Corporate Governance Disclosure Index–Executive Pay Nexus: The Moderating Effect of Governance Mechanisms

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This paper first employs principal component analysis technique to develop and introduce an alternative UK corporate governance disclosure index to the US-centric ones. Second, we then investigate whether this new corporate governance disclosure index can determine the level of executive pay (including CEOs, CFOs, and all executive directors) in UK listed firms, and consequently ascertain whether the governance mechanisms can moderate the pay-for-performance sensitivity. Employing data on corporate governance, executive pay and performance from 2008 to 2013, we find that, on average, better-governed firms, tend to pay their executives lower compared with their poorly-governed counterparts. Additionally, our findings suggest that the pay-for-performance sensitivity is generally positive, but improves in firms with high corporate governance quality, implying that the pay-for-performance sensitivity is contingent on the quality of internal governance structures. We interpret our findings within the predictions of optimal contracting theory and managerial power hypothesis.

Keywords: corporate governance disclosure index; corporate performance; executive pay; endogeneity; principal component analysis, UK combined code.

Introduction

The agency theoretic literature has suggested several monitoring (e.g., good corporate governance practices) and incentive alignment (e.g., executive pay packages) mechanisms that can be employed to mitigate agency conflicts in modern corporations (Beatty and Zajac 1994; Fama, 1980; Fama and Jensen 1983; Jensen and Meckling, 1976). Noticeably, studies examining the extent to which executive pay packages can be used to mitigate agency problems in public corporations are underpinned by two main theoretical perspectives with deep roots in rational agency theory: (i) *managerial power hypothesis*; and (ii) *optimal contracting theory* (Bebchuk et al., 2002; Jensen and Murphy, 1990; Mallin et al., 2015; van Essen et al., 2015). Briefly, the managerial power hypothesis assumes that in firms with weak corporate governance structures, opportunistic and powerful corporate executives directly determine their own pay packages by controlling the executive pay setting process (Bebchuk et al., 2002), and thus the managerial power hypothesis does not expect executive pay to be necessarily related to corporate performance. Managerial power hypothesis can, therefore, be more applicable under a poor corporate governance regime. By contrast, the optimal contracting theory suggests that executive pay results from arms-length negotiations between independent corporate boards and managers, leading to executive pay packages that are able to optimise managerial performance (Conyon, 2014; Edmans and Gabaix, 2009), and therefore the optimal contracting theory expects a strong pay-for-performance sensitivity (PPS). Hence, the optimal contracting theory can be expected to operate better under a good corporate governance condition.

Due to varied reasons underlying executive pay, Amzaleg et al. (2014), Core et al. (1999, 2003), Murphy (1999), Newton (2015), and Sapp (2008), amongst others, have strived to investigate its determinants. However, the existing literature suffers from a number of observable limitations. First, despite the importance of good corporate governance practices and the considerable amount of corporate governance reforms that have been pursued worldwide (Aguilera and Cuervo-Cazurra, 2004), existing literature, such as Amzaleg et al. (2014), Conyon and Murphy (2000), and Ozkan (2011), has almost focused exclusively on how or whether executive pay can be influenced by corporate performance/PPS, but performance is arguably only one possible determinant of executive pay. In contrast, few studies, such as those conducted by Adams and Ferreira (2009), Conyon (1997), Dong and Ozkan (2008) and Ozkan (2011), have examined whether and how firm-level corporate governance structures may influence executive pay, and thereby limiting current understanding of the effect of good corporate governance practices on executive pay.

Second, from a theoretical and practitioner point of view, corporate governance is important in corporate decision-making and thus, should and is expected to influence corporate outcomes (Foss and Stea, 2014; Larcker et al., 2007). Indeed, this expectation is reflected in the large volume of studies that have investigated the effect of different corporate governance mechanisms on different managerial behaviour and corporate outcomes (e.g., Donadelli et al., 2014; Gompers et al., 2003; Granado-Peiró and López-Gracia, 2017; Morck et al., 1988; Murphy, 1999; Serra et al., 2016; Yermack, 1996). However and as corporate governance is a complex 'concept' to operationalise, existing studies have either mostly employed single corporate governance mechanisms, such as board size and ownership structure (e.g., Morck et al., 1988; Yermack, 1996) or some form of arbitrarily constructed composite governance disclosure indices (e.g., Bebchuk et al., 2009; Gompers et al., 2003; Karpoff et al., 2016). Observably, and despite a general consensus on its importance, the findings of a vast majority of existing governance studies are mixed, and thereby raising major questions as to whether these governance 'constructs' that are often employed are actually 'valid' proxies (single governance structures or governance disclosure indices) for the complex concept ('governance') that they seek to measure ('construct validity') (Black et al., 2016). On the one hand, Larcker et al. (2007, p.964) argue that the potential measurement error that may be introduced from employing the use of single governance mechanisms (e.g., board size), "w*ill almost certainly cause the regression coefficients to be inconsistent*".

On the other hand, other researchers have sought to address the measurement error issue by constructing governance indices that contain multiple provisions. There are, however, three major problems associated with such indices. First, and because there is no theoretical basis for selecting governance provisions, such indices are often naively constructed (Brown and Caylor, 2006), and thereby equally resulting in similar measurement errors (Black et al., 2016; Larcker et al., 2007). Second, it is not only practically impossible to include all relevant governance provisions, but also likely that not all the included provisions will be relevant, and therefore measurement problems, such as omitted variables bias are likely to persist in such governance indices (Black et al., 2016; Karpoff et al., 2016; Larcker et al., 2007).[1] Consequently, a small, but gradually increasing number of researchers have recently employed

[1]For example, Gompers et al. (2003) constructed an influential equally weighted governance disclosure index ('G-index) that contained 24 US shareholder rights provisions and showed that firms with poor governance had lower operating profits, market valuation and stock returns compared with their better-governed counterparts. However, successive researchers, such as Cremers and Nair (2005), Bebchuk et al. (2009) and Karpoff et al. (2016) have demonstrated that only six (entrenchment-index, E-index), eighteen (other-index, O-index), and twelve (deterrent-index, D-index) of the 24 governance items, respectively, are relevant and often not just contradicting the findings of Gompers et al. (2003), but also among themselves. In addition, these indices are generally for US firms with no alternative (there are few commercial agencies, such as Governance Metric International, Institute of Shareholder Service, Credit Lyonnais Securities, and Standard & Poors, that construct commercial indices for sale, but they are often copyrighted and not freely available) indices for other countries, such as the UK.

statistical approaches in developing more reliable governance indices (e.g., Black et al., 2016 Karpoff et al.,2016;Larcker et al., 2007). Larcker et al. (2007), for example, employ principal component analysis to develop an alternative disclosure index containing 14 key components out of 39 governance provisions for US firms, and they demonstrate that it is more reliable and better specified compared with previous ones, such as the G-disclosure index. We thus employ the principal component analysis approach to develop an alternative corporate governance disclosure index for UK firms.

Third and despite increasing anecdotal evidence suggesting that other corporate executives below the CEOs, such as CFOs pay packages are getting equally significant in magnitude, existing studies have mainly investigated the antecedents of CEO pay (e.g., Adams and Ferreira, 2009; Fahlenbrach, 2009; Core et al., 1999; Dong and Ozkan, 2008; Gregory-Smith, 2012; Guest, 2009; Jouber and Fakhfakh, 2012), and thereby relatively little is known about the impact of firm-level corporate governance on the pay packages of other executives, such as CFOs and all other executive directors.

Fourth, the existing studies that have investigated the executive pay-performance nexus generally suggest that the relationship is positive, but weak (e.g., Jensen and Murphy, 1990; Main et al., 1996). However, a major limitation of these studies is that they only control for a small number of corporate governance variables that may affect the PPS. In response to this limitation, the more recent and subsequent studies have controlled for a large number of corporate governance mechanisms (i.e., including board and ownership structure), when examining the link between executive pay and corporate performance (e.g., Conyon, 1997; Core et al., 1999; Dong and Ozkan, 2008; Gregory-Smith, 2012; Guest, 2009; Hartzell and Starks, 2003; Jouber and Fakhfakh, 2012; Ozkan, 2011). However, and despite controlling for a large set of corporate governance variables, these studies report similar positive and weak PPS. An observable limitation of these studies is that they do not sufficiently consider possible endogeneity concerns that may result from simultaneously employing both the incentive alignment (executive pay) and monitoring mechanisms (corporate governance) by firms to reduce agency conflicts (Ntim et al., 2015a, b). Arguably, this may explain the observably weak PPS reported by past studies and may also limit current understanding of the extent to which firm-level corporate governance quality can moderate the link between executive pay and firm performance. Finally, and despite the theoretical and empirical suggestions that most corporate decisions, including executive pay is mainly a function of top management team and ownership structure (Ntim et al., 2015a, b), there is a clear dearth of studies examining how board structure, CEO power and ownership structure variables may affect executive pay.

Arguably, this also limits our understanding of the extent to which board structure, CEO power and ownership mechanisms can impact executive pay.

Given these noticeable weaknesses of the extant literature, we seek to investigate the impact of firm-level corporate governance on executive pay and the PPS among UK listed firms. There are number of reasons, which motivated us to focus on the UK corporate setting. First, since 1992, the UK has been at the forefront of pursuing arguably the most influential global corporate governance reforms (Greenbury Report, 1995; Hampel Report, 1998; DRR, 2002; Higgs and Smith Reports, 2003; FRC, 2010a, b, 2012a, b). For example, most countries around the world have adopted the recommendations of the 1992 Cadbury Report, and intergovernmental organisations, such as World Bank, have also issued guidelines and principles, which reflect the content of the UK corporate governance codes. Thus, the findings[2] of our study may not only be relevant to the UK, but also to other countries, which are currently pursuing corporate governance reforms around the world. Second, the UK has strong shareholder activism with a good track record of implementing and enforcing corporate regulations. Third, the markets for products, services, capital, managerial and corporate control are fairly active, and thereby serving as an effective external corporate governance mechanism that can restrain executive abuse. Arguably, these contextual characteristics make the UK an ideal corporate environment to examine the impact of corporate governance practices on executive pay and the PPS.

This study, therefore, seeks to extend, as well as make a number of new contributions to the growing body of literature on the antecedents of executive pay. First, it contributes to the literature by employing a principal component analysis technique to develop and introduce a new alternative governance disclosure index containing 31 key components out of 120 comprehensive governance provisions from the UK Combined Code for UK firms and researchers. Second, it contributes to the extant literature by examining the impact of a broad corporate governance disclosure index on executive pay. Third, we contribute to the existing literature by providing evidence on the extent to which board structure (i.e., board size and diversity), CEO power (i.e., CEO tenure, CEO duality and CEO pay slice), and ownership structure (i.e., managerial, institutional and block ownership) can explain differences in executive pay.

[2]We note that although the recommendations of the 1992 Cadbury Report have been adopted worldwide, the UK has different economic system and characteristics compared to not only developing countries that adopted the code, but also to other developed countries. For example, the markets for products, services and corporate control are more active in the US than UK, and this due to the fact that competition in the UK is tightly controlled by the Competition and Markets Authority. Further, shareholder activisim is stronger in US. In contrast, stakeholder activisim (i.e., general public outrage and activism) is much stronger in the UK. Additionaly, firms in civil law countries (e.g., Germany, France) are characteristised by weak protection of minority shareholders compared with firms in common law countries (e.g., UK and Ireland). Therefore, our results should be interpreted with great caution because there are apparent differences even among developed countries.

Fourth, this study contributes to the literature by providing new evidence on how corporate governance can impact on the annual cash (i.e., bonus, salary, and other cash payments) and equity-based (i.e., performance share plan and any other long-term incentive plans) pay of CEOs, CFOs and all other executive directors. Finally, given that directors' incentives and corporate governance mechanisms may act either as complements and/or substitutes, it distinctively seeks to contribute to the existing literature by investigating whether corporate governance can moderate the PPS. We employ traditional ordinary least squares regressions in addition to lagged-effects, fixed-effects, GMM and Heckman selection bias regression techniques in testing the robustnesses of our contributions.

The rest of the paper is organised as follows. Section 2 briefly discusses corporate governance and executive pay policy reforms that have been pursued in the UK. Section 3 reviews related literature and develops hypotheses. The research design is described in section 4, while empirical findings are discussed in section 5. Section 6 concludes the paper.

Corporate governance, executive pay and the UK corporate context

The need to improve corporate governance practices in the UK increased since the late 1980s, and particularly after the occurrence of a series of major corporate failures, such as the collapse of Britain's Barings Bank (Aguilera and Cuervo-Cazurra, 2004). This period was discernibly characterised by poor transparency, accountability, performance and excessive executive pay (Conyon and Mallin, 1997; Pass, 2006; Pye, 2000). Consequently, and since the early 1990s, several legislations and reports have been introduced aimed at promoting high standards of corporate governance by enhancing accountability and transparency among UK listed firms. For example, the Cadbury Committee was established in 1991 and issued its final report in 1992. The report included recommendations relating to board structures, financial reporting, auditing and internal controls. With specific regard to executive pay, the Cadbury Report required every listed firm to establish a remuneration committee with a majority of its members being unaffiliated directors, including the chairman of the committee. The report also recommends UK listed firms to disclose more information relating to the total payments made to the chairperson/highest-paid director. However, a key limitation of the Cadbury Report is that it focused mainly on the financial aspects of corporate governance and neglected other equally important aspects of governance, including the disclosure of detailed pay packages of each director (Conyon and Sadler, 2010; Dong and Ozkan, 2008).

To overcome the limitations of the Cadbury Report, as well as to reduce the widespread public concerns about excessive executive pay in UK listed firms, the Greenbury Report was issued in 1995. The report aimed at addressing issues relating to executive pay in UK listed firms with specific focus on

enhancing the link between executive pay and performance through increased disclosures relating to executive pay. Also, the Greenbury Report recommended that every listed UK firm need to establish a remuneration committee, comprising exclusively of independent outside directors with its chairperson also being an independent non-executive director. The remuneration committee should also have terms of reference specifying its function, including determining the pay package for each director. Additionally, and unlike the Cadbury Report, the Greenbury Report suggested that the pay of senior executives should be set by the board as a whole and senior executives should not play any part in deciding their own remuneration. Similarly, the report suggested that the remuneration committee may invite CEOs to attend its meetings, and CEOs may help remuneration committees in setting the pay of other executive directors, but should not play any part in decisions concerning their own remuneration.

Another crucial improvement on the Cadbury Report is that the Greenbury Report required UK listed firms to disclose additional information on the pay packages of each executive director (e.g., fees, bonuses, salaries, benefits in-kind, long-term incentive plans and any other benefit) in the annual report. The report also recommended that firms should disclose their core philosophy and rational underlying their executive pay packages. Further, the Greenbury Report suggested that shareholders, particularly institutional ones, should play an active role in determining executive pay. Additionally, the Greenbury Report emphasised the crucial role of institutional shareholders in determining executive pay by mandating the so-called ('say-on-pay') votes, as well as by requiring that the chairman of the remuneration committee should be available for consultations with major shareholders and strive to answer any of their questions/concerns.

