on *Trend* for US firms relative to UK firms. This finding suggests a larger increase in CEO pay growth rate in the robust economy of the Post period for US firms (after taking into effect all the control variables included in the regression)—possibly a reflection of an attenuating effect of the DRR on the growth of CEO pay in the UK. On the other hand, the US firms’ analysis also shows a larger negative coefficient on the *Post Period* dummy, suggesting a downward shift in levels of CEO pay in the US (after controlling for all other factors) relative to the UK – inconsistent with a moderating effect of the

suggests that the CEO labor markets, governance structures, and compensation arrangements of “high-profile” firms differ in both observable and unobservable ways from those of “low-profile” firms (e.g., Cadman, Klasa and Matsunaga 2006). Consequently, although the AIM and US control groups are imperfect, they “bracket” our treatment sample of UK firms in terms of size and related characteristics. Such use of non-equivalent control groups is generally considered “ideal” in the sense that it minimizes the likelihood that unobserved biases will invalidate our conclusions (Campbell 1969).

DRR. We conjecture that these differences may be due to the significant fluctuations in the exchange rate between US dollar and UK pound (see Figure 2)—with the US dollar appreciating relative to the UK pound between 2000 and 2002 and then depreciating in the following years, resulting in significant differences between the nominal exchange rate and the purchasing power-adjusted rate. Following other cross-country studies on CEO compensation (e.g. Abowd and Kaplan, 1999), in Panel B we replicate the CEO cash compensation analysis using purchasing power parity rates, and find that the above differences disappear. Noticeably, the coefficient on *Trend* is actually very similar across the two countries in both periods. Our main findings on *Negative ROA* remain unaffected. Similar results occur in the CEO total compensation analysis (untabulated).

The above analyses in essence assume that trends in US firms accurately capture what would have happened in UK firms without the DRR. Of course, this assumption is inaccurate since other events affected CEO pay trends at US firms during the same period. Two of these events are a surge in compensation-related activism in the US (particularly in the Post period), through pay-related shareholder proposals and vote-no campaigns against compensation committee members (Cheffins and Thomas, 2001; Ertimur, Ferri and Muslu, 2008), and the passage of the Sarbanes-Oxley Act in 2002.

With respect to the former, to the extent that compensation-related activism affected targeted US firms in ways similar to the DRR in the UK, it would bias against finding any difference between UK and US firms. In Table 7 Panel C we repeat our CEO cash compensation analysis after excluding US firm-year observations characterized by the presence of a shareholder proposal related to CEO pay and find essentially no

differences in the results. The same occurs for the CEO total compensation analysis (untabulated).

With respect to the Sarbanes-Oxley Act, its passage, combined with the post-Enron governance-oriented environment, may have led directors to design more judicious CEO pay plans. If so, again such effect would bias against detecting an incremental impact of the DRR in the UK.

Overall, the analyses of AIM firms and US firms provide support for interpreting the increase in CEO pay to negative operating performance sensitivity documented in Table 3 as due to the DRR Regulations rather than to simultaneous changes in the UK or in the global governance environment.

5.3.3 The effect of contemporaneous changes in mandated disclosures on executive pay

As discussed in Section 2, the DRR mandated both enhanced disclosure *and* an advisory shareholder vote. Hence, it may be difficult to ascertain what drives our findings on the effects of the DRR. This issue has significant implications for the generalizability of the findings to other countries. For example, opponents of “say on pay” in the US have argued that it would be redundant in view of the new executive pay disclosures mandated in 2006 by the Securities Exchange Commission (Executive Office of the President, 2007; Kaplan 2007). Others, however, have argued that, without stronger shareholder rights, more disclosure is (a necessary but) not a sufficient condition for greater shareholder involvement in the executive pay setting process (Bebchuk, 2007). Besides, the effect of enhanced disclosure on CEO pay is not clear and may arguably lead to an increase in executive pay—through a ratcheting process that has been likened to Garrison Keillor’s fable of “Lake Wobegon.. While disentangling the relative effect of additional

disclosure requirements and the mandatory advisory shareholder vote may be difficult, we note two things. First, the additional disclosures mandated by the DRR appear quite minimal relative to pre-existing disclosure requirements (see Appendix 1) and to the best practices in compensation disclosures recommended by the UK Combined Code (Baird and Stowasser, 2002). Second, according to a survey, most UK institutional investors explicitly attribute the changes in CEO pay practices observed subsequent to the introduction DRR to the advisory shareholder vote rather than the disclosure component (Deloitte 2004).

5.3.4 Alternative interpretations of the coefficient on Negative ROA

We have interpreted the increase in the coefficient on *Negative ROA* after the say on pay legislation as evidence of greater sensitivity of CEO pay to poor performance. Another possibility is that the optimal coefficient on *Negative ROA* is close to zero at extreme realizations of *Negative ROA* and positive at intermediate and low levels of *Negative ROA*. If so, our findings may simply reflect a different range of values for *Negative ROA* between the two periods (due to the different economic environment). However, Table 2, Panel A, shows that the distribution of *Negative ROA* is similar across the two periods.