The corporate governance recommendations contained in Cadbury and Greenbury Reports were then consolidated in the Hampel Report (1998), permitting its committee to issue the first UK Combined Code in 1998. Additionally, and in order to increase disclosure and transparency about EP, the "Directors' Remuneration Report" (DRR) regulations were published in 2002, as amendment to the 1985 Companies Act, and were subsequently incorporated into the 2006 Companies Act. The DRR required listed firms to make significant disclosures, including disclosing information about remuneration consultants, executive service contracts and remuneration policy (Conyon et al., 2009; DRR, 2002). Additionally, and similar to the Greenbury Report's recommendations, the DRR also encouraged greater activism among shareholders by mandating the vote on executives' pay ("say-on-pay"). The requirement of shareholders to be more active in determining executive pay has also been emphasised in the 2006 Companies Act (section 439),

Combined Codes (1998, 2003, 2006, 2008, 2010, 2012, 2014 and 2016) and the stewardship codes (2010, 2012) with specific focus on institutional shareholders.

In addition to the above recommendations, corporate governance provisions relating to the executive pay section in the Combined Codes (2003, 2006, 2008, 2010, 2012, 2014 and 2016) indicate that executives should be paid sufficiently in order to attract, retain and encourage them to perform their roles to the best of their abilities. These codes also recommend that the pay package of executives should consist of a fair mix of both cash and equity-based pay. Furthermore, these codes suggest that high proportions of executive pay should be linked to performance. It should be acknowledged that, although complying with the executive pay reforms contained in all of the above mentioned reports and codes is voluntary, they have been added to the London Stock Exchange's (LSE) listing rules, and thereby making it difficult to be ignored by UK listed firms (LR. 9.8.6R, 5–6).

Apart from pursing the recent corporate governance reforms, which have aimed at promoting high corporate governance standards among UK listed firms, ownership is relatively highly dispersed, where institutional shareholders play a crucial role in overseeing and preventing management from expropriating shareholder wealth (Mallin et al., 2015). The combination of dispersed ownership structure with strong shareholder activism and good record of adopting and imposing corporate regulations (Filatotchev and Dotsenko, 2015; Melis et al., 2015) has helped in strengthening the markets for capital, product, services, managerial and corporate control in the UK. Consequently, this may help in reducing a number of agency problems, including excessive executive pay (Mallin et al., 2015; Newton, 2015). We, therefore, seek to examine whether corporate governance matters in determining executive pay in UK listed firms and consequently, ascertain whether corporate governance moderates the *PPS*.

Literature review and hypotheses development

A broad corporate governance disclosure index and executive pay

Prior literature on executive pay has mainly used two perspectives of agency theory: (i) managerial power hypothesis; and (ii) optimal contracting theory (Bebchuk et al., 2002; Edmans and Gabaix, 2009; Jensen and Murphy, 1990). Optimal contracting theory suggests that in firms with good corporate governance mechanisms, executive pay packages can be designed in a way that helps to align management and shareholders' interests (Jensen and Meckling, 1976). In this case, optimal contracting theory is more applicable when governance structures are effective. On the other hand, managerial power hypothesis suggests that in firms with poor corporate governance structures, opportunistic executives can

expropriate corporate resources by having the power to set their own pay (Choe et al., 2014; Shleifer and Vishny, 1997). Hence, managerial power hypothesis works better under a poor governance regime.

Existing empirical literature examining the effect of corporate governance disclosure indices on executive pay are rare and therefore, offers opportunities to make original contribution to the literature. However, prior research suggests that corporate governance disclosure indices impact positively on performance/market value (e.g., Beekes and Brown, 2006; Beiner et al., 2006; Gompers et al., 2003; Ntim et al., 2012). Therefore, and to the extent that better-governed firms generate higher performance than their poorly-governed counterparts, we will expect firms with high good corporate governance disclosure index scores to be better placed to constrain excessive executive pay. Indeed, Jouber and Fakhfakh (2012) and Newton (2015) offer rare recent evidence in support of our proposition. Fahlenbrach (2009), for example, examined the effect of the Gompers et al. (2003)'s corporate governance disclosure index on executive pay for a sample of 11,029 US CEOs. His results suggest that well-governed companies: (i) have stronger PPS compared with poorly-governed companies; and (ii) pay their CEOs relatively less. This result implies that good corporate governance practices influence not just the levels of executive pay, but also the structure of their pay. Jouber and Fakhfakh (2012) and Newton (2015) have reported largely similar findings for UK and US listed companies, respectively. Thus, and in line with the objectives of the considerable corporate governance reforms (e.g., 1992 Cadbury Report and 2010 Combined Code) that have been pursued in the UK over the past 30 years, we expect that in firms with strong corporate governance structures, executives will have less influence over their own remuneration and, hence the first hypothesis to be tested is that:

> ***Hypothesis 1.*** *There is a negative association between firm-level corporate governance disclosure index score and executive pay.*

Board structure and executive pay

Corporate boards are argued to play crucial roles in terms of monitoring, controlling and setting pay for managers that ensures that they act in the best interest of shareholders (Jensen, 1993; Ozkan, 2007). However, the ability of a corporate board to conduct its duties effectively can be influenced by the way it is structured (e.g., diversity and size) (Ntim et al., 2015a. b; Ntim et al., 2017). Thus, and in our study, we examine the effect of these two board structures (board size and diversity) on executive pay. Theoretically, and in terms of board size, it is argued that poor governance is often associated with larger boards, since larger boards tend to be associated with more communication and coordination problems that can impair their effectiveness (Bebchuk et al., 2002; Yermack, 1996). The weak monitoring can lead to managers rewarding themselves with overly generous pay packages (Ntim et al., 2015a, b; Ozkan, 2007). In

contrast, it is argued that larger boards are more effective in monitoring and controlling the opportunistic behaviours of management. This is because larger boards are often associated with more expertise and experience, which can restrain the influence that managers may have over board decisions, and thereby allowing the board to design pay packages that may be more closely aligned with executive performance (Edmans and Gabaix, 2009; Jensen and Murphy, 1990).

With reference to board diversity, in this study, we focus mainly on examining the impact of both gender and ethnic diversity aspects of a corporate board on executive pay. This is due to two main reasons: (i) these two aspects can be observed and measured easily (Adams and Ferreira, 2009), and (ii) these two aspects have been widely investigated (Adams and Ferreira, 2009; Gregory-Smith et al., 2014). Theoretically, board diversity can increase managers' power and influence over board decisions, including those relating to the level and structure of executive pay, by appointing few women and ethnic minorities mainly for symbolic reasons (Gyapong et al., 2016). By contrast, it is suggested that board diversity can play a crucial role in improving board effectiveness, including preventing management from expropriating shareholders' wealth by increasing managerial monitoring and also by brining diverse perspectives, knowledge, experience and ideas to the board (Adam and Ferreira, 2009; Carter et al., 2003).

The empirical evidence relating to the effect of board structures on executive pay are generally limited and therefore, this offers a fertile area for further research. For example, Guest (2009), Main (1991) and Ozkan (2007) report that firms with larger boards in the UK pay their CEOs higher than their counterparts with smaller boards. In terms of board diversity, the empirical evidence of prior studies suggests that board gender and ethnic diversity can enhance board independence and effectiveness by increasing monitoring on the opportunistic behaviours of management. For example, Adams and Ferreira (2009) and Gregory-Smith et al (2014) find a negative association between board gender diversity and CEO pay for US and UK firms, respectively. Therefore, our second hypothesis to be tested is that:

Hypothesis 2. *There is an association between board structure and executive pay.*

CEO power and executive pay

CEO power is considered to be an important element that can influence board effectiveness (Bebchuk et al., 2011; Tian and Yang, 2014). Managerial power hypothesis suggests that firms with powerful CEOs, represented by high CEOs pay slice, long-tenure and role duality, tend to pay their executives more than necessary compared with firms with less powerful CEOs (Conyon and He, 2012). Specficially, and from managerial power hypothesis, CEO tenure is considered harmful, and this can be explained by the view that long-tenured CEOs tend to develop strong relationships with other board

members (Bebchuk et al., 2009; Ozkan, 2011), which can increase their power and influence over board strategic decision (i.e., pay setting process). Similarly, optimal contracting theory suggests that long-tenured CEOs usually tend to have greater external networks, skills and experience, which firms need to be successful, and this consequently may lead to awarding high pay packages to long-tenured CEOs in order to maintain them (Ntim et al., 2017).

With respect to CEO duality, managerial power hypothesis indicates that combining CEO and chairperson roles can diminish board independence and effectiveness by granting more power to CEOs, and that can increase CEOs influence over strategic decisions, including those relating to executive pay (Jensen, 1993; Conyon and He, 2011). Similarly, optimal contracting theory suggests that separating CEO and chairperson roles can reduce CEO power by increasing monitoring over the opportunistic behaviours of management (Conyon, 1997; Core et al., 1999), which can have positive impact on the pay setting process. Further, and in terms of CEO pay slice, managerial power and optimal contracting theories suggest that the concentration of power in CEOs can reduce the monitoring role of the board on executives, which can offer opportunities for CEOs to award themselves with overly generous pay packages (Bebchuk et al., 2011; Tian and Yang, 2014). As poor governance is associated with the concentration of power in CEOs, it can be expected that powerful CEOs are more likely to receive larger slice of the total pay awarded to executives than less powerful CEOs.

The empirical evidence is largely consistent with the prediction that CEO power can reduce board independence and effectiveness, which may allow CEOs to reward themselves with overly generous pay packages (e.g., Bebchuk et al., 2011; Conyon and Sadler, 2010; Conyon et al., 2009; Tian and Yang, 2014). For example, using 390 UK listed firms from 1999 to 2005, Ozkan (2011) reports that long-tenured CEOs tend to receive higher pay than short-tenured CEOs. Renneboog and Zhao (2011), Conyon and He (2012) and Ntim et al. (2015a), for instance, have reported similar findings for samples of British, Chinese, and South African listed firms, respectively. With respect to CEO duality, Brick et al. (2006) report a higher CEO pay for firms, which combined CEO and chairperson positions than those, which separated these two positions. Similarly, Core et al. (1999) reported similar findings for sample of US firms. However, Conyon (1997) and Renneboog and Zhao (2011) report no association between CEO duality and CEO pay for a sample of UK listed firms. With reference to CEO pay slice, studies examining its influence on executive pay are rare, and thus this study constitutes a timely contribution to the extant literature. Tian and Yang (2014) find a positive and significant association between CEO play slice and CEO pay for a sample of 179 US financial institutions. Hence, our third hypothesis to be tested is:

Hypothesis 3. *There is an association between CEO power and executive pay.*

Ownership structure and executive pay

Managerial power hypothesis suggests that firms with concentrated ownership structure may suffer from agency problems that arise from the conflict of interest problems between majority and minority shareholders. Conyon and He (2011, 2012), and Wang and Xiao (2011) suggest that block shareholders may connive with executives to maximise their own interests at the expense of minority of shareholders, and this can empower executives to pay themselves excessively high. Alternatively, optimal contracting theory suggests that ownership concentration can enhance monitoring on management activities by acting as alternative governance mechanism that can restrain the influence of managers over the decisions made by the board, and thereby allowing the board to design pay packages that are closely aligned with executive performance (Hartzell and Starks, 2003).

With reference to institutional ownership, optimal contracting theory indicates that institutional owners, as powerful stakeholders, have more incentives to monitor the opportunistic behaviours of management (Ntim et al., 2017), and this is due to the fact that institutional shareholders tend to have large equity stakes in listed firms (Jafarinejad et al., 2015). Institutional shareholders also enjoy various advantages over their individual or less informed counterparts, including information, knowledge and skills (Ntim et al., 2015a). These advantages can allow institutional shareholders to exert more influence on a number of board decisions, including determining the appropriate level of executive pay. From managerial power hypothesis, institutional shareholders may not play active role in monitoring and preventing management from expropriating shareholders' wealth, since they might be more interested in maximising their own liquidity and short-term profits (Ntim et al., 2015a). Consequently, this can offer managers opportunities to maximise their own utility by paying themselves excessively high at the expense of shareholders. In terms of managerial ownership, and from managerial power hypothesis perspective, higher managerial ownership can diminish board monitoring and effectiveness, because it can grant more power to managers over their own pay (Cyert et al., 2002; Morck et al., 1988). Alternatively, optimal contracting theory suggests that managerial ownership can help in aligning managers and shareholders' interests by increasing managerial monitoring and preventing executives from expropriating shareholders' wealth (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). Consequently, this can reduce the influence of executives over the level and structure of their pay.

The empirical evidence is largely consistent with the view that concentrated ownership can mitigate agency problems through allowing block shareholders to set executive pay in such a way that aligns

executives' interest with those of shareholders (e.g., Conyon and He, 2011; Dong and Ozkan, 2008; Hartzell and Starks, 2003). For example, Conyon and He (2011) and Sapp (2008) report a negative relationship between block ownership structure and CEO pay using a sample of Chinese and Canadian listed firms, respectively. With reference to institutional ownership, the findings of prior studies are mixed. For example, and consistent with the results of previous studies (e.g., Sapp, 2008), Dong and Ozkan (2010) and Ozkan (2007, 2011) report a negative relationship between institutional ownership and CEO pay using a sample of UK listed firms. By contrast, Cosh and Hughes (1997) find no association between institutional ownership and CEO pay for a sample of UK firms. However, much of the UK governance reforms (i.e., from 1992 Cadbury Report to 2016 Combined Code) is underpinned by an expectation that institutional shareholders will play an active role in improving governance practices, including restraining executive pay. Additionally, prior evidence on the link between director ownership and executive pay is largely in line with the view that higher director ownership can help in mitigating agency problems (including preventing executives from rewarding themselves with overly generous pay packages) by aligning managers and shareholders' interests (Morck et al., 1988; Ozkan, 2007). For example, and consistent with the results of previous studies (e.g., Choe et al., 2014; Dong and Ozkan, 2008; Ozkan, 2007), Tian and Wang (2014) report a negative relationship between the level of share ownership by CEOs and their pay. Therefore, and given the widespread nature of share ownership in the UK (Mallin et al., 2015), our fourth hypothesis to be tested is that:

Hypothesis 4. *There is an association between ownership structure and executive pay.*

Executive pay and performance (pay-for-performance sensitivity – PPS)

The separation of ownership from control in modern firms has been suggested to be one of the main drivers for agency conflicts in modern corporations (Jensen and Meckling, 1976), as rational managers may be motivated by their self-interests, and as such they may not necessarily act in the shareholders' best interests. As a result, different governance mechanisms have been suggested that may be able to encourage managers to act in the shareholders' best interests (Fama, 1980; Fama and Jensen, 1983). In this case, executive pay has been suggested to be one of the most effective corporate governance mechanisms that can help in aligning management and shareholders' interests (Beatty and Zajac, 1994), and this is the central driver for a number of recent UK corporate governance reforms, including those contained in the 1995 Greenbury Report, the 2002 Director Remuneration Report and the 2016 Combined Code.

A considerable number of existing corporate governance studies have, therefore, investigated the link between executive pay and performance (pay-for-performance sensitivity - *PPS*) (e.g,. Amzaleg et al., 2014; Bebchuk et al., 2011; Core et al., 1999; Core et al., 2003). Prior empirical literature generally finds a positive, but weak PPS (e.g., Amzaleg et al., 2014; Cheng and Firth, 2005; Core et al., 1999; Jensen and Murphy, 1990; Main et al., 1996; Murphy, 1999; Schultz et al., 2013; van Essen et al., 2015). For instance, Main et al. (1996) reports a positive, but weak link between CEO pay and performance for a sample of UK firms. Therefore, we propose the following hypothesis:

Hypothesis 5. *There is a positive link between executive pay and performance (PPS).*

The moderating effect of corporate governance on the PPS

A major limitation of past studies examining executive pay–performance nexus is that they fail to control for corporate governance mechanisms that may influence the PPS. Therefore, and to overcome these limitations, a number of studies in the US (e.g., Core et al., 1999; Dong, 2014; Newton, 2015) and UK (e.g., Ozkan, 2007, 2011) have controlled for a comprehensive number of corporate governance variables (e.g., board and ownership mechanisms), when examining the PPS. In spite of controlling for a large number of corporate governance variables, many studies have reported weak PPS, implying that the findings of these studies largely lend support to the predictions of the managerial power hypothesis. A major weakness of existing literature is that they have only investigated the PPS for CEOs without considering other executive directors, such as CFOs.

Additionally, these studies do not take into account possible endogeneity concerns that may result from simultaneously using both corporate governance (as monitoring mechanism) and executive pay (as alignment mechanism of interests) by corporations to mitigate agency problems (Ntim et al., 2015a. b). These limitations may help to explain the weak PPS that have been generally reported by past studies (Cho et al., 2014; Conyon and He, 2011, 2012). However, and as monitoring (corporate governance) and incentive alignment (executive pay) mechanisms are often employed together by firms in order to resolve agency problems, they may need to be interrelated or interdepended in order to be efficient in practice (Beiner et al., 2006; Ntim et al., 2015a, b). One way of taking such potential interdependencies/simultaneities into account and thus, improve the PPS, is to conduct regressions containing interaction terms among our performance (e.g., *TSR*), incentive (executive pay) and monitoring (corporate governance quality) mechanisms. For example, good corporate governance may increase monitoring on the opportunistic behaviour of management and that can improve the PPS. Thus,

we hypothesise that firm-level corporate governance may interact with performance and executive pay in order to improve the PPS. Thus, our final hypothesis to be tested is:

> ***Hypothesis 6.*** *Corporate governance moderates the association between executive pay and performance, with the PPS being stronger in firms with good corporate governance mechanisms.*

Research design

Data considerations

Four criteria were set to select the final sample: (i) the annual reports of the listed companies need to be available/accessible for the years from 2008 to 2013; (ii) a firm's financial and corporate governance data must be available for all years from 2008 to 2013; (iii) availability of executive pay data for years from 2008 to 2013; and (iv) continuity of listing on the London Stock Exchange over the six years investigated. A number of reasons underlined the application of these criteria. First, we limit our sample to firms with consecutive-years data available, because corporate governance and executive pay data were manually collected, which was highly labour intensive activity (Ntim et al., 2013), and thereby serving as a limiting factor in terms of the amount firms/annual reports from which the required data could be collected from. Second, and in line with past corporate governance studies (e.g., Core et al., 1999; Ntim et al., 2015a, b), these criteria helped us to satisfy the requirement of a balanced panel analysis. Third, combining time-series and cross-sectional data can help in ascertaining whether any cross-sectional relationship among corporate governance mechanisms, executive pay, and performance holds over time. Fourth, the 2008 financial year was the first year when we started data collection because the financial crisis of 2007/08 has increased debate surrounding the effectiveness and the role of corporate governance in preventing managers from expropriating shareholders' wealth. The 2013 financial year was the last year for which data was available at the time of collecting the data.

A number of procedures have been followed in selecting our final sample. As at December 2013, a total of 1,297 firms were listed on the main board of the London Stock Exchange. First, we excluded 685 firms operating in the financial and utility industries, leaving us with 612 (non-financial) listed firms during the 2008-2013 period. The financial and utilities were excluded for the following two reasons: (i) they have different capital structure and also different regulations (Guest, 2009; Ntim et al., 2012) and (ii) to facilitate comparisons with the results of prior studies (e.g., Mallin et al., 2015; Melis et al., 2015; Ntim et al., 2013; Ozkan, 2011), who also excluded financial and utilities from their sample. Second, we excluded 319 companies with missing annual reports/data/listed recently, leaving us with 293 companies with full data.

The classification of the remaining 293 companies is as follows: basic-materials consisted of 27 (9%) companies; consumer-goods consisted of 36 (13%) companies; consumer-services consisted of 68 (23%) companies; healthcare consisted of 15 (5%) companies; industrials consisted of 102 (35%) companies; oil and gas consisted of 18 (6%) companies; technology consisted of 22 (7%) companies; and telecommunications consisted of 5 (2%) companies. Third, because the number of observations from healthcare, oil and gas, and telecommunications industries was relatively small, the observations from these three industries were added to the basic-materials, consumer-services, and technology industries. In particular, corporations operating in the oil and gas industry were included in the basic-materials industry; corporations operating in the healthcare industry were added to the consumer-services industry, while corporations operating in the telecommunication industry were added to the technology industry. Finally, due to collecting the required data manually, which was highly labour intensive activity, coupled with the extensive nature of the corporate governance, executive pay, board, ownership, and financial data required, we restricted our final balanced sample to 100 companies from 2008 to 2013 (i.e., resulting in a sample of 600 company-year observations), which were stratifiedly sampled using both firm size and industry type. The selection of our final sample was particularly based on the ranking of the largest 10 companies and the smallest 10 companies (i.e., 20 companies from each of the main 5 industries) in each industry using market capitalisation (see Table 1 for detailed information about sample selection procedure).

We collected our data from two main sources. First, the corporate governance, board characteristics, ownership mechanisms and executive pay data were collected manually from the annual reports of the examined sample. Those reports were downloaded from companies' websites and the *Perfect Information* database, whereas *DataStream* was used to collect the financial data. Unlike most past studies that focused only on the pay package of CEOs (e.g., Conyon and He, 2011, 2012; Core et al., 1999; Jouber and Fakhfakh, 2012; Ozkan, 2011; van Essen et al., 2015), we collected data on both cash and non-cash pay relating to CEOs, CFOs and all other executives. Second, we collected data on financial and accounting variable from *DataStream*.

Definition of variables and model specification

Table 2 presents summary definitions of the dependent, explanatory, interaction and control variables employed in this study. To test *H1 to H4* (i.e., to answer our central research question: the effect of corporate governance on executive pay), we use three main types of variables, as follows:

Dependent variable (executive pay)

Insert Table 2 about here

Following prior studies (e.g., Conyon and He, 2011, 2012; Ntim et al., 2015a), total pay of the CEOs, the CFOs and all other executive directors, are our main dependent variable. Similarly, and following well established studies (e.g., Choe et al., 2014; Jouber and Fakhfakh. 2012; Ozkan, 2011), CEO pay or CFO pay is defined as the natural log of annual cash (i.e., cash-bonus, salary and other reported cash remuneration) and total non-cash (i.e., performance share plan and any other reported long-term incentive plans) pay in a financial year. Additionally and in line with Ntim et al. (2015a, 2017) and Schaefer (1998), all other executive directors' pay is defined as the natural log of annual cash (i.e., cash-bonus, salary and other reported cash remuneration) and total non-cash (i.e., performance share plan and any other reported long-term incentive plans) pay of all executive directors scaled by the total number of executive directors in a financial year.

Independent variables

Our main independent variables are corporate governance mechanisms, which are measured by using a (i) broad UK corporate disclosure index (*CGI*), (ii) board structure variables (*BSE* and *BD*), (iii) CEO power variables (*CEOT*, *DSPLIT* and *CEOS*), and (iv) ownership mechanisms (*MANO*, *ISTO* and *BLKO*). With reference to the *CGI*, it has been developed based on the definition provided by the UK corporate governance codes. Specifically, Cadbury Report (1992) and FRC (2010a, b; 2012a, b) define good corporate governance to be underpinned by principles of *accountability, fairness, independence, integrity, openness, responsibility, social responsibility* and *transparency*. In this paper, we follow the UK Combined Code in defining the five main pillars of good corporate governance as: displaying strong (i) *leadership*; maintaining strong board (ii) *effectiveness*; maintaining high corporate (iii) *accountability*; applying fair and transparent (iv) *remuneration* practices; and maintaining good (v) *relations with shareholders*. Additionally, and following well-established literature (Bebchuk et al., 2009; Gompers et al., 2003; Larcker et al., 2007; Karpoff et al., 2016), we operationalise the concept of good corporate governance by measuring the presence or absence of 120 individual corporate governance items[3] based on the 2012 UK Combined Code, with firms receiving higher scores considered to be better-governed (i.e., good/strong governance) and vice-versa (i.e., poor/weak governance). Appendix 1 presents the definitions of all the corporate governance disclosure provisions included in the *CGI*.

[3]These 120 governance provisions were mainly extracted from the 2012 UK Combined Code. We also relied on other sources, such as the 2006 Companies Act, the London Stock Exchange Listing Rules, Disclosure and Transparency Rules, and Insider Trading Law, in determining the final governance provisions included in our index.

Corporate governance disclosure index coding process

For transparency and replicability purposes, in this section, we describe in detail the process of coding our index. We constructed our *CGI* in a way that allows us to capture the qualitative differences in governance disclosures among different firms. With the issue of the quality of the govexrnance mechanisms in mind when designing our governance index, we inherently designed in a such a way that it naturally measures quality of the governance mechanisms rather than their mere disclosure in the annual reports. This quality approach mainly explains the relatively large number of items that we have in our index. For example, our index is designed in such a way that it avoids box-ticking by including a comprehensive list of items (i.e., 120 corporate governance provisions) compared with those of prior studies (e.g., Bebchuk et al., 2009; Gompers et al., 2003). Consequently, this allows us to measure the qualitative differences in corporate governance disclosures across firms. For instance and if we take the quality of board committees, such as audit committee, rather than just measuring their mere presence by simply adding 1 if a company has an audit committee, otherwise 0, our index carefully attempts to measure the quality of the audit committee by investigating further whether the audit committee is also chaired by an independent non-executive director, whether it has been formed entirely by independent non-executive directors, whether it has members with financial expertise, whether the membership has been clearly disclosed, whether it organises regular meetings, and whether the members attendance record of such meetings is disclosed, amongst others. Similarly, with respect to the board structures, a value of 1 is given to a firm if the chairperson of its board is an independent non-executive director. Additional one point is added if the roles of the board chairperson and CEO are separated. Another one point is added if the majority of the board members are independent non-executive directors, amongst others. Therefore, this detailed approach allows us to clearly distinguish firms with good governance mechanisms in place from those with poor governance mechanisms, and thereby helping us to measure compliance with the 'spirit' rather than just the 'letter' of the UK corporate governance codes. Therefore, and following this widely employed binary (unweighted) coding scheme, a firm's overall score of corporate governance disclosure may range between 0 and 120, which is then expressed as a percentage ranging from 0% (poor corporate governance disclosure index quality) to 100% (perfect corporate governance disclosure index quality) with higher compliance with the 2012 UK Combined Code.

Although the unweighted scoring scheme has been criticised for not reflecting the relative importance associated with different corporate governance disclosure provisions (Beattie et al., 2004;

Gompers et al., 2003), we adopt this approach for the following reasons. First, unlike the ordinal (weighted) scoring scheme, the unweighted scoring scheme helps in enhancing the reliability and objectivity of our index, because it does not require making judgements in relation to the specific weight that needs to be given to different corporate governance disclosure provisions (Gompers et al., 2003; Owusu-Ansah, 1998). Second, there is no agreed theoretical framework to accurately assign weights to different corporate governance provisions, and thus our decision to use unweighted scoring scheme may limit the possibility that our index is biased towards any single or specific corporate governance provision, as is often the case with binary scoring scheme (Owusu-Ansah, 1998). Third, existing studies indicate that both the unweighted and weighted scoring schemes provide similar results (e.g., Barako et al., 2006; Chow and Wong-Boren, 1987). Finally, the use of unweighted coding scheme is based on a well-established theoretical and empirical literature (e.g., Jouber and Fakhfakh. 2012; Newton. 2015; Ntim et al. 2015a), and hence, this may allow us to compare our findings with the results of past similar studies.

The content analysis for this study was performed by a single coder. However, to ensure the reliability, validity and consistency of the coding framework, in the first round of coding, an initial sample of 10 companies (2 companies from each of the main five industries) over the period 2008-2013 were coded. Coding categories and coded materials were critically discussed with two experienced coders, and then in the second round, any mistakes or inconsistencies identified independently by the two coders in the first round were discussed and corrected. A further 10 firms were coded, but the two experienced coders independently did not identify any further mistakes or inconsistencies with the coding procedure. This ensured near perfect correlation between the first and second stage coding and thus, high levels of consistency, reliability, and validity were achieved.

Additionally, and to examine the reliability of the constructed index, the current study used Cronbach's alpha. The Cronbach's alpha coefficient for the five categories contained in the *CGI* is 0.861, indicating further that the corporate governance disclosure index employed in this study is a reliable and valid construct for corporate governance quality (Allegrini and Greco, 2013).

Principal Component Analysis

Although great efforts have been made to improve the validity and reliability of our index, existing literature suggests that not all of the 120 governance provisions included in our index may contribute to the observed effect of the *CGI* on executive pay, because some provisions may have significant explanatory power, whilst others may be less relevant or have less importance in terms of measuring corporate governance (Bebchuk et al., 2009; Brown and Caylor, 2006). To identify the most relevant

corporate governance provisions that contribute to the observed effect of the governance disclosure index and following existing literature (e.g., Black et al., 2016; Hoppe and Moers, 2011; Larcker et al., 2007; Karpoff et al., 2016), we use principal component analysis.

Principal component analysis is a commonly used statistical method to reduce the number of predictor variables (i.e., corporate governance provisions) and determine variables that explain most of the variance (Larcker et al., 2007). Therefore, and in order to identify the underlying components of our *CGI* and determine which corporate governance provisions are associated with each component, we follow Black et al. (2016), Larcker et al. (2007) and Karpoff et al. (2016) by employing principal component analysis. We run the principal component analysis for each of our five sub-indices and we retained components with eigenvalues greater than one. This resulted in retaining 31 components that accounted for 68.04% of the total variance in our original data (see Appendix 2). Additionally and following Larcker et al. (2007), we retain all corporate governance provisions with loading values exceeding 0.40. This resulted in excluding four provisions, which are 19 (0.381), 21 (0.327), 97 (0.309) and 98 (0.320). Appendix 2 also shows that provisions number 4, 5, 3 and 7 are loaded most strongly on the first principal component. The loading values of all of these four corporate governance provisions are above 0.40, and thus we retained all of these provisions. Similarly, and as shown in Appendix 2, the loading of provisions number 2 and 6 are above 0.40, indicating that these provisions are loaded most strongly on the second principal component, and hence we retained these two provisions. We used this general approach (i.e., loading values that exceed 0.40) to determine the other corporate governance provisions that we finally retain.

Table 3 provides the descriptive statistics and percentage of variation explained by each of the 31 components. The mean value for the 31 components ranges between 0.979 and 0.007, indicating that there is adequate variation in the *CGI*.