Even if the amount of *Negative ROA* is similar across periods, its nature and, thus, its implication for CEO pay, may differ. For example, in the Pre period (down economy), *Negative ROA* is more likely to reflect restructuring, impairment and other one-time charges (“optimally” excluded from the compensation contract), while in the Post period (robust economy) it may more properly reflect poor, recurring operating performance (“optimally” penalized in terms of lower pay). However, the same argument would apply

to US firms and yet the result holds even in the tests using US firms as a control sample.⁴¹

5.4 Policy-making implications: caveats

Similar to other empirical studies on regulation, our goal is to inform the policy-making debate rather than provide normative recommendations. In assessing the evidence from the UK, policy-makers in other countries should reflect on a number of factors not addressed in our study.

First of all, a set of well-established best practices—a key feature of the UK governance system—, detailed disclosure requirements on executive pay, an active financial press, a well developed director labor market and significant shareholder powers in electing directors may be necessary prerequisites for the documented effects of “say on pay”. Codified best-practices provide firms and shareholders with a clear benchmark against which to make assessments of pay practices and high-quality disclosures are necessary to make such assessments. Media coverage, a deep director labor market and, most importantly, strong shareholder power in directors’ election will strengthen directors’ reputational incentives associated with adverse shareholder votes.⁴²

Second, policy-makers need to assess the merits of “say on pay” vis-a-vis alternative mechanisms. For example, in the US the ownership threshold for submitting

⁴¹ *Negative ROA* may also proxy for the greater use of subjective evaluation and non-financial measures to determine bonuses in loss firms (Matejka, Merchant and Van der Stede, 2005). To the extent that these measures are not correlated with *Negative ROA* realizations, their use would dampen the relation between cash pay (bonus) and magnitude of losses, potentially explaining the insignificant coefficient in the Pre period. However, as discussed in Section 4.3, these alternatives measures should be partly captured by stock returns. Also, to explain the increase in the coefficient on *Negative ROA*, it must be the case that the use of subjective and non-financial measures in loss firms has decreased (or their correlation with *Negative ROA* increased) in the Post period and that this happened in UK firms but not in the control sample (e.g. US firms).

⁴² In the UK, shareholders owning at least 5% of the voting rights have the power to nominate their candidates to the board and ask for the removal of incumbent directors. This power may increase the effectiveness of advisory votes such as the say on pay vote.

pay-related proposals for a vote at the annual meeting are minimal relative to the UK and the use of these proposals has increased in recent years (Ertimur, Ferri and Muslu, 2008).

Third, the intended goal of “say on pay” in other countries may be different from the UK—e.g. increase the use of relative performance evaluation— and so may be its effectiveness with respect to such goal.

Finally, our study does not consider potential side effects of “say on pay”. For example, greater communication between firms and shareholders on executive pay may spill over to other corporate decisions and strengthen investors’ confidence in the financial markets—a point often noted by “say on pay” supporters in the US (Ferlauto, 2007). On the other hand, potentially greater uncertainty of CEO pay under a “say on pay” rule may reduce the supply of managerial talent to publicly traded firms.

6. Conclusion

CEO pay has become a major concern for institutional investors, both in the US and internationally (e.g., Watson Wyatt Worldwide 2006). In response to these concerns academics, practitioners, and regulators have advocated various reforms. A mechanism that has received considerable attention is the annual advisory shareholder vote on the compensation committee report introduced through legislation in the UK in 2002 (Directors’ Remuneration Report Regulations, DRR).

In this study, we examine the effect of the DRR on CEO pay in a large sample UK firms by comparing the determinants of CEO pay before (2000-2002) and after the DRR (2003-2005). Consistent with calls for less “rewards for failure” that led to its introduction, we find that the post-DRR period is characterized by higher sensitivity of CEO cash and total pay to negative operating performance. The higher sensitivity of pay

to poor performance is mostly concentrated in firms characterized by particularly high CEO pay in the pre-DRR period and in firms with high voting dissent against the remuneration report at the time the rule was introduced. Using a control sample of UK firms not subject to the DRR (within-country test) and a control sample of US firms (between-country test), we conclude that our findings do not appear to be driven by other factors affecting CEO pay around the same time—e.g. changes in the governance environment in the UK other than the DRR rule, global trends in CEO pay practices and in the CEO labor market.

However, we find no evidence of a change in the level and growth rate of CEO pay, *after* controlling for firm performance and other determinants of CEO pay—consistent with levels and growth of CEO pay being mostly the result of market forces. While the interpretation and policy-making implications of our findings are subject to a number of caveats, our study may inform the regulatory and academic debate on the merits of greater shareholder voice in the CEO pay setting process. It also extends the literature on the role of institutional investors and shareholder activists in CEO pay design, the effect of regulatory intervention on CEO pay and the differences in pay practices across countries.