Insert Table 3 about here

Control variables

Additionally, previous studies suggest that the level of executive pay can be influenced by firm characteristics, such as firm size (Newton, 2015); size of auditing firm (Beiner et al., 2006; Ntim et al., 2015a), capital expenditure (Ntim et al., 2015a); sales growth (Conyon and He, 2011, 2012); cross-listing (Fahlenbrach, 2009); and time and industry differences (Main et al., 1996). Therefore, we controlled for firm-level (i.e., firm size, audit firm size, capital expenditure, sales growth, cross-listing, industry and year dummies) characteristics in this study.

To address the first research question ((i.e., whether firm-level corporate governance disclosure impacts on executive pay (*H1–H4*)), the following models are proposed and tested using the ordinary least square (OLS) regression technique initially:

$$PAY_{it} = \alpha_0 + \beta_1 CGI_{it} + \sum_{i=1}^{8} \beta_i CONTS_{it} + \varepsilon_{it} \quad (1)$$

$$PAY_{it} = \alpha_0 + \beta_1 BSE_{it} + \beta_2 BD_{it} + \beta_3 CEOT_{it} + \beta_4 DSPLIT_{it} + \beta_5 CEOS_{it} + \beta_6 MANO_{it} + \beta_7 ISTO_{it} + \beta_8 BLKO_{it} \sum_{i=1}^{8} \beta_i CONTS_{it} + \varepsilon_{it} \quad (2)$$

Where: *PAY* is the main predicted variable that is measured using CEO (*CEOP*), CFO (*CFOP*) and all executive directors (*AEDP*) pay; *CGI* (corporate governance inded), *BSE* (board size), *BD* (board diversity), *CEOT* (CEO tenure), *DSPLIT* (CEO–board chairperson role split), *CEOS* (CEO pay slice), *MANO* (managerial ownership), *ISTO* (institutional ownership) and *BLKO* (block ownership) are our main independent variables; and *CONTS* refers to the set of variables being controlled for, namely, firm size (*LTA*), audit firm size (*AFS*), capital expenditure (*CEX*), risk taking (*RIS*), sales growth (*SG*), cross-listing (*CL*) , industry (*IDU*) and year (*YDU*) dummies.

To test *H5* and *H6* (i.e., to answer our supplementary research question: the PPS and whether corporate governance on can moderate the PPS), we divided the study's variables into five groups. First, our main dependent variable is total pay of the CEOs, the CFOs and all other executive directors. Executive pay (CEO, CFO, or all other executive directors) is broadly defined to include both cash and non-cash pay. Second, our main independent variable is firm performance, as measured by total shareholder return (*TSR*), which is consistent with Gregory-Smith (2012) and Ntim et al. (2015b, 2017). Third, we control for a number of variables that may affect executive pay, including board structure (*BSE* and *BD*), CEO power (*CEOT, DSPLIT* and *CEOS*), ownership structure (*MANO, ISTO* and *BLKO*), and firm characteristics, such as firm size (*LTA*), audit firm size (*AFS*), capital expenditure (*CEX*), risk taking (*RIS*), sales growth (*SG*), cross-listing (*CL*), industries (*IDU*) and year (*YDU*) dummies. Assuming that all the hypothesised relationships are linear, our initial OLS regression model to specifically test H5 (i.e., the *PPS*) is structured as follows:

$$PAY_{it} = \alpha_0 + \beta_1 TSR_{it} + \sum_{i=1}^{8} \beta_i CONTS_{it} + \varepsilon_{it} \quad (3)$$

Where: *PAY* is the main dependent variable; *TSR* is our main independent variable; and *CONTS* refers to control variables, including *BSE, BD, CEOT, DSPLIT, CEOS, MANO, ISTO, BLOK, LTA, AFS,*

CEX, *RIS*, *SG*, *CL*, *IDU* and *YDU*. As a robustness check, we also employ Tobin's q (*Q*) and return on assets (*ROA*), as alterative market- and accounting-based measures, respectively.

Fourth, and to specifically examine *H6* (whether corporate governance disclosure index can moderate the PPS), we create an interaction variable by multiplying the firm-level corporate governance disclosure index and performance as follows: *CGI* times *TSR or Q* or *ROA* (*P*CGI*). Finally, we control for the same variables included in the third model in estimating our final model, which is as follows:

$$PAY_{it} = \alpha_0 + \beta_1 TSR_{it} + \sum_{j=1}^{1} \beta_j CGI_{it} + \sum_{k=1}^{1} \beta_k INT_{it} + \sum_{i=1}^{8} \beta_i CONTS_{it} + \varepsilon_{it} \quad (4)$$

Where *TSR* refers to total shareholder return; *CGI* refers to the corporate governance disclosure index; and *INT* refers to their respective interaction variable, namely *P*CGI*; and *CONTS* remains the same as specified in equation (3).

Empirical findings

Descriptive analysis and bivariate correlation analyses

The statistical summary of the pay of the CEO, CFO and all other executive directors is reported in Panels *A*-*C* in Table 4 over the 6-year period investigated (2008-2013). The panels suggest that the distribution of the total pay of CEOs, CFOs and all other executive directors varies substantially. For example, all other executive directors pay has a mean (median) of £7.49 million (£2.46 million) and ranges from £0.065 million to £105.58 million. Similarly, the distribution of the total pay of CEOs or CFOs shows similar pattern. The average CEO pay, for example, is £3.49 million, with a minimum value of £0.020 million and a maximum value of £61.44 million. Additionally, Table 4 shows that the average CEO pay is relatively higher compared with the average pay of other executive directors. Particularly and on average, CEOs seem to receive about £1.79 million (£3.55 million – £1.76 million) more in total pay than the CFOs. This suggests that CEOs continue to receive relatively higher pay compared with other executive directors, and that lends support for the findings of past UK studies (e.g. Conyon and Murphy, 2000; Main et al., 1996; Ozkan, 2011). Crucially, and supporting the recommendations of the 2010 corporate governance code that a large proportion of executive pay should be non-cash-based in order to align management and shareholders' interests, total non-cash-based pay forms a large proportion of total executive pay among the UK sampled firms. Specifically, the mean value of total non-cash-based pay of all other executive directors (*AEDs_non-cash*) of £4.03 million is higher, and it is about 54% of the mean value of total pay (all other executive directors pay) of £7.53 million, whilst the mean value of total cash

pay of all other executive directors (*AEDs_cash*) of £3.50 million is only 46% of the mean value of total pay (all other executive directors pay) of £7.53 million. The evidence that executives are paid higher non-cash-based remuneration compared with cash-based remuneration is largely consistent with those reported by past US studies (e.g., Cyert et al., 2002; Dong, 2014).

Insert Table 4 about here

Further, Panels *D-H* of Table 4 present summary descriptive statistics relating to the corporate performance, corporate governance and control variables, respectively. Overall, these panels show wide spread for all variables under examination. For instance, and similar to the results of past corporate governance studies (e.g., Gregory-Smith. 2012), *TSR* ranges from -0.60 to 0.91 with an average (a median) of 0.086 (0.03), suggesting that our sampled firms are, on average, profitable. The corporate governance disclosure index (*CGI*) also varies substantially, ranging from 17% to 81% with the mean (median) companies complying with 52% (64%) of the 120 governance provisions investigated. The mean board size of 8 is consistent with that reported by Ozkan (2011). The mean institutional ownership of 38% is close to the 30% found by Dong and Ozkan (2008) for a sample of UK firms. The average 11% of board diversity suggests that, on average, the boards of UK listed firms are dominated by white males. With reference to the other remaining variables, all show wide variation, indicating that the sample is sufficiently made up of a mixture of small and large firms, and thereby minimising any possibilities of sample selection bias.

The correlation coefficients of both Pearson and Spearman are reported in Table 5 in order to identify the presence of any potential multicollinearity problems. The direction and magnitude of both correlation matrices are relatively similar, indicating that any remaining non-normalities in the variables employed are not likely to be serious to violate the assumptions of OLS regression (Ntim et al., 2015b). Additionally, the correlation coefficients of Spearman and Pearson are relatively low and the values of the Variance Inflation Factor (VIF) reported in Tables 7 and 8 also do not exceed 10, indicating that there are no serious multicollinearity problems (Field, 2009).

Insert Table 5 about here

Overall and focusing on the Pearson's parametric correlation coefficients, Table 5 indicates statistically strong associations among the executive pay (CEOs, CFOs, or all other executive directors), corporate governance, performance and control variables. For example, the findings suggest that companies with larger portions of managerial ownership, institutional ownership, and block ownership pay significantly lower remuneration to their CEOs, CFOs and all other executive directors. Additionally,

there is a discernible evidence that cross-listed (*CL*), larger (*LTA*), capital intensive (*CEX*), auditing by a big-4 firm (*AFS*), larger boards (*BSE*), diversed boards (*BD*) and profitable (*TSR, Q* and *ROA*) firms pay significantly higher remuneration to their CEOs, CFOs and all other executive directors.

Multivariate Regression Analyses

The empirical findings of the effect of corporate governance disclosure index on executive pay

Table 6 presents the empirical findings of the impact of corporate governance disclosure index (*CGI*) containing 31 key components developed from 120 corporate governance provisions, on CEO pay. Specifically, the table contains the results relating to the effect of corporate governance disclosure index on the pay package of CEOs explaining cash, non-cash and total pay as the dependent variables, respectively. Prior studies suggest that good corporate governance structures may help in reducing agency problems by increasing managerial monitoring capacity, and thus prevent executives from expropriating shareholders' wealth (Fama, 1980; Jensen and Meckling, 1976). To test this, we examine the effect of the *CGI* on executive pay. The coefficients of *CGI* on cash, non-cash and total pay for CEOs (-1.199, -2.578 and -2.026) in Table 6 are statistically negative at 1%. Overall, the results provide empirical support for *H1*.

The empirical findings of the *CGI* along with the control variables on CFOs and AEDs' pay are reported in Table 7 (,er account for potential size-effects in the total pay of all other executive directors, we run median regressions). It contains the results for six models relating to CFOs and all other executive directors explaining cash, non-cash and total pay. The coefficients of *CGI* on cash, non-cash and total pay for CFOs (-0.976, -2.065 and -1.454) and all other executive directors (-1.314, -2.451 and -1.971) are negative and statistically significant, suggesting that our first hypothesis (*H1*) is empirically supported.

In addition to examining the effect of the *CGI* on executive pay for our entire sample, we divided our sample into two main categories: (i) well-governed firms (firms having a *CGI* score above the mean value of 52%); and (ii) poorly-governed firms (firm having a *CGI* score below the mean value of 52%). The reason behind doing this is to provide more informative inferences about our data. The findings are presented in Table 8. In terms of well-governed firms, the coefficients of the *CGI* on the total pay of CEOs (-1.800), CFOs (-1.152) and *AED*s' (-1.810) pay are negative and statistically significant, whereas the coefficients of the *CGI* on the total pay of CEOs (-1.592), CFOs (-0.820) and *AED*s (-1.930) for poorly-governed firms are negative, but not statistically significant, suggesting that our first hypothesis is empirically supported.

The empirical findings of the effect of individual governance mechanisms and executive pay

Table 6 also presents the results of pooled OLS regression of board structure variables (*BSE* and *BD*), CEO power measures (*DSPLIT*, *CEOT* and *CEOS*), and ownership structure variables (*MANO*, *ISTO* and *BLKO*) along with the control variables on CEOs' pay. Specifically, Table 6 contains three models explaining the effect of these eight individual governance mechanisms (i.e., *BSE*, *BD*, *DSPLIT*, *CEOT*, *CEOS*, *MANO*, *ISTO* and *BLKO*) on CEOs' cash, non-cash and total pay. First, and with reference to the board structure variables, the positive and significant association between *BSE* and CEOs' cash and total pay provides support for *H2*. However, the insignificant effect of *BD* on cash and total pay of CEOs does not provide support for *H2*. Second, the separation of CEO and chairperson roles (*DSPLIT*) is negatively associated with CEOs' cash and total pay, suggesting that *H3* is empirically support. Similarly, results reported in Table 6 indicate that both CEO tenure (*CEOT*) and CEO pay slice (*CEOs*) are positively associated with CEOs pay, implying that *H3* is further supported. Finally, and with reference to the ownership mechanisms, the results contained in Table 6 suggest that managerial ownership (*MANO*) and block ownership (*BLKO*) are negatively associated with the CEO pay. This implies that *H4* is empirically supported. However, the insignificant influence of institutional ownership on CEOs' pay does not provide support for *H4*.

With reference to the effect of the individual governance mechanisms on CFOs and AEDs' cash, non-cash and total pay, the results contained in Table 7 are generally consistent with our developed hypotheses. First, the coefficients of *BSE* on non-cash pay in Model 2 for CFOs, and those in Models 4 to 6 for AEDs' cash, non-cash and total pay, are all negative and statistically significant. This implies that *H2* is accepted. However, the insignificant influence of *BD* on CFOs and AEDs' cash and total pay does not provide support for *H2*. Second, the insignificant effect of *DSPLIT* and *CEOS* on CFOs and AEDs' pay does not provide support for *H3*, whereas the positive and significant effect of *CEOT* on CFOs and AEDs' pay is in line with *H3*. Finally, the negative and significant effect of both *MANO* and *BLKO* on CFOs and AEDs' pay is consistent with *H4*. In terms of institutional ownership (*ISTO*), the coefficients on the cash pay in Model 1 for CFOs, and those in Models 4-6 for AEDs are all positive, but statistically insignificant, indicating that *ISTO* has no influence on cash pay of CFOs, and on cash, non-cash and total pay of AEDs. Similarly, the positive and significant influence of *ISTO* on non-cash and total pay of CFOs does not provide support for *H4*.

The results relating to executive pay-performance nexus

The empirical findings of the executive pay along with the control variables on corporate performance are reported in Table 9. It contains the results of nine models relating to CEOs (Columns 2-4), CFOs (Columns 5-7) and all other executive directors (Columns 8-10) explaining cash, non-cash and total pay. The coefficients of *TSR* on executive pay (CEOs, CFOs and AEDs) are observably small (ranging from 0.455 for CEOs' non-cash pay to 0.142 for CFOs cash pay), which lends empirical support for *H5*. Additionally, the empirical findings relating to the potential moderating effect of corporate governance disclosure index (i.e., *CGI*) on the PPS are reported in Table 10. Specifically, Table 10 reports findings relating to *TSR, Q* and *ROA* performance measures for the total CEO pay (Models 1-3), Models 4 to 6 do similarly for the CFO measure, whilst Models 7 to 9 report similar results for all other executive directors alternative. In addition, all control variables contained in Table 9 are included in Table 10. Crucially, it is clearly observable from our results that, regardless of the executive pay proxy used, the PPS has noticeably improved, implying that *H6* is empirically supported.

Finally, we carried out several additional tests to check the robustness of our results. Specifically, we run four different tests, a: (i) fixed-effects model; (ii) lagged structure model; (iii) generalised method of moments estimator (GMM); and (iv) Heckman (1979) sample selection bias test, which for brevity not reported, but will be available upon request. Overall, the findings of these additional analyses indicated that our results were not driven by any potential endogenity and sample selection bias problems.