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APPENDIX 1

	Remuneration-related disclosure requirements under the Director Remuneration Report Regulations	Remuneration-related disclosures already required under the UKLA Listing Rule 12.43A*
Auditable Information**	Emoluments and Compensation: salary, annual bonuses, termination payments, non-cash benefits	Similar to DRR, except that DRR also requires disclosure of termination payments
	Stock Options: <ul style="list-style-type: none"> - Number of options outstanding at the beginning and the end of the fiscal year, with details about new grants, cancellations, modifications, expirations and exercises occurring during the year. - Exercise price, vesting date and maturity for any option award still outstanding at the end of the year. - Market price at exercise date for any option exercised during the year. - Performance criteria upon which the award or exercise is contingent upon. - The above data need to be provided separately for options with different terms and conditions. 	Broadly similar to DRR, except that DRR requires more detailed information.
	Long-term incentive schemes: <ul style="list-style-type: none"> - Similar to stock options disclosures - Requirement to disclose the value of money or assets receivable for schemes that have vested. 	Broadly similar to DRR, except that DRR requires more detailed information.
	Pension and retirement benefits: accrued benefits at the end of the year and changes during the year.	Not required.
	Above information also for non-executive directors	Not required
Non-Auditable Information	Names of members of Remuneration Committee	Same as DRR
	Details of any advisors to the Remuneration Committee, their connection with the company (e.g. other services provided) and description of who appointed them.	Not required.
	Details of executives' service contracts: duration of contracts, notice periods, termination payments, etc.	Not required
	Stock returns performance graph for past five years relative to a broad equity market index	Not required
	Company's policy on remuneration for the subsequent years: including: i) explanation of the performance conditions (or lack thereof) attached to the long term incentives schemes and the stock options; ii) rationale for the performance conditions chosen (or for their absence) and for any planned amendment, iii) details on use of external benchmarks (e.g. peer groups), iv) policy on duration of contracts and termination payments.	Not required

Source: prepared by authors.

* UKLA: United Kingdom Listing Authority.

** In their report to shareholders, auditors must; i) indicate whether the auditable portion of the remuneration report has been properly prepared, ii) highlight any non-compliance (DRR, 2002)

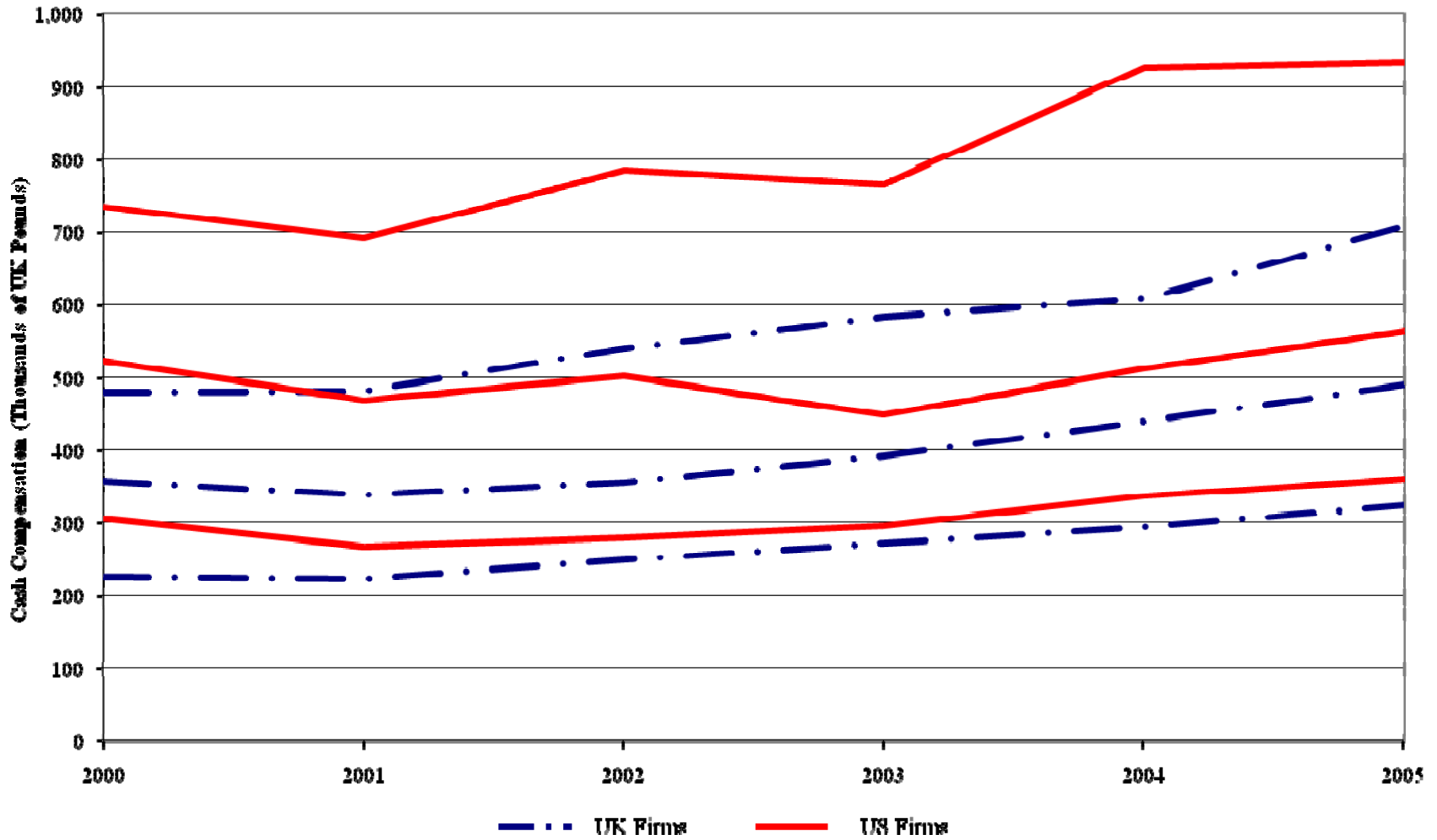
Appendix 2: Variables description

Variable	Definition*
CEO Cash Compensation	Sum of CEO salary and annual bonus. Source: Boardex.
CEO Total Compensation	CEO total direct compensation, defined as the sum of cash compensation plus the value of equity grants, long-term incentive payouts, pensions and other benefits. Source: Boardex.
Stock Returns	Annual total buy-and-hold return. Source: Datastream (UK firms), CRSP (US firms).
Sector Returns	Equally-weighted average of the stock returns of all the other firms in the same industrial sector, as defined by Boardex.
Positive (Negative) Sector Returns	Equal to Sector Returns if Sector Returns is positive (negative), 0 else.
Positive (Negative) Firm-Specific Returns	Equal to the difference between Stock Returns and Sector Returns if the difference is positive (negative), 0 else.
ROA (Return on Assets)	Operating income divided by average total assets. Net income is measured over the same fiscal year as the compensation variables. Source: Worldscope for UK firms, Compustat for US firms.
Positive (Negative) ROA	Equal to ROA if ROA is positive (negative), 0 else.
Sales	Annual revenues. Ln(Sales) is the natural log of Sales. Source: Worldscope (UK firms), Compustat (US firms).
Market to Book Ratio	Ratio of market value of equity to book value of equity. Source: Worldscope for UK firms, Compustat for US firms.
Board Independence	Ratio of the number of independent directors (e.g. with no current or former affiliation to the company) to the number of all directors sitting on the board. Source: Boardex.
Institutional Ownership Concentration	Percentage of shares cumulatively held by those institutional investors holding at least 3% of the shares. Source: Boardex for UK firms, Thomson Financial for US firms.
CEO Percentage Ownership	Percentage of shares held by the CEO. Source: Boardex.
Post Period	Dummy equal to 1 for the fiscal years 2003-2005 (i.e. after the introduction of the Director Remuneration report), 0 else.
Trend	Variable equal to the fiscal year minus 1999 (i.e. equal to 1 if the fiscal year is 2000, 2 if the fiscal year is 2001, etc.).

* Stock Returns and ROA are measured over the same fiscal year as the compensation variables. Sales are measured over the previous fiscal year. Market to Book Ratio, Board Independence and Institutional Ownership Concentration and CEO Percentage Ownership are measured as of the end of the fiscal year prior to the fiscal year over which the compensation variables are measured.

FIGURE1a:

**CEO Cash Compensation over Time: UK Firms vs. US Firms
25th, 50th and 75th Percentiles**



FIGURE

1b:

**CEO Total Compensation over Time: UK Firms vs. US Firms
25th, 50th and 75th Percentiles**

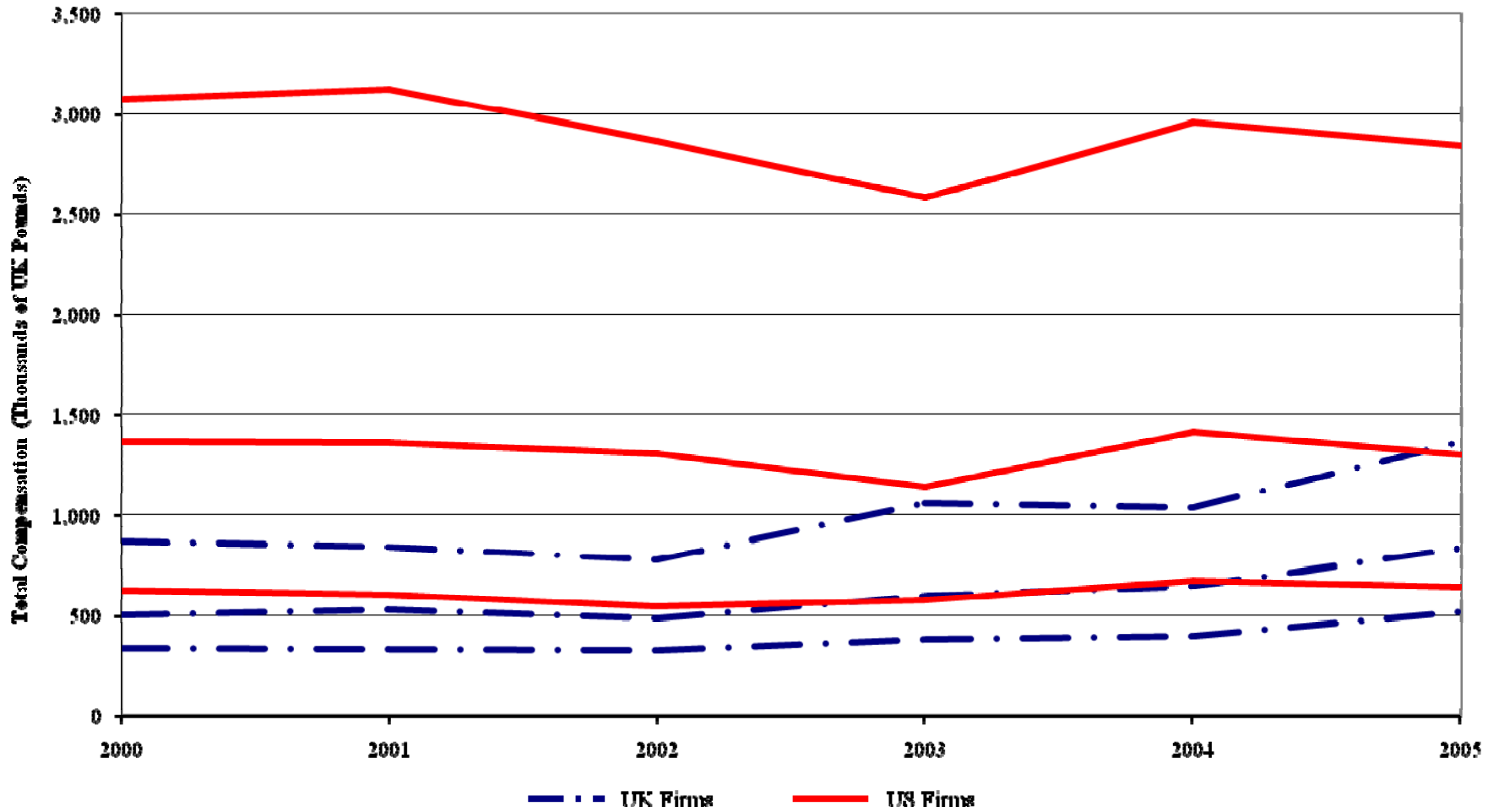


Figure 2
UK Pounds per US Dollar: Comparison of Purchasing Power Parity (PPP) and Nominal Exchange Rates



TABLE 1
CEO COMPENSATION IN UK AND US FIRMS, 2000 - 2005

Panel A: UK Firms

UK									
Year	N	CEO Cash Compensation				CEO Total Compensation			
		Q1	Median	Q3	Mean	Q1	Median	Q3	Mean
2000	372	203	299	447	383	271	434	794	707
2001	425	202	309	467	379	279	463	817	719
2002	506	215	332	513	419	279	459	796	765
2003	510	235	375	561	461	346	568	1,014	913
2004	461	254	399	618	506	364	603	1,069	1,021
2005	400	290	466	708	569	420	761	1,331	1,175
<i>All</i>	<i>2,674</i>	<i>227</i>	<i>355</i>	<i>550</i>	<i>453</i>	<i>316</i>	<i>529</i>	<i>962</i>	<i>883</i>

Panel B: US Firms

US									
Year	N	CEO Cash Compensation				CEO Total Compensation			
		Q1	Median	Q3	Mean	Q1	Median	Q3	Mean
2000	1,031	362	610	1,015	886	776	2,064	4,879	5,676
2001	1,193	355	559	903	772	818	1,983	4,784	4,165
2002	1,303	349	563	957	763	696	1,499	3,369	2,836
2003	1,336	343	553	937	763	734	1,626	3,482	3,127
2004	1,169	372	616	1,059	852	787	1,640	3,308	3,067
2005	1,100	414	711	1,225	1,019	891	1,997	4,015	3,638
<i>All</i>	<i>7,132</i>	<i>364</i>	<i>597</i>	<i>1,009</i>	<i>836</i>	<i>781</i>	<i>1,751</i>	<i>3,902</i>	<i>3,685</i>

All figures (except percentages) are reported in (nominal) UK Pounds (thousands). See Appendix 2 for variables' description.

TABLE 2
DESCRIPTIVE STATISTICS

Panel A: UK Firms

	UK								
	Pre (N= 1,303)				Post (N=1,371)				All (N= 2,674)
	Q1	Median	Q3	Mean	Q1	Median	Q3	Mean	Median
Cash Comp ('000 Pounds)	206	312	478	395	250	403	621	507	355
Total Comp ('000 Pounds)	276	453	796	733	365	625	1112	1026	529
Stock Returns	-33%	-4%	18%	-3%	6%	26%	49%	35%	12%
Positive Firm-Sp. Returns	9%	21%	39%	34%	9%	20%	43%	37%	20%
Negative Firm-Sp. Returns	-47%	-28%	-15%	-33%	-44%	-25%	-11%	-31%	-27%
Positive Sector Returns	8%	15%	24%	19%	16%	29%	60%	37%	23%
Negative Sector Returns	-19%	-12%	-7%	-14%	-4%	-4%	0%	-3%	-12%
ROA	3%	7%	11%	6%	4%	7%	12%	7%	7%
Positive ROA	5%	8%	12%	9%	5%	8%	12%	9%	8%
Negative ROA	-19%	-6%	-2%	-13%	-15%	-5%	-1%	-11%	-5%
Sales (Millions of Pounds)	67	204	649	1261	78	236	790	1540	223
Market to Book Ratio	1.0	1.6	2.9	2.6	1.4	2.2	3.5	3.1	1.9
Board Independence	43%	50%	60%	51%	50%	56%	63%	55%	50%
Inst. Ownership Conc.	18%	29%	44%	31%	20%	32%	46%	34%	31%
CEO Perc. Ownership	0.0%	0.2%	1.1%	2.9%	0.1%	0.4%	1.5%	2.5%	0.3%

All figures (except percentages) are reported in (nominal) UK Pounds. See Appendix 2 for variables' description.