Discussion

Columns 2-4 of Table 6 reports results relating to the effect of the *CGI* on cash, non-cash and total pay of CEOs, respectively. The associated coefficients of the *CGI* are negative and statistically significant, supporting the view that well-governed firms pay significantly lower levels of remuneration to their CEOs than their poorly-governed counterparts. Similarly, the results reported in Columns 2-4 and 6-8 of Table 7 relating to CFOs and AEDs, respectively, suggest that well-governed firms pay significantly lower cash, non-cash and total pay to their CFOs and all other executive directors, than their poorly-governed counterparts. The negative effect of the *CGI* lends empirical support for the recommendations of UK corporate governance codes (e.g., 1992 Cadbury Report and 2012 Combined Code) and the findings of past corporate governance studies (e.g., Fahenbrach, 2009; Jouber and Fakhfakh, 2012; Newton, 2015.Theoretically, our evidence offers empirical support for both managerial power hypothesis and optimal contracting theory, indicating that under poor governance conditions (managerial power hypothesis) managers can control the board and reward themselves with overly generous pay packages (Ntim et al., 2015a, b; Ozkan, 2007), whereas under good corporate governance conditions (optimal

contracting theory), managers have less influence on their pay, and thereby allowing the board to design pay packages that may be more closely aligned with executive performance (Dong, 2014; Edmans and Gabaix, 2009).

Insert Table 6 about here

Insert Table 7 about here

To examine the robustness of the obtained findings (reported in Tables 6 and 7) relating to the effect of the *CGI* on CEOs, CFOs and AEDs' pay, we divide our sample using the mean value of the *CGI*. This resulted in having two groups (i.e., well-governed and poorly-governed firms). The results reported in Table 8 suggest that firms with higher *CGI* scores tend to pay their executive significantly lower than their poorly-governed firms (i.e., firms with lower *CGI* scores). The findings indicate that under good governance structures, executive pay packages are designed in a way that helps in aligning management and shareholders' interests (Jensen and Meckling, 1976). However, under weak governance structures, opportunistic executives can expropriate the wealth of shareholders by having the power to influence their own pay (Choe et al., 2014; Shleifer andVishny, 1997).

Insert Table 8 about here

In terms of the individual governance mechanisms, most of them bear the expected sign. For example, the findings reported in Tables 6 and 7 reveal that board diversity, along with splitting the CEO and chairperson positions are associated negatively with the cash-based and total pay for CEOs, which is consistent with the findings of prior studies (e.g., Adams and Ferreira, 2009; Conyon and He, 2011). By contrast, they are positively linked with the non-cash-based pay for CEOs, CFOs and AEDs, suggesting that board diversity and splitting of the CEO and chairperson positions help to align management and shareholders' interests by increasing board independence from management. Additionally, we have found evidence that board size and CEO tenure impact positively on CEO pay, as reported by Conyon and He (2012), Guest (2009) and Ozkan (2011). Theoretically, these findings support the view that firms with larger boards and longer-tenured CEOs suffer agency problems that arise from empowering CEOs to have greater control of the board, and that can increase the influence of CEOs over the decisions made by the board, and thereby allowing CEOs to pay themselves excessively high (Ntim et al., 2015a, b; Ozkan, 2007). In contrary, the coefficients of *BSE* on the non-cash and total pay in Models 2 and 3 for CFOs, and those in Models 4-6 for AEDs, are negative. This implies that larger boards are more difficult to be controlled by CFOs and other executive directors (not CEOs) compared to smaller boards because they

are associated with more expertise and experience. That can restrain the influence of CFOs and AEDs over the decisions made by the board, and thereby allowing the board to design pay packages that are closely aligned with executive performance (Jensen and Murphy, 1990).

With reference to CEO pay slice (*CEOS*), the results reported in Tables 6 and 7 suggest that *CEOS* is positively and significantly associated with cash, non-cash and total pay of CEOs, but insignificantly associated with CFOs and AEDs pay. The significant effect of the *CEOS* on CEOs' pay is consistent with the findings of Bebchuk et al. (2011) and Tian and Yang (2014), implying that the concentration of power in CEOs can reduce the monitoring role of the board on CEOs, which can allow CEOs to reward themselves with overly generous pay packages.

In terms of ownership structure variables, the results contained in Tables 6 and 7 for the three models relating to their effect on the pay of CEOs, CFOs and AEDs are mixed. Specifically, and in line with previous studies (e.g., Baixauli-Soler and Sanchez-Marin, 2015), our evidence reveals that managerial ownership and block ownership are associated with lower CEO pay, implying that higher managerial ownership and block ownership help to align management and shareholders' interests by bringing more effective monitoring on the opportunistic behaviour of management (Wang and Xiao, 2011). In contrast, our evidence shows that institutional ownership is insignificantly associated with CEOs' pay, suggesting that institutional investors are passive and ineffective in monitoring management (Dong and Ozkan, 2008).

With reference to the *PPS*, the results contained in Table 9 suggest that there is a positive, but weak link between executive pay and performance, and this is consistent with the findings of Adams and Ferreira (2009). Theoretically, our evidence offers support for the predictions of managerial power hypothesis, which views executive pay as a result of close negotiations between weak/dependent board and strong executives that may lead to the design of ineffective incentive contracts that tend to increase agency problems (Choe et al., 2014; Mallin et al., 2015). Thus, managerial power hypothesis predicts a weak *PPS*, due to the assumption that executives have strong influence in setting their own pay (Van Essen et al., 2015).

Insert Table 9 about here

Table 10 contains OLS regression results investigating the potential moderating effect of *CGI* on the *PPS*. Overall, the results suggest that corporate governance significantly moderates the PPS. For instance, the magnitude of the coefficient of the *TSR* on the total pay of CEO has improved from 0.242 in Model 3 of Table 10, to 0.466 in Model 1 of Table 10. The results, therefore, provide empirical support

for *H6* that *CGI* moderates the association between executive pay and performance, with the PPS being stronger in firms with good corporate governance practices. Similarly, the magnitude of the coefficient of the *TSR* on the total CFO and all other executive director pay has improved from 0.197 (Model 3) and 0.247 (Model 9) of Table 9 to 0.583 (Model 4) and 0.416 (Model 7) of Table 10, respectively, implying that firm-level corporate governance moderates the PPS, with the PPS being stronger in firms with good CG practices (Newton, 2015; Sapp, 2008).

Insert Table 10 about here

We also used Tobin's Q (*Q*) and return on assets (*ROA*) as market and accounting-based alternative performance proxies to check the robustness of our findings. These alternative performance proxies have been used in this study because they are considered to be appropriate and also because they have excessively been used in the prior literature (e.g., Conyon, 1997; Ntim et al., 2015a, 2016; Ozkan, 2011). The results generally indicate that corporate governance significantly moderates the PPS. Observably, and on a comparison basis, our evidence suggests that the PPS is higher (significant at 1% level) for CEO and CFO than all other executive pay (significant at 5%), and this may due to the strategic nature of CEO and CFO roles (Ntim et al., 2017).

Finally, and with regard to the interaction variables, the results presented in Table 10 generally offer evidence of a moderating impact of firm-level corporate governance (*CGI*) on the PPS, which largely supports our hypothesis (*H6*), as well as the predictions of optimal contracting theory. Specifically, the statistically significant and negative effect of *P*CGI* on CEO, CFO or all other executive directors pay in Models 1 to 9 of Table 10 provides support for *H6*. The interacted variable (*CGI*) has improved the magnitude of *TSR*, *Q* and *ROA* and this suggests that strong corporate governance quality (in the form of higher compliance with 2012 Combined Code) moderates the association between executive pay and performance, with the PPS being stronger in firms with good corporate governance practices. Observably, our findings contribute to a small, but increasing number of evidence, which suggests that firm-level corporate governance has a moderating impact on the PPS (Baixauli-Soler and Sanchez-Marin, 2015; Ntim et al., 2017). Table 11 provides a summary of the empirical findings and the hypothesised relationships among the corporate governance mechanisms, executive pay and PPS.

Insert Table 11 about here

Conclusions

This study examines whether corporate governance structures do influence executive directors' pay, and consequently ascertains whether corporate governance can moderate the pay-for-performance

sensitivity (PPS) for UK listed firms. Specifically, we investigate the impact of firm-level corporate governance quality on the cash, non-cash and total pay for chief executive officers (CEOs) and chief financial officers (CFOs), as well as all other executive directors (AEDs). Additionally, we examine the link between executive pay (CEOs, CFOs and AEDs) and corporate performance, and consequently examine the moderating influence of corporate governance disclosure index on the PPS. Our study, therefore, extends, as well as makes a number of new contributions to the growing body of literature on the antecedents of executive pay.

First, we contribute to the literature by employing a principal component analysis technique to develop and introduce a new alternative governance disclosure index containing 31 key components out of 120 comprehensive governance provisions from the UK Combined Code for UK firms and researchers. Second, we extend and contribute to the extant literature by examining the impact of our newly developed corporate governance disclosure index on executive pay. There is a scarcity of studies that have investigated the impact of corporate governance disclosure index on executive pay. The findings indicate that companies with stronger corporate governance structures tend to pay their executives significantly lower than their poorly-governed counterparts, and thereby providing support for both the optimal contracting theory and managerial power hypothesis.

Third, previous studies examining the impact of corporate governance on executive pay have almost examined only the impact of few individual corporate governance variables on CEOs pay, whereas studies which have examined the impact of board structure, CEO power and ownership mechanisms on executive pay are scarce. Therefore, this study contributes to the extant literature by examining the link among board structure (board size and board diversity), CEO power (CEO tenure, CEO duality and CEO pay slice), ownership (managerial ownership, institutional ownership and block ownership) and executive pay (CEOs, CFOs and AEDs). Overall, the results indicate that board structure, CEO power and ownership variables have a significant impact on executive pay among UK firms.

Fourth, the study reports empirical evidence of a positive, but weak link between executive pay and corporate performance. Our evidence supports managerial power hypothesis perspective, which predicts weak PPS. Managerial power hypothesis suggests that in corporations with weak corporate governance structures, executives tend to have strong influence over setting their own pay, leading to a weak PPS. The evidence of a positive, but weak PPS lends support for the findings of past corporate governance studies (e.g., Amzaleg et al., 2014; Cheng and Firth, 2005; Conyon and Murphy, 2000; Jensen and Murphy, 1990; Schultz et al., 2013).

Fifth, previous studies (e.g., Choe et al., 2014; Conyon and He, 2011, 2012) have only examined the PPS without taking into account possible endogeneity concerns that may result from simultaneous use of both monitoring and incentive alignment mechanisms by corporations to mitigate agency problems. Therefore, this study aimed to extend, as well as contribute to the existing studies by investigating why and how corporate governance can moderate the PPS. We find that the PPS improves considerably in firms with good corporate governance structures. This evidence provides support for optimal contracting theory, which suggests that in firms with good corporate governance mechanisms, executive pay packages can be designed in a way that helps to align management and shareholders' interests, and thereby improving the PPS.

Sixth, the results of the study have important implications for policy-makers and regulator of other countries that are intending to or are currently pursuing corporate governance and executive director pay policy reforms. The major implication of our findings is that policy reforms relating to monitoring (corporate governance) and incentive alignment (executive pay) should be pursued jointly for greater effectiveness. The methodological implication of the evidence is that firm-level corporate governance moderates the PPS provides new empirical insights from the managerial power hypothesis and optimal contracting theory. Further and methodologically, future researchers may be able to employ our new governance disclosure index as an alternative to the US-centric ones.

Seventh, the evidence provided in this paper offers potential empirical and theoretical insight for future studies. In terms of empirical expansions, this paper focused only on the UK, however, future research can extend our study by examining the impact of corporate governance on executive pay and consequently whether corporate governance moderates the PPS in different international governance environments (i.e., developing and/or developed countries with different economic systems and characteristics). With reference to theoretical expansions, the evidence indicates that future studies can possibly enhance their theoretical grounds by relying on the insights provided by other closely related governance theories, including equity fairness, lake 'Wobegon' effect, managerial talent, stewardship and tournament theories, when examining the drivers of executive pay.

Finally, although the results of this study are robust to alternative estimations and models, our study has some limitations, including limiting our analysis to only internal corporate governance mechanisms. Hence, and as data becomes accessible, future studies can consider how both internal and external corporate governance mechanisms can influence executive pay. The current study has examined the factors driving executive pay from a quantitative perspective, a future research can enhance our

understanding by conducting in-depth interviews and qualitative analysis to gain further insights relating to the drivers of executive pay and the PPS. Also, like most archival research of this nature, the proxies for governance, pay and performance may or may not reflect actual practice. For example, governance quality may simply refers to disclosure of governance rather than actual governance quality of a firm, which is very to difficult observe in practice. Further, due to the labour intensive nature of manual data collection, we limited our sample to a relatively smaller size and therefore, could arguably influence the generalisability of our findings, although the findings of the Heckman (1979) sample selection bias suggest that this may not be the case. Future research may, therefore, improve upon the current study by employing a much larger sample size. Similarly, we restricted our analysis to the period after the 2007/08 global financial crisis, since prior UK studies have investigated the period before the global financial crisis. In this case, future studies may improve our analysis by including the period before and after the 2007/08 crisis and examine whether the crisis has had an effect on the link among corporate governance, pay and performance.