TABLE 2 (CONTINUED)
DESCRIPTIVE STATISTICS

Panel B: US Firms

	US								
	Pre (N=3,527)				Post (N=3,605)				All (N=7,132)
	Q1	Median	Q3	Mean	Q1	Median	Q3	Mean	Median
Cash Comp ('000 Pounds)	349	571	947	795	368	614	1052	864	594
Total Comp ('000 Pounds)	749	1769	4213	4115	798	1725	3654	3263	1751
Stock Returns	-25%	1%	28%	9%	1%	22%	47%	32%	12%
Positive Firm-Sp. Returns	11%	25%	50%	43%	9%	22%	45%	41%	24%
Negative Firm-Sp. Returns	-45%	-26%	-13%	-31%	-45%	-25%	-12%	-31%	-25%
Positive Sector Returns	5%	15%	27%	20%	15%	27%	61%	37%	23%
Negative Sector Returns	-21%	-12%	-7%	-14%	-6%	-4%	-3%	-4%	-12%
ROA	4%	9%	13%	8%	5%	9%	14%	9%	9%
Positive ROA	6%	10%	14%	11%	6%	10%	14%	11%	10%
Negative ROA	-19%	-9%	-3%	-14%	-18%	-6%	-2%	-12%	-8%
Sales (Millions of Pounds)	231	673	1818	2744	242	679	1903	2674	677
Market to Book Ratio	1.4	2.2	3.8	3.3	1.8	2.6	3.9	3.4	2.4
Board Independence	71%	80%	88%	78%	75%	83%	89%	81%	83%
Inst. Ownership Conc.	13%	24%	34%	25%	17%	28%	40%	29%	26%
CEO Perc. Ownership	0.0%	0.2%	1.7%	2.3%	0.1%	0.8%	2.2%	2.6%	0.6%

All figures (except percentages) are reported in (nominal) UK Pounds. See Appendix 2 for variables' description.

TABLE 3
DETERMINANTS OF CEO COMPENSATION IN UK: PRE- VS. POST- PERIOD

	Dependent Variable: Ln(Cash Compensation)			Dependent Variable: Ln(Total Compensation)		
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference
Post Period			-0.067			-0.265
Trend	0.065 ^{***}	0.077 ^{***}	0.012	0.052 ^{**}	0.107 ^{***}	0.055 [*]
Positive Firm-Sp. Returns	0.016	0.029	0.013	0.192 ^{**}	0.053	-0.139 [*]
Negative Firm-Sp. Returns	0.152 ^{***}	0.197 ^{***}	0.045	0.127	0.425 ^{***}	0.298 ^{***}
Positive Sector Returns	-0.059	0.089 [*]	0.149	-0.067	0.270 ^{***}	0.337 ^{**}
Negative Sector Returns	-0.094	0.280	0.374	0.253	0.971	0.719
Positive ROA	1.069 ^{***}	1.359 ^{***}	0.290	0.598	0.884 ^{***}	0.287
Negative ROA	-0.379	0.615 [*]	0.994 ^{**}	0.071	0.988 ^{**}	0.917 ^{**}
Ln(Sales)	0.118 ^{***}	0.084 ^{***}	-0.033 ^{***}	0.135 ^{***}	0.123 ^{***}	-0.013
Market to Book	-0.003	0.001	0.004	0.000	0.006	0.006
Board Independence	0.097	0.446 ^{***}	0.349 ^{**}	0.577 ^{***}	0.744 ^{***}	0.167
Inst. Ownership Conc.	-0.002	-0.001	0.000	-0.003 ^{**}	-0.002	0.001
CEO Perc. Ownership	0.090	0.021	-0.069	0.009	-0.163	-0.172

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 4
DETERMINANTS OF CEO CASH COMPENSATION IN UK:
PRE- VS POST- PERIOD, PARTITIONED BY VOTING DISSENT

	Firms With Low Voting Dissent			Firms With High Voting Dissent			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			-0.105			0.010	0.115
Trend	0.056**	0.050**	-0.005	0.041	0.090***	0.049	0.054
Positive Firm-Sp. Returns	0.031	-0.001	-0.032	0.047	0.219	0.172	0.204
Negative Firm-Sp. Returns	0.177**	0.283**	0.107	0.227*	0.038	-0.189	-0.296
Sector Returns	-0.067	0.105	0.171	-0.082	-0.013	0.068	-0.103
Positive ROA	0.972**	1.639***	0.668	0.455	0.276	-0.179	-0.847
Negative ROA	-0.141	0.058	0.199	-2.161	4.755***	6.916***	6.717***
Ln(Sales)	0.064	0.039	-0.025	0.072	0.066	-0.005	0.020
Market to Book	0.000	0.000	0.000	0.000	0.007	0.007	0.007
Board Independence	0.216	0.734***	0.518**	-0.051	-0.168	-0.117	-0.636
Inst. Ownership Conc.	-0.001	-0.001	0.000	0.001	0.000	-0.001	0.000
CEO Perc. Ownership	0.198	-0.066	-0.265	-0.150	-0.284	-0.134	0.130

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 5
DETERMINANTS OF CEO CASH COMPENSATION IN UK:
PRE- VS POST- PERIOD, PARTITIONED BY EXCESSIVE COMPENSATION

	Firms With No Excessive Compensation			Firms With Excessive Compensation			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			-0.082			-0.143	-0.062
Trend	0.087***	0.088***	0.001	-0.028	0.045	0.073	0.072
Positive Firm-Sp. Returns	0.029	0.032	0.003	-0.023	-0.006	0.017	0.014
Negative Firm-Sp. Returns	0.125**	0.239***	0.113	0.173	0.039	-0.134	-0.247
Positive Sector Returns	-0.019	0.136**	0.155	-0.335	-0.05	0.284	0.129
Negative Sector Returns	0.06	0.273	0.213	-0.523	-0.436	0.087	-0.126
Positive ROA	0.949***	1.444***	0.495	1.420***	1.149*	-0.27	-0.765
Negative ROA	-0.092	0.327	0.419	-1.118*	1.033	2.151***	1.731**
Ln(Sales)	0.112***	0.085***	-0.027**	0.151*	0.076	-0.075**	-0.047
Market to Book	-0.003	-0.002	0.001	-0.005	0.009	0.014	0.013
Board Independence	0.174	0.502***	0.328**	-0.242	0.464	0.706	0.378
Inst. Ownership Conc.	-0.001	-0.001	0.000	-0.004	-0.003	0.001	0.000
CEO Perc. Ownership	0.08	-0.009	-0.089	0.123	0.164	0.041	0.130

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 6
DETERMINANTS OF CEO CASH COMPENSATION IN UK:
PRE- VS POST- PERIOD, NON-AIM FIRMS VS. AIM FIRMS

	Firms on AIM			Firms NOT on AIM			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			0.370			-0.067	-0.437
Trend	0.175 ^{***}	0.093	-0.082	0.065 ^{***}	0.077 ^{***}	0.012	0.094
Positive Firm-Sp. Returns	0.072	0.056	-0.016	0.016	0.029	0.013	0.029
Negative Firm-Sp. Returns	-0.088	0.094	0.182	0.152 ^{***}	0.197 ^{***}	0.045	-0.137
Positive Sector Returns	0.834	0.235	-0.599	-0.059	0.089 [*]	0.149	0.747
Negative Sector Returns	-0.518	-1.142	-0.625	-0.094	0.280	0.374	0.999
Positive ROA	2.350 ^{**}	2.390 ^{**}	0.040	1.069 ^{***}	1.359 ^{***}	0.290	0.250
Negative ROA	-0.662	-0.574	0.088	-0.379	0.615 [*]	0.994 ^{**}	0.906
Ln(Sales)	0.132 ^{**}	0.134 ^{**}	0.002	0.118 ^{***}	0.084 ^{***}	-0.033 ^{**}	-0.035
Market to Book	-0.020	-0.007	0.013	-0.003	0.001	0.004	-0.009
Board Independence	-0.180	-1.024	-0.844 [*]	0.097	0.446 ^{***}	0.349 ^{**}	1.193 ^{**}
Inst. Ownership Conc.	0.003	0.007	0.004	-0.002	-0.001	0.000	-0.003
CEO Perc. Ownership	-0.368	-0.433	-0.066	0.090	0.021	-0.069	-0.003

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 7

DETERMINANTS OF CEO CASH COMPENSATION: PRE- VS POST- PERIOD, UK FIRMS VS. US FIRMS

Panel A: Dependent Variable is Ln(Cash Compensation)

	US Firms			UK Firms			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			-0.563 ^{***}			-0.067	0.496 ^{***}
Trend	0.023 [*]	0.095 ^{***}	0.072 ^{***}	0.065 ^{***}	0.077 ^{***}	0.012	-0.061 [*]
Positive Firm-Sp. Returns	0.027 [*]	-0.022	-0.049 [*]	0.016	0.029	0.013	0.062
Negative Firm-Sp. Returns	0.261 ^{***}	0.346 ^{***}	0.085	0.152 ^{***}	0.197 ^{***}	0.045	-0.04
Positive Sector Returns	-0.005	0.161 ^{***}	0.166 ^{**}	-0.059	0.089 [*]	0.149	-0.017
Negative Sector Returns	0.206 [*]	-0.041	-0.248	-0.094	0.28	0.374	0.622
Positive ROA	2.424 ^{***}	2.759 ^{***}	0.335	1.069 ^{***}	1.359 ^{***}	0.290	-0.045
Negative ROA	0.292	0.445	0.153	-0.379	0.615 [*]	0.994 ^{***}	0.841 [*]
Ln(Sales)	0.149 ^{***}	0.163 ^{***}	0.014	0.118 ^{***}	0.084 ^{***}	-0.033 ^{***}	-0.047 ^{***}
Market to Book	0.002	0.000	-0.002	-0.003	0.001	0.004	0.006
Board Independence	0.234	0.351 [*]	0.117	0.097	0.446 ^{***}	0.349 ^{**}	0.233
Inst. Ownership Conc.	-0.002 ^{**}	-0.003 ^{***}	-0.001	-0.002	-0.001	0.000	0.002
CEO Perc. Ownership	0.182	0.49 [*]	0.309 [*]	0.09	0.021	-0.069	-0.378