Appendices

Appendix 1: Corporate governance disclosure index (CGI)

CGI theme	CGI items: information on or reference to	scoring
Leadership Sub-Index		
(i) Board structure	1. Board membership	0 - 1
	2. Role duality	0 - 1
	3. Frequency of board meetings (BMs)	0 - 1
	4. Individual directors' attendance of BMs	0 - 1
	5. Attendance of the majority of BMs	0 - 1
	6. Statement on chairperson's independence	0 - 1
	7. Senior independent director appointment	0 - 1
	8. Roles of the board and management	0 - 1
Effectiveness Sub-Index		
(ii) Board and directors	9. Board chairperson is non-executive director (NED)	0 - 1

	10. Chairperson independence	0 - 1
	11. Board composition	0 - 1
	12. Classification of directors	0 - 1
(iii) Board and directors' evaluation	13. Process of evaluating board/executives	0 - 1
	14. Evaluation of board performance	0 - 1
	15. Evaluation of individual directors' performance	0 - 1
	16. Evaluation of board's committees' performance	0 - 1
	17. Evaluation of CEO's performance	0 - 1
	18. Evaluation of chairperson's performance	0 - 1
	19. Externally facilitated evaluation	0 - 1
(iv) Re-election of board's members	20. Process of board/executives' re-election	0 - 1
	21. Directors' names	0 - 1
	22. Directors' biographical details	0 - 1
	23. Directors other details	0 - 1
	24. Directors' experience	0 - 1
(v) Induction and training programmes	25. Induction and training provided to all directors	0 - 1
	26. Details on training programmes	0 - 1
(vi) Free legal advice	27. Access to free independent legal advice	0 - 1
(vii) Insider trading/dealing	28. Directors/officers dealings and securities	0 - 1
	29. Directors/officers share dealings	0 - 1
(viii) Nomination committee (NC)	30. Existence	0 - 1
	31. Terms of reference	0 - 1
	32. Membership	0 - 1
	33. Composition	0 - 1
	34. Chairperson independence	0 – 1
	35. Frequency of NC meetings	0 - 1
	36. Individual members' attendance of NC meetings	0 - 1
	37. Attendance of the majority of NC meetings	0 - 1
	38. Evaluation of the committee as a group	0 - 1
	39. Evaluation of chairperson	0 - 1
	40. Evaluation of individual members	0 - 1
(ix) Office of a company secretary	41. Existence	0 - 1
	42. Identity	0 - 1
	43. Terms of reference	0 - 1
	44. Attendance of board's meetings	0 - 1
	45. Meeting attendance record	0 - 1

Continuation: Appendix 1, Corporate governance disclosure index (CGI)

CGI theme		CGI items: information on or reference to	scoring
Accountability Sub-Index			
(x)	Board accountability	46. Preparing annual report and accounts	0 - 1
		47. Status of a firm's going concern	0 - 1
(xi)	Audit committee (AC)	48. Existence	0 - 1
		49. Reviewing risk management systems	0 - 1
		50. Terms of reference	0 - 1
		51. Membership	0 - 1
		52. Composition	0 - 1
		53. Chairperson independence	0 - 1
		54. Frequency of AC meeting	0 - 1
		55. Individual members' attendance of AC meetings	0 - 1
		56. Attendance of the majority of AC meetings	0 - 1
		57. External auditor's scope and responsibility	0 - 1
		58. External audit meetings	0 - 1
		59. External audit private meetings	0 - 1
		60. Audit fees	0 - 1
		61. Evaluation of audit committee as a group	0 - 1
		62. Evaluation of chairperson	0 - 1
		63. Evaluation of individual members	0 - 1
(xii)	Risk management	64. Actual and potential risks	0 - 1
		65. Risk evaluation	0 - 1
		66. Policy of risk management	0 - 1
		67. Risk management committee (RMC)	0 - 1
		68. Terms of reference	0 - 1
		69. Membership	0 - 1
		70. Composition	0 - 1
		71. Frequency of RMC meetings	0 - 1
		72. Individual members' attendance of RMC meetings	0 – 1
		73. Attendance of the majority of RMC meetings	0 - 1
		74. Evaluation of risk committee as a group	0 - 1
		75. Evaluation of chairperson	0 - 1
		76. Evaluation of individual members	0 - 1
(xiii)	Internal audit and control	77. Internal control policy and procedure	0 - 1
		78. Existence of internal audit unit	0 - 1
		79. Annual meetings with audit committee	0 - 1
		80. Private meetings with audit committee	0 - 1
		81. Review of risk and internal control systems	0 - 1
Remuneration Sub-Index			
(xiv)	Remuneration committee (RC)	82. Existence	0 - 1
		83. Membership	0 - 1
		84. Composition	0 - 1
		85. Chairperson independence	0 - 1
		86. Frequency of RC meetings	0 - 1
		87. Individual members' attendance of RC meetings	0 - 1
		88. Attendance of the majority of RC meetings	0 - 1
		89. Evaluation of chairperson	0 - 1
		90. Evaluation of individual members	0 - 1
		91. Terms of reference	0 - 1
		92. CEO's remuneration	0 - 1
		93. Other directors' remuneration	0 - 1
		94. All directors' cash remuneration	0 - 1
		95. NEDs' remuneration	0 - 1
		96. All directors' non-cash remuneration	0 - 1

Continuation: Appendix 1, Corporate governance disclosure index (CGI)

CGI theme	CGI items: information on or reference to	scoring
	97. Say on executive pay policy	0 - 1
	98. Directors' ownership interests	0 - 1
	99. Composition of NEDs' remuneration	0 - 1
	100. Remuneration consultants	0 - 1
	101. All directors' remuneration by name	0 - 1
	102. Directors' long-term incentive plan	0 - 1
	103. Directors' remuneration philosophy	0 - 1
Relations with Shareholders Sub-Index	104. Obligations to shareholders	0 - 1
	105. Notice on annual general meetings (AGMs)	0 - 1
	106. Disclosure of shareholders' rights	0 - 1
	107. Names of board member attend AGM	0 - 1
	108. Board chairman attendance of AGM	0 - 1
	109. NC chairman attendance of AGM	0 - 1
	110. RC chairman attendance of AGM	0 - 1
	111. AC chairman attendance of AGM	0 – 1
	112. RMC chairman attendance of AGM	0 - 1
	113. Shareholder activism	0 - 1
	114. Proxy voting policy	0 - 1
	115. Obligations to society/community	0 - 1
	116. Environmental issues	0 - 1
	117. Social issues	0 - 1
	118. Employee training and education programmes	0 - 1
	119. Health and safety	0 - 1
	120. Code of ethics	0 - 1

Appendix 2: Loadings on individual corporate governance provisions for each of the 31 components		
Principal Component (Factor)	CGI items: information on or reference to	Loading value
Leadership Sub-Index		
Principal Component No. 1	4. Individual directors' attendance of BMs	0.896
	5. Attendance of the majority of BMs	0.892
	3. Frequency of board meetings (BMs)	0.672
	7. Senior independent director appointment	0.621
Principal Component No. 2	2. Role duality	0.842
	6. Statement on chairperson's independence	0.622
Principal Component No. 3	8. Roles of the board and management	0.713
	1. Board membership	-0.522
Effectiveness Sub-Index		
Principal Component No. 4	16. Evaluation of board's committees' performance	0.916
	15. Evaluation of individual directors' performance	0.879
	38. Evaluation of the committee as a group	0.877
	14. Evaluation of board performance	0.812
	13. Process of evaluating board/executives	0.779
	17. Evaluation of CEO's performance	0.650
	36. Individual members' attendance of NC meetings	0.558
	37. Attendance of the majority of NC meetings	0.544
	43. Terms of reference of a company secretary	0.501
Principal Component No. 5	32. Membership of NC	0.899
	30. Existence of NC	0.878
	33. Composition of NC	0.796
	31. Terms of reference of NC	0.666
	20. Process of board/executives' re-election	0.556
Principal Component No. 6	39. Evaluation of chairperson	0.937
	40. Evaluation of individual members	0.937
	18. Evaluation of chairperson's performance	0.440
Principal Component No. 7	42. Identity of a company secretary	0.806
	12. Classification of directors	0.742
	41. Existence of a company secretary	0.731
Principal Component No. 8	10. Chairperson independence	0.847
	34. Chairperson independence of NC	0.753
	9. Board chairperson is non-executive director (NED)	0.439
Principal Component No. 9	26. Details on training programmes	0.798
	25. Induction and training provided to all directors	0.637
	29. Directors/officers share dealings	0.532
Principal Component No. 10	45. Meeting attendance record	0.959
	44. Attendance of board's meetings	0.959
Principal Component No. 11	24. Directors' experience	0.858
	22. Directors' biographical details	0.823

Continuation: Appendix 2, Loadings on individual corporate governance provisions for each of the 31 components		
Principal Component (Factor)	CGI items: information on or reference to	Loading value
Principal Component No. 12	28. Directors/officers dealings and securities	0.812
	23. Directors other details	0.571
Principal Component No. 13	35. Frequency of NC meetings	0.571
	27. Access to free independent legal advice	-0.527
	11. Board composition	0.425
Accountability Sub-Index		
Principal Component No. 14	73. Attendance of the majority of RMC meetings	0.928
	71. Frequency of RMC meetings	0.928
	72. Individual members' attendance of RMC meetings	0.928
	76. Evaluation of individual members	0.879
	74. Evaluation of risk committee as a group	0.671
	75. Evaluation of chairperson	0.671
Principal Component No. 15	79. Annual meetings with audit committee	0.846
	80. Private meetings with audit committee	0.767
	78. Existence of internal audit unit	0.700
	58. External audit meetings	0.626
	59. External audit private meetings	0.595
	61. Evaluation of audit committee as a group	0.491
	52. Composition of AC	0.459
	65. Risk evaluation	0.407
Principal Component No. 16	60. Audit fees	0.825
	47. Status of a firm's going concern	0.805
	81. Review of risk and internal control systems	0.754
	46. Preparing annual report and accounts	0.697
Principal Component No. 17	67. Risk management committee (RMC)	0.853
	68. Terms of reference of RMC	0.786
	69. Membership of RMC	0.739
	49. Reviewing risk management systems	-0.667
Principal Component No. 18	51. Membership of AC	0.932
	48. Existence of AC	0.932
	77. Internal control policy and procedure	0.681
Principal Component No. 19	63. Evaluation of individual members	0.857
	62. Evaluation of chairperson	0.849
	70. Composition of RMC	0.452
Principal Component No. 20	55. Individual members' attendance of AC meetings	0.870
	56. Attendance of the majority of AC meetings	0.860
Principal Component No. 21	66. Policy of risk management	0.740
	53. Chairperson independence of AC	0.566
	54. Frequency of AC meeting	0.544
	50. Terms of reference of AC	0.489

Continuation: Appendix 2, Loadings on individual corporate governance provisions for each of the 31 components		
Principal Component (Factor)	CGI items: information on or reference to	Loading value
Principal Component No. 22	57. External auditor's scope and responsibility	0.714
	64. Actual and potential risks	-0.542
Remuneration Sub-Index		
Principal Component No. 23	101. All directors' remuneration by name	0.890
	103. Directors' remuneration philosophy	0.860
	82. Existence of RC	0.837
	95. NEDs' remuneration	0.836
	94. All directors' cash remuneration	0.836
	83. Membership of RC	0.804
Principal Component No. 24	93. Other directors' remuneration	0.905
	92. CEO's remuneration	0.905
	96. All directors' non-cash remuneration	0.862
	102. Directors' long-term incentive plan	0.554
Principal Component No. 25	85. Chairperson independence of RC	0.792
	84. Composition of RC	0.740
	91. Terms of reference	0.696
	86. Frequency of RC meetings	0.571
	100. Remuneration consultants	0.496
Principal Component No. 26	87. Individual members' attendance of RC meetings	0.938
	90. Evaluation of individual members	0.931
	99. Composition of NEDs' remuneration	0.429
Principal Component No. 27	88. Attendance of the majority of RC meetings	0.992
	89. Evaluation of chairperson	0.992
Principal Component No. 28	111. AC chairman attendance of AGM	0.928
	110. RC chairman attendance of AGM	0.918
	109. NC chairman attendance of AGM	0.917
	107. Names of board member attend AGM	0.908
	108. Board chairman attendance of AGM	0.823
	112. RMC chairman attendance of AGM	0.432
Relations with Shareholder Sub-Index		
Principal Component No. 29	115. Obligations to society/community	0.794
	116. Environmental issues	0.776
	117. Social issues	0.714
	118. Employee training and education programmes	0.702
	119. Health and safety	0.685
Principal Component No. 30	114. Proxy voting policy	0.670
	113. Shareholder activism	0.593
	120. Code of ethics	0.562
	105. Notice on annual general meetings (AGMs)	0.557
Principal Component No. 31	104. Obligations to shareholders	0.872
	106. Disclosure of shareholders' rights	0.577

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Table 1
Sample selection procedures

Panel A: classification of non-financial listed firms on the LSE as of 31/12/2013		Number of firms from each industry
Basic materials		72
Consumer goods		76
Consumer series		131
Technology		44
Industrials		179
Healthcare		28
Communication		26
Oil and gas		56
Firms available for sampling		612
Less: Firms with no annual reports	66	
Firms listed recently (2008-2013)	125	
Firms with some annual reports missing	128	319
Firms with full data		293

Panel B: classification of non-financial listed firms with full data		Number of firms from each industry
Basic materials		27
Consumer goods		36
Consumer series		68
Technology		22
Industrials		102
Healthcare		15
Communication		5
Oil and gas		18
Firms with full data		293

Panel C: The final selected sample	Number of firms from each industry	Final stratified sample
Basic materials and oil and gas	45	20
Consumer goods	36	20
Consumer series and healthcare	83	20
Industrials	102	20
Technology and communication	27	20
	293	100

LSE, London Stock Exchange.

Table 2
Summary definition of variables

Variables	Definition
CEOP	Natural log of annual cash (i.e., cash-bonus, salary and other reported cash remuneration) and total non-cash (i.e., performance share plan and any other reported LTIPs) remuneration of CEOs.
CFOP	Natural log of annual cash (i.e. cash-bonus, salary and other reported cash remuneration) and total non-cash (i.e. performance share plan and any other reported LTIPs) remuneration of CFOs.
AEDP	Natural log of annual cash (i.e. cash-bonus, salary and other reported cash remuneration) and total non-cash (i.e. performance share plan and any other reported LTIPs) remuneration of AEDs scaled by the total number of executive directors. To account for potential size effects, we run median regressions.
TSR	Total share return obtained by adding capital gain (closing share price minus opening share price divided by opening share price) and dividend yield (dividend per share divided by opening share price).
Q	Book value of total assets minus equity's market and book values scaled by book total assets.
ROA	Operating profit divided by total assets.
CGI	UK corporate governance (CG) index constituting 120 CG provisions extracted from the CG Code of 2010. Each CG provision of the constructed index is awarded a value of 1 if disclosure is made in firms' accounts/reports and 0 otherwise. This then is scaled to a value ranging from 100% to 0%. Principal component analysis is then applied to obtain 31 key components out of the 120 individual corporate governance provisions.
P*CGI	Interaction variable between performance (i.e., TSR or Q or ROA) and CGI.
BSE	Natural log of the number of inside and outside executives on a corporate board.
BD	Percentage of ethnic minorities and females on a corporate board.
DSPLIT	1 if CEO and chairperson positions are separated, 0 otherwise.
CEOT	Total number of years an individual remained in the CEO position within a firm.
CEOS	Total CEO pay scaled by total of all other executive directors' pay.
MANO	Proportion of all directors' ownership to total company ordinary shareholdings.
ISTO	Proportion of institutional ownership to total company ordinary shareholdings.
BLKO	Proportion of block ownership (at least own 3% to total company ordinary shareholdings).
AFS	1, if a company is audited by one of the biggest four audit firms (PricewaterhouseCoopers, Deloitte and Touche, Ernst and Young and KPMG), 0 otherwise.
LTA	Natural log of book total assets.
CEX	Total capital expenditure scaled by total assets.
RIS	Total research and development expenditure scaled by total assets.
SG	Percentage of the sales of this year minus the sales of previous year to the sales of the previous year.
CL	Takes 1 if a firm is listed in a foreign market, 0 otherwise.
IDU	Dummy variables for each of the five main industries.
YDU	Dummy variables for the years 2008-2013.

Table 3
Summary statistics and percentage of variation explained by each of 31 components of the CGI

Component	Percent Explained	SD	Mean	Median
Leadership Sub-Index's Components				
C1	31.08	0.24	0.89	1.00
C2	15.85	0.31	0.65	0.50
C3	14.25	0.25	-0.25	-0.50
Effectiveness Sub-Index's Components				
C4	16.56	0.37	0.67	0.89
C5	11.41	0.30	0.84	1.00
C6	6.92	0.22	0.10	0.00
C7	6.71	0.21	0.92	1.00
C8	6.07	0.37	0.61	0.67
C9	5.32	0.33	0.35	0.33
C10	5.29	0.084	0.007	0.00
C11	5.16	0.17	0.96	1.00
C12	4.15	0.34	0.43	0.50
C13	4.04	0.30	0.028	0.00
Accountability Sub-Index's Components				
C14	14.65	0.13	0.019	0.00
C15	10.29	0.31	0.56	0.63
C16	8.24	0.19	0.94	1.00
C17	8.14	0.25	-0.14	-0.25
C18	7.64	0.11	0.98	1.00
C19	7.42	0.14	0.030	0.00
C20	6.54	0.38	0.81	1.00
C21	5.83	0.23	0.82	1.00
C22	3.62	0.22	-0.047	0.00
Remuneration Sub-Index's Components				
C23	21.87	0.12	0.98	1.00
C24	16.25	0.29	0.87	1.00
C25	13.04	0.26	0.77	0.80
C26	9.95	0.32	0.82	1.00
C27	9.45	0.20	0.040	0.00
Relations with Shareholders Sub-Index's Components				
C28	26.39	0.35	0.24	0.00
C29	18.26	0.33	0.72	0.80
C30	11.30	0.29	0.75	0.75
C31	8.46	0.25	0.89	1.00

Notes: Principal component analysis is conducted for our five sub-indices in order to identify the most relevant corporate governance provisions that contribute to the observed effect of the governance index, where we retain all components with an eigenvalue greater than one. We also retain all corporate governance provisions with loading values exceeding 0.40. This resulted in retaining 31 components that account for 68.04% of the total variance in our original data. To compute the score of our index, we use the average equal-weighted sum of the corporate governance provisions associated with each component, with the exception of components number 3, 13, 17 and 22, which have substitute provisions. The provisions of these components are calculated as follows to reflect the substitutability: the component 3 is calculated as the sum of the roles of the board and management less board membership, divided by two. Component number 13 is computed as the sum of frequency of nomination committee (*NC*) meetings and board composition minus access to free independent legal advice, divided by three. The same approach is followed to compute the remaining two components.

Table 4
Summary statistics

Variable	Mean	Median	SD	Min	Max
Panel A - CEO pay (£m)					
CEO_salary	0.56	0.40	0.40	0.0009	2.12
CEO_bonus	0.75	0.52	0.77	0.0006	3.65
CEO_cash	1.57	0.68	3.07	0.020	36.65
CEO_non-cash	1.98	0.46	3.73	0.003	29.92
Total CEO pay (CEOP)	3.55	1.14	6.15	0.020	61.44
Panel B - CFO pay (£m)					
CFO_salary	0.36	0.29	0.23	0.015	1.82
CFO_bonus	0.39	0.30	0.34	0.005	1.85
CFO_cash	0.81	0.56	0.82	0.017	7.07
CFO_non-cash	0.95	0.38	1.44	0.0009	12.31
Total CFO pay (CFOP)	1.76	0.94	2.04	0.029	15.28
Panel C - All other executive directors pay (£m)					
AED_salary	1.36	0.92	1.21	0.003	9.80
ADE_bonus	1.56	0.94	1.90	0.002	13.66
AED_cash	3.50	1.66	5.44	0.065	58.85
AED_non-cash	4.03	1.08	6.59	0.011	46.73
Total AED pay (AEDP)	7.53	2.74	11.19	0.065	105.58
Panel D - Firm performance variables					
TSR	0.086	0.039	0.396	-0.605	0.916
Q	0.54	0.56	0.24	0.014	1.66
ROA	0.086	0.077	0.097	-0.137	0.299
Panel E - Corporate governance disclosure index					
CGI *%*	52.42	54.69	12.49	17.00	81.00
Panel F - Board characteristics (control variables)					
BSE	9.00	8.00	3.46	3.00	18.00
BD *%*	11.65	11.11	11.40	0.00	50.00
Panel G – CEO Power (control variables)					
DSPLIT %	90.33	100.00	29.57	0.00	100.00
CEOT	5.54	4.00	5.21	0.00	35.00
CEOS	0.48	0.476	0.18	0.08	1.00
Panel H - Ownership structure (control variables)					
MANO %	5.95	0.58	11.40	0.005	52.37
ISTO *%*	38.38	36.38	20.70	3.07	97.49
BLKO *%*	42.62	43.20	21.55	3.07	98.08
Panel I - Firm-characteristics (control variables)					
AFS %	82.00	100.00	38.45	0.00	100.00
TA (£*m*)	177,43.64	431.25	418,59.28	0.983	274,507.71
CEX *%*	4.99	3.70	4.14	0.42	14.73
RIS	0.07	0.024	0.14	0.00	1.24
SG *%*	7.61	5.65	18.60	-23.77	52.04
CL *%*	70.00	100.00	45.86	0.00	100.00

Notes: The table reports summary descriptive statistics relating to annual cash-based (bonus, salary, and other cash payments) and equity-based (i.e., performance share plan and any other LTIPs) pay for CEOs, CFOs, and all other executive directors (AEDs) in Panels *A*-*C*. The descriptive statistic for alterative accounting (*ROA*) and market-based (*TSR* and *Q*) measures for corporate performance provided in Panel *D*. Additionally, descriptive statistics for corporate governance disclosure index (*CGI*) are provided in Panel *E*. Finally, Panels *F, G and H* provide the descriptive statistics for control variables as follows: Panel *F* presents the statistical summary of board mechanisms, namely board size (*BSE*), board gender and ethnic diversity (*BD*), separation of CEO and chairperson positions (*DSPLIT*), CEO tenure (*CEOT*), and CEO slice (*CEOS*); Panel *G* shows the descriptive statistics for ownership variables, namely managerial ownership (*MANO*), institutional ownership (*ISTO*) and block ownership (*BLKO*), whilst Panel *H* provides the descriptive statistics of firm characteristics including audit firm size (*AFS*), firm size (*TA*), capital expenditure (*CEX*), risk taking (*RIS*), sales growth (*SG*) and cross-listing (*CL*).

Table 5
Bivariate correlations

Variable	CGI	BSE	BD	DSPLIT	CEOT	CEOS	CL	AFS	MANO	ISTO	BLKO	LTA	CEX	RIS	SG	ROA	TSR	Q	CEOP	CFOP	AEDP
CGI		.480***	.374***	.312***	-.093**	.082*	.517***	.523***	-.618***	-.260***	-.507***	.527***	.107***	-.207***	.069*	.236***	0.114***	.239***	.617***	.584***	.534***
BSE	.440***		.381***	.011	-.005	-.221***	.512***	.177***	-.619***	-.313***	-.541***	.809***	.121***	-.310***	.089**	.310***	0.033	.220***	.696***	.730***	.613***
BD	.326***	.335***		-.089**	.000	-.005	.172***	.032	-.367***	-.255***	-.364***	.418***	.126***	-.194***	-.007	.247***	-0.095**	.151***	.470***	.511***	.456***
DSPLIT	.307***	.016	-.072*		-.019	.011	.020	.273***	-.120***	.020	.009	-.036	-.002	-.086*	.004	-.031	0.017	-.118***	-.031	-.074*	-.039
CEOT	-.167***	-.045	-.054	-.074*		.064	-.112***	-.009	.126***	-.059	-.018	-.017	.094**	-.172***	.085**	.173***	0.115***	-.070*	.042	-.016	.052
CEOS	.070*	-.209***	.031	-.005	.063		-.042	.178***	-.114***	.154***	.122***	-.050	.145***	-.061	.008	.134***	0.030	-.047	.181***	.023	-.027
CL	.482***	.507***	.169***	.020	-.162***	-.057		.244***	-.530***	-.288***	-.405***	.533***	.241***	.075	.079*	.268***	0.058	.090**	.518***	.515***	.480***
AFS	.558***	.195***	.021	.273***	-.087**	.167***	.224***		-.265***	-.009	-.234***	.166***	.060	.081	.005	.013	0.017	.124***	.309***	.234***	.243***
MANO	-.420***	-.361***	-.043	-.194***	.055	-.083*	-.376***	-.326***		.159***	.466***	-.754***	-.156***	.308***	-.036	-.333***	-0.033	-.297***	-.749***	-.740***	-.689***
ISTO	-.265***	-.266***	-.225***	.017	.010	.132***	-.251***	-.043	.025		.748***	-.260***	.019	.010	-.100**	-.157***	-0.136***	-.166***	-.321***	-.372***	-.322***
BLKO	-.474***	-.517***	-.349***	.011	.078*	.106**	-.377***	-.255***	.291***	.722***		-.531***	.002	.116**	-.095**	-.245***	-0.097**	-.233***	-.620***	-.642***	-.606***
LTA	.453***	.809***	.388***	-.031	-.047	-.044	.525***	.151***	-.446***	-.209***	-.493***		.189***	-.487***	.128***	.504***	0.093**	.268***	.861***	.876***	.779***
CEX	.076*	.096**	.097**	-.018	.023	.155***	.208***	.045	-.028	.086**	.091**	.151***		-.252***	.103**	.225***	-0.048	-.111***	.157***	.212***	.102**
RIS	-.028	-.136***	-.186***	.012	-.154***	-.096*	.150***	.071	.048	.100*	.133***	-.326***	-.125**		-.090*	-.328***	-0.041	-.209***	-.349***	-.366***	-.284***
SG	.028	.091**	-.029	-.001	.034	.003	.071*	-.012	.004	-.057	-.045	.109***	.102**	-.063		.277***	0.008	-.019	.121***	.131***	.118***
ROA	.147***	.297***	.239***	-.053	.162***	.119***	.218***	-.010	-.078*	-.093**	-.187***	.512***	.161***	-.412***	.216***		0.243***	.067	.487***	.484***	.430***
TSR	.073*	.014	.067	-.006	.078*	.035	.052	.016	-.011	-.094**	-.058	.066	-.073*	-.087*	-.014	.222***		-0.014	0.157***	0.158***	0.156***
Q	.233***	.190***	.104**	-.121***	-.028	-.042	.099**	.148***	-.256***	-.178***	-.207***	.251***	-.106***	-.263***	-.051	.083**	-0.044		.298***	.220***	.293***
CEOP	.580***	.693***	.443***	-.026	.000	.202***	.476***	.312***	-.534***	-.302***	-.610***	.852***	.073*	-.222***	.084**	.456***	0.125***	.293***		.937***	.953***
CFOP	.546***	.724***	.488***	-.082*	-.064	.012	.503***	.234***	-.470***	-.342***	-.630***	.874***	.109**	-.254***	.114**	.468***	0.125***	.233***	.931***		.925***
AEDP	.456***	.753***	.445***	-.034	-.007	-.026	.443***	.238***	-.505***	-.287***	-.559***	.775***	.019	-.188***	.080*	.398***	0.119***	.280***	.951***	.926***	

Notes: The upper right half of the table provides the coefficients relating to Spearman's correlation, whilst the bottom left half of the table presents the coefficients relating to Pearson's correlation. *CGI* denotes the corporate governance disclosure index; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *CL* denotes cross-listing ; *AFS* denotes audit firm size ; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *TSR* denotes total shareholder return; *ROA* denotes return on assets; *Q* denotes Tobin's Q; *CEOP, CFOP* and *AEDP* denote natural log of total CEOs, CFOs and all other executive directors pay, respectively. ***, **, and* indicate that correlation is significant at the 0.01, 0.05 and 0.10 level, respectively

Table 6
Effect of corporate governance structure on CEOs' pay (CEOP)

Dep. Variable (*Model*)	Annual_Cash (1)	Annual_Non-cash (2)	Total (3)	VIF
Corporate governance index:				
CGI	-1.199(.000)***	-2.578(.003)***	-2.026(.000)***	3.060
Board structure:				
BSE	0.282(.025)**	-0.157(.648)	0.385(.008)***	3.287
BD	-0.025(.913)	1.518(.016)**	-0.352(.182)	1.630
CEO power:				
DSPLIT	-0.438(.000)***	0.255(.348)	-0.050(.654)	1.494
CEOT	0.007(.150)	0.057(.000)***	0.029(.000)***	1.233
CEOS	1.250(.000)***	2.674(.000)****	2.065(.000)***	1.344
Ownership structure:				
MANO	-1.631(.000)***	-1.994(.106)	-2.365(.000)***	2.343
ISTO	0.080(.649)	0.249(.599)	0.089(.655)	2.537
BLKO	-0.241(.275)	-1.575(.010)***	-0.592(.019)**	3.807
Controls:				
AFS	0.000(.955)	0.013(.000)***	0.002(.056)*	1.864
LTA	0.299(.000)***	0.497(.000)***	0.373(.000)***	5.834
CEX	-0.776(.189)	1.742(.279)	0.621(.356)	1.244
RIS	0.728(.000)***	1.338(.012)**	1.032(.000)***	1.735
SG	0.127(.356)	0.239(.522)	0.250(.112)	1.224
CL	0.225(.001)***	0.139(.585)	0.113(.159)	1.941
IDU	YES	YES	YES	-
YDU	YES	YES	YES	-
Constant	7.451***	2.341**	5.897***	-
Durbin-W. Stat.	2.175	2.147	2.171	-
F- value	109.465***	39.181***	128.614***	-
Adj. R^2	0.883	0.731	0.899	-
No. of observations	600	600	600	-

Notes: *CGI* denotes the corporate governance disclosure index; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *AFS* denotes audit firm size; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *CL* denotes cross-listing; *IDU* denotes industry dummies and *YDU* denotes year dummies. *P*-values are between brackets. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 7
Effect of corporate governance structure on CFOs and all other executive directors' (AEDs) pay

	CFO Pay (CFOP)				AED Pay (AEDP)			
Dep. Variable (*Model*)	Annual_Cash (1)	Annual_Non-cash (2)	Total (3)	VIF	Annual_Cash (4)	Annual_Non-cash (5)	Total (6)	VIF
Corporate governance index:								
CGI	-0.976(.004)***	-2.065(.057)*	-1.454(.001)***	2.849	-1.314(.000)***	-2.451(.002)***	-1.971(.000)***	3.060
Board structure:								
BSE	0.017(.900)	-1.025(.017)**	-0.032(.855)	5.363	-0.512(.000)***	-1.141(.000)***	-0.529(.000)***	3.287
BD	-0.041(.869)	2.008(.011)**	0.411(.211)	1.692	0.158(.447)	1.494(.010)***	0.392(.145)	1.630
CEO power:								
DSPLIT	-0.093(.384)	0.146(.671)	0.121(.386)	1.587	-0.334(.000)***	0.216(.385)	-0.025(.829)	1.494
CEOT	0.010(.070)*	0.068(.000)***	0.025(.001)***	1.273	0.007(.127)	0.057(.000)***	0.028(.000)***	1.233
CEOS	0.213(.190)	-0.627(.227)	0.043(.841)	1.286	-0.389(.004)***	0.372(.315)	0.003(.988)	1.344
Ownership structure:								
MANO	-0.871(.092)*	0.159(.922)	-1.160(.087)*	1.927	-1.605(.000)***	-2.024(.072)*	-2.287(.000)***	2.343
ISTO	0.193(.309)	1.513(.012)**	0.425(.084)*	2.602	0.012(.940)	0.417(.335)	0.050(.807)	2.537
BLKO	-0.126(.597)	-1.509(.050)**	-0.368(.263)	3.967	-0.360(.071)*	-1.641(.003)***	-0.641(.013)**	3.807
Controls:								
AFS	-0.002(.075)*	0.010(.016)**	0.000(.909)	1.775	0.000(.740)	0.013(.000)***	0.003(.056)*	1.864
LTA	0.308(.000)***	0.485(.000)***	0.363(.000)***	6.748	0.285(.000)***	0.480(.000)***	0.359(.000)***	5.834
CEX	-1.238(.054)*	0.151(.941)	-0.227(.785)	1.261	-0.659(.216)	2.208(.134)	0.795(.248)	1.244
RIS	0.835(.000)***	-0.024(.974)	0.470(.115)	1.751	0.829(.000)***	1.396(.004)***	1.031(.000)***	1.735
SG	0.056(.709)	0.463(.325)	0.188(.334)	1.223	0.137(.268)	0.183(.593)	0.254(.114)	1.224
CL	0.198(.009)***	0.842(.001)***	0.311(.002)***	1.765	0.146(.022)**	0.073(.681)	0.081(.321)	1.941
IDU	YES	YES	YES	-	YES	YES	YES	-
YDU	YES	YES	YES	-	YES	YES	YES	-
Constant	7.490***	4.416***	6.765***	-	8.945***	4.569***	7.755***	-
Durbin-W. Stat.	2.016	2.117	2.088	-	2.075	2.173	2.129	-
F- value	64.261***	16.884***	55.479***	-	68.632***	29.361***	66.803***	-
Adj. R^2	0.824	0.544	0.801	-	0.825	0.668	0.821	-
No. of observations	600	600	600	-	600	600	600	-