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 7 (CONTINUED)
DETERMINANTS OF CEO CASH COMPENSATION: PRE- VS POST- PERIOD, UK FIRMS VS. US FIRMS

Panel B: Dependent Variable is Ln(Cash Compensation) - Data Adjusted For Purchasing Power Parity

	US Firms			UK Firms			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			-0.188			-0.067	0.121
Trend	0.050 ^{***}	0.072 ^{***}	0.022	0.065 ^{***}	0.077 ^{***}	0.012	-0.011
Positive Firm-Sp. Returns	0.022	-0.023	-0.045 [*]	0.016	0.029	0.013	0.058
Negative Firm-Sp. Returns	0.255 ^{***}	0.348 ^{***}	0.092	0.152 ^{***}	0.197 ^{***}	0.045	-0.047
Positive Sector Returns	-0.013	0.118 ^{***}	0.132 [*]	-0.059	0.089 [*]	0.149	0.017
Negative Sector Returns	0.027	-0.030	-0.057	-0.094	0.28	0.374	0.431
Positive ROA	2.541 ^{***}	2.831 ^{***}	0.290	1.069 ^{***}	1.359 ^{***}	0.290	0.000
Negative ROA	0.355	0.482	0.127	-0.379	0.615 [*]	0.994 ^{***}	0.867 [*]
Ln(Sales)	0.132 ^{***}	0.145 ^{***}	0.013	0.118 ^{***}	0.084 ^{***}	-0.033 ^{***}	-0.046 ^{***}
Market to Book	0.002	0.00	-0.001	-0.003	0.001	0.004	0.005
Board Independence	0.241	0.363 [*]	0.122	0.097	0.446 ^{***}	0.349 ^{**}	0.227
Inst. Ownership Conc.	-0.002 ^{**}	-0.003 ^{***}	-0.001	-0.002	-0.001	0.000	0.002
CEO Perc. Ownership	0.082	0.445 [*]	0.364 ^{**}	0.09	0.021	-0.069	-0.433 [*]

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.

TABLE 7 (CONTINUED)
DETERMINANTS OF CEO CASH COMPENSATION: PRE- VS POST- PERIOD, UK FIRMS VS. US FIRMS

Panel C: Dependent Variable is Purchasing-Power Parity-Adjusted Ln(Cash Compensation)
 US firms targeted by compensation-related shareholder activism are excluded.

	US Firms			UK Firms			[G] = [F] - [C]
	[A]	[B]	[C] = [B] - [A]	[D]	[E]	[F] = [E] - [D]	
	Pre Period	Post Period	Difference	Pre Period	Post Period	Difference	
Post Period			-0.109			-0.067	0.042
Trend	0.060 ^{***}	0.072 ^{***}	0.013	0.065 ^{***}	0.077 ^{***}	0.012	-0.001
Positive Firm-Sp. Returns	0.019	-0.022	-0.041	0.016	0.029	0.013	0.054
Negative Firm-Sp. Returns	0.191 ^{***}	0.364 ^{***}	0.173 ^{***}	0.152 ^{***}	0.197 ^{***}	0.045	-0.128
Positive Sector Returns	0.027	0.132 ^{***}	0.105	-0.059	0.089 [*]	0.149	0.043
Negative Sector Returns	0.023	-1.174	-1.197	-0.094	0.280	0.374	1.572
Positive ROA	2.497 ^{***}	2.733 ^{***}	0.236	1.069 ^{***}	1.359 ^{***}	0.290	0.054
Negative ROA	0.275	0.312	0.037	-0.379	0.615 [*]	0.994 ^{***}	0.957 ^{**}
Ln(Sales)	0.119 ^{***}	0.133 ^{***}	0.015	0.118 ^{***}	0.084 ^{***}	-0.033 ^{***}	-0.048 ^{***}
Market to Book	0.003	-0.001	-0.004	-0.003	0.001	0.004	0.008
Board Independence	0.174	0.245	0.072	0.097	0.446 ^{***}	0.349 ^{**}	0.277
Inst. Ownership Conc.	-0.002	-0.003 ^{***}	-0.001	-0.002	-0.001	0.000	0.002
CEO Perc. Ownership	0.253	0.612 ^{***}	0.358 ^{**}	0.090	0.021	-0.069	-0.427 [*]

*** (**, *) denotes significance at the 0.01 (0.05, 0.10) level. We estimate and report heteroskedasticity-adjusted standard errors clustered by firm to account for the fact that we have multiple observations for certain firms in our sample. See Appendix 2 for variables' description.