Notes: *CGI* denotes the corporate governance disclosure index; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *AFS* denotes audit firm size; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *CL* denotes cross-listing; *IDU* denotes industry dummies and *YDU* denotes year dummies. *P*-values are between brackets. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 8
Effect of corporate governance structure on total CEOs, CFOs and all other executive directors' (AEDs)

	Good-governed firms			Poorly-governed firms		
Dep. Variable (*Model*)	CEO Total Pay (1)	CFO Total Pay (2)	AED Total Pay (3)	CEO Total Pay (4)	CFO Total Pay (5)	AED Total Pay (6)
Corporate governance index:						
CGI	-1.800(.001)***	-1.152(.006)***	-1.810(.001)***	-1.592(.220)	-0.820(.637)	-1.930(.149)
Board structure:						
BSE	0.177(.286)	-0.049(.804)	0.234(.169)	0.173(.667)	-1.118(.047)**	0.445(.285)
BD	0.068(.814)	0.186(.595)	0.118(.691)	0.406(.712)	0.922(.537)	0.641(.571)
CEO power:						
DSPLIT	0.131(.409)	0.063(.755)	0.156(.338)	-0.347(.140)	0.148(.576)	-0.290(.229)
CEOT	0.033(.000)***	0.031(.000)***	0.033(.000)***	-0.003(.884)	-0.005(.817)	0.000(.986)
CEOS	1.834(.000)***	0.094(.683)	-0.198(.298)	2.907(.000)***	-0.143(.852)	0.525(.405)
Ownership structure:						
MANO	-2.643(.000)***	-1.781(.039)**	-2.581(.000)***	-3.241(.001)***	-0.985(.435)	-3.440(.000)***
ISTO	0.306(.151)	0.463(.069)*	0.255(.242)	-1.161(.219)	0.336(.805)	-0.880(.362)
BLKO	-0.375(.072)*	-0.057(.861)	-0.392(.163)	0.523(.715)	0.254(.895)	0.269(.855)
Controls:						
AFS	-0.047(.704)	-0.026(.865)	-0.059(.639)	-0.367(.128)	-1.046(.003)***	-0.350(.157)
LTA	0.416(.000)***	0.379(.000)***	0.410(.000)***	0.362(.000)***	0.432(.001)***	0.311(.001)***
CEX	0.827(.269)	-0.675(.459)	0.987(.199)	-2.977(.240)	-2.206(.454)	-3.231(.215)
RIS	1.216(.000)***	0.749(.024)**	1.239(.000)***	-0.139(.862)	-0.425(.657)	-0.409(.617)
SG	0.388(.038)**	0.321(.162)	0.401(.036)**	-0.398(.207)	-0.405(.251)	-0.418(.197)
CL	0.012(.902)	0.227(.053)*	-0.020(.843)	0.284(.226)	0.690(.016)**	0.351(.148)
IDU	YES	YES	YES	YES	YES	YES
YDU	YES	YES	YES	YES	YES	YES
Constant	5.448***	6.391***	7.242***	6.985***	8.249***	9.432***
Durbin-W. Stat.	2.106	2.165	2.134	1.916	2.086	1.916
F- value	84.309***	42.042***	79.051***	54.995***	21.627***	46.599***
Adj. R^2	0.876	0.783	0.868	0.974	0.907	0.970
No. of observations	447	447	447	153	153	153

Notes: *CGI* denotes the corporate governance disclosure index; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *AFS* denotes audit firm size; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *CL* denotes cross-listing; *IDU* denotes industry dummies and *YDU* denotes year dummies. *P*-values are between brackets. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 9
Pay-for-performance relationship

	CEO Pay (CEOP)			CFO Pay (CFOP)			AED Pay (AEDP)		
Dep. Variable	Annual_Cash	Annual_Non-cash	Total	Annual_Cash	Annual_Non-cash	Total	Annual_Cash	Annual_Non-cash	Total
(Model)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Corporate performance:									
TSR	0.146(.021)**	0.455(.011)**	0.242(.001)***	0.142(.035)**	0.446(.038)**	0.197(.027)**	0.187(.001)***	0.349(.034)**	0.247(.001)***
Controls:									
BSE	0.231(.066)*	-0.134(.707)	0.358(.016)**	-0.023(.867)	0.997(.022)**	-0.066(.711)	-0.545(.000)***	-1.140(.001)***	-0.558(.000)***
BD	-0.408(.072)*	0.671(.297)	-0.186(.487)	-0.276(.257)	1.005(.201)	-0.022(.946)	-0.208(.310)	0.638(.281)	-0.142(.601)
DSPLIT	-0.473(.000)***	-0.199(.454)	-0.240(.026)**	-0.093(.350)	-0.053(.871)	0.056(.668)	-0.410(.000)***	-0.189(.438)	-0.207(.060)*
CEOT	0.007(.165)	0.052(.000)***	0.028(.000)***	0.010(054)*	0.064(.000)***	0.025(.000)***	0.006(.162)	0.053(.000)***	0.027(.000)***
CEOS	1.242(.000)***	2.722(.000)***	2.054(.000)***	0.206(.198)	-0.555(.288)	0.037(.863)	-0.395(.003)***	0.416(.276)	-0.006(.971)
MANO	-1.524(.000)***	-2.524(.031)**	-1.165(.002)***	-0.497(.302)	-0428(.781)	-0.925(.144)	-1.404(.000)***	-2.663(.013)**	-2.112(.000)***
ISTO	0.112(.510)	0.493(.307)	0.155(.440)	0.190(303)	1.859(.002)***	0.505(.036)**	0.043(.781)	0.653(.141)	0.119(.561)
BLKO	-0.190(.368)	-1.844(.003)***	-0.614(.018)**	-0.060(.798)	-1.837(.016)**	-0.377(.216)	-0.330(.097)*	-1.891(.001)***	-0.659(.013)**
AFS	-0.343(.000)***	0.117(.608)	0.285(.003)***	-0.355(.000)***	-0.274(.389)	-0.378(.001)***	-0.291(.000)***	0.059(.780)	-0.283(.004)***
LTA	0.297(.000)***	0.476(.000)***	0.357(.000)***	0.302(.000)***	0.470(.000)***	0.353(.000)***	0.278(.000)***	0.463(.000)***	0.345(.000)***
CEX	-0.769(.187)	2.714(.101)	0.719(.296)	-1.249(.050)**	1.511(.461)	-0.051(.951)	-0.607(.251)	3.027(.047)**	0.916(.192)
RIS	0.718(.000)***	1.397(.010)***	0.998(.000)***	0.813(.000)***	0.086(.904)	0.453(.123)	0.815(.000)***	1.438(.004)***	1.005(.000)***
SG	0.052(.699)	0.049(.898)	0.125(.436)	0.000(.998)	0.328(.491)	0.108(.577)	0.049(.692)	0.023(.948)	0.129(.429)
CL	0.170(.013)**	0.077(.706)	0.029(.722)	0.156(.035)**	0.825(.001)***	0.257(.008)***	0.087(.163)	0.015(.936)	-0.001(.988)
IDU	YES	YES	YES	YES	YES	YES	YES	YES	YES
YDU	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	7.314***	2.872(.000)***	5.882***	7.247***	4.911***	6.674***	8.822***	5.108***	7.735***
Durbin-W. Stat.	2.175	2.177	2.219	2.004	2.135	2.116	2.085	2.239	2.207
F- value	112.879***	36.483***	123.112***	66.190***	16.595***	56.640***	69.993***	26.632***	64.234***
Adj. R^2	0.886	0.716	0.895	0.828	0.540	0.804	0.828	0.645	0.815
No. of observations	600	600	600	600	600	600	600	600	600

Notes: *TSR* denotes total shareholder return; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *AFS* denotes audit firm size; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *CL* denotes cross-listing; *IDU* denotes industry dummies and *YDU* denotes year dummies. *P*-values are between brackets. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

Table 10
The moderating role of firm-level corporate governance

	CEO Pay (CEOP)			CFO Pay (CFOP)			AED Pay (AEDP)		
Dep. Variable (Model)	Total (1)	Total (2)	Total (3)	Total (4)	Total (5)	Total (6)	Total (7)	Total (8)	Total (9)
Corporate performance:									
TSR	0.466(.003)***	-	-	0.583(.001)***	-	-	0.416(.006)***	-	-
Q	-	2.119(.005)***	-	-	2.723(.006)***	-	-	1.827(.019)**	-
ROA	-	-	6.367(.002)***	-	-	7.036(.005)***	-	-	5.154(.011)**
Corporate governance index:									
CGI	0.014(.976)	0.183(.792)	0.306(.573)	0.814(.122)	1.224(.208)	0.997(.133)	0.012(.980)	0.289(.683)	0.111(.839)
Interaction variable:									
P*CGI	-0.570(.010)***	-4.022(.002)***	-6.722(.003)***	-0.918(.020)**	-5.460(.001)***	-8.061(.006)***	-0.497(.064)*	-3.639(.007)***	-4.679(.005)***
Controls:									
BSE	1.977(.000)***	-0.314(.029)**	-1.806(.000)***	1.475(.000)***	-0.173(.327)	-1.361(.000)***	0.989(.000)***	-0.603(.000)***	-0.821(.000)***
BD	0.645(.064)*	0.426(.107)	0.739(.019)**	0.611(.120)	0.602(.066)*	0.758(.040)**	0.636(.068)*	0.485(.072)*	0.768(.015)**
DSPLIT	-0.407(.006)***	0.038(.744)	0.394(.004)***	-0.219(.191)	0.212(.144)	0.240(.126)	-0.374(.012)**	0.044(.713)	0.361(.008)***
CEOT	0.024(.002)***	0.026(.000)***	0.015(.027)**	0.019(.028)**	0.021(.003)***	0.009(.067)*	0.021(.006)***	0.025(.000)***	0.014(.053)*
CEOS	2.694(.000)***	1.981(.000)***	2.164(.000)***	0.601(.019)**	-0.063(.765)	-0.188(.450)	0.597(.007)***	-0.076(.660)	0.084(.686)
MANO	-3.714(.000)***	-2.090(.000)***	-2.565(.000)***	-2.320(.004)***	-0.768(.251)	-1.547(.049)**	-3.655(.000)***	-2.042(.000)***	-2561(.000)***
ISTO	0.465(.071)*	0.145(.464)	0.369(.114)	0.661(.021)**	0.505(.037)**	0.713(.009)***	0.418(.105)	0.103(.610)	0.300(.200)
BLKO	-2.146(.000)***	-0.623(.013)**	-1.769(.000)***	-1.816(.000)***	-0.394(.196)	-1.530(.000)***	-2.137(.000)***	-0.665(.009)***	-1.754(.000)***
AFS	0.128(.290)	0.002(.127)	0.006(.355)	-0.045(.748)	0.000(.851)	0.004(.043)**	0.114(.348)	0.002(.121)	0.006(.000)***
LTA	0.087(.000)***	0.386(.000)***	0.004(.000)***	0.116(.000)***	0.389(.000)***	0.001(.000)***	0.134(.005)***	0.375(.000)***	0.000(.000)***
CEX	0.598(.500)	0.757(.256)	0.381(.820)	0.146(.883)	0.025(.975)	0.390(.677)	0.829(.351)	0.923(.176)	0.569(.485)
RIS	0.188(.476)	0.909(.000)***	0.018(.638)	0.777(.016)**	0.227(.449)	0.143(.661)	0.141(.591)	0.901(.000)***	0.284(.269)
SG	0.004(.983)	0.214(.169)	0.032(.867)	0.008(.971)	0.158(.407)	0.091(.686)	0.012(.955)	0.217(.173)	-0.022(.910)
CL	0.336(.001)***	0125(.116)	0.293(.002)***	0.493(.000)***	0.335(.001)***	0.453(.000)***	0.296(.004)***	0.092(.254)	0.262(.002)***
IDU	YES	YES	YES	YES	YES	YES	YES	YES	YES
YDU	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	9.736***	4.822***	8.940***	10.523***	5.286***	9.791***	11.620***	6.804***	10.851***
Durbin-W. Stat.	2.096	2.116	2.098	2.138	2.111	2.090	2.096	2.079	2.116
F- value	62.953***	122.275***	81.823***	32.715	54.137***	39.576***	32.388***	63.531***	42.366***
Adj. R^2	0.830	0.902	0.850	0.726	0.810	0.741	0.712	0.825	0.744
No. of observations	600	600	600	600	600	600	600	600	600

Notes: *CGI* denotes the corporate governance index; *P*CGI* denotes the interaction variable between the CGI and each corporate performance proxies; *TSR* denotes total shareholder return; *Q* denotes Tobin's Q; *ROA* denotes return on assets; *BSE* denotes board size; *BD* denotes board gender and ethnic diversity; *DSPLIT* denotes separation of CEO and chairperson positions; *CEOT* denotes CEO tenure; *CEOS* denotes CEO pay slice; *MANO* denotes managerial ownership; *ISTO* denotes institutional ownership; *BLKO* denotes block ownership; *AFS* denotes audit firm size; *LTA* denotes firm size; *CEX* denotes capital expenditure; *RIS* denotes risk; *SG* denotes sales growth; *CL* denotes cross-listing; *IDU* denotes industry dummies and *YDU* denotes year dummies

Table 11
A summary of the findings and hypotheses

Hypotheses	Descriptions	Results
H1	There is a statistically significant negative association between firm-level corporate governance disclosure index score and executive pay.	Accepted
H2	There is a statistically significant association between board structure and executive pay.	Rejected
H3	There is a statistically significant association between CEO power and executive pay.	Generally accepted
H4	There is a statistically significant association between ownership structure and executive pay.	Generally accepted
H5	There is a statistically positive link between executive pay and performance (PPS).	Accepted
H6	Corporate governance moderates the association between executive pay and performance, with the PPS being stronger in firms with good corporate governance mechanisms.	Accepted