Strategy-Pay Linkage and Future Performance: Evidence from FTSE 350 Firms' Annual Reports

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Abstract

This study examines the economic implications of firms' strategy disclosures. Examining the annual reports of FTSE 350 firms, I find that stronger strategy-pay linkage (i.e., the linkage between strategies and future executive pay policies) disclosed in the annual reports is associated with better operating performance over the subsequent three years. The result is mainly driven by firms with lower proprietary costs of disclosures and firms whose strategy disclosures are expected to face more public scrutiny. Moreover, I find that stronger strategy-pay linkage leads to greater investor consensus about future firm performance and lower information asymmetry among market participants. Finally, there is no evidence that managers disclose the linkage as a means to justify their future excess pay. Overall, strategy-pay linkage appears to be a useful predictor of firms' future operating performance.

Keywords: strategy disclosure; strategic report; directors' remuneration report; annual report; executive compensation; operating performance

JEL Codes: D82; D83; G14; L10; L20; M12; M41

1. Introduction

Strategy analysis is critical to assessing a firm's competitive advantage and forecasting its future performance (Palepu and Healy, 2013). Anecdotal evidence indicates that investors pay close attention to firms' disclosures on corporate and business strategies.[1] Prior academic research also finds that strategy disclosures are associated with significant market reactions (e.g., Gu and Li, 2007; Whittington et al., 2016; Baginski et al., 2017). In fact, regulators not only recognise the importance of these disclosures but also exert effort to improve the disclosures' usefulness to investors.

Since 2013, directors of U.K. quoted firms have been mandated to disclose a *strategic report* as part of the annual report to discuss their company strategies. Although there are few statutory requirements on how the strategies need to be disclosed, firms are encouraged to follow the Financial Reporting Council (FRC)'s *Guidance on the Strategic Report*, which outlines the desirable communication principles and content elements (FRC, 2014).[2] Also, in another section of the annual report, the *directors' remuneration report*, firms are required to disclose their future executive pay policies.[3] The FRC calls for firms to demonstrate the linkage between the strategies and the future pay policies (hereafter, the *strategy-pay linkage*) by ensuring that the

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[1] Larry Fink, the CEO of Blackrock, urged the S&P 500 firms to be more forthcoming about their long-term strategies in his 2016 Letter to CEOs: https://www.blackrock.com/corporate/investor-relations/2016-larry-fink-ceo-letter.

[2] The Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013 requires that all quoted companies (i.e., firms incorporated in the U.K. and listed on a main stock exchange in the U.K., the U.S. or an EEA state), unless entitled to the small companies exemption, prepare a *strategic report* as part of the annual report for fiscal years ending on or after September 30, 2013. In the strategic report, managers are required to disclose certain items, such as company strategies, KPIs, and risk factors. As the regulatory body, the FRC released a non-mandatory guidance document for the quoted firms, the *Guidance on the Strategic Report*, in June 2014 to promote high-quality strategy disclosures.

[3] The Large and Medium-Sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013 applies to all fiscal years ending on or after September 30, 2013, and requires that firms explain in the directors' remuneration report how the executives' pay policies will be implemented in the next fiscal year. In this study, the terms "remuneration," "pay" and "compensation" are used interchangeably.

key performance indicators (KPIs) disclosed in the strategic report, which are meant to measure the success of the strategies, are consistent with the KPIs that determine the executives' future pay. The purpose of articulating the strategy-pay linkage is to enable a better understanding of the managers' incentives to implement the strategies and ultimately, a better assessment of the firms' future prospects (FRC, 2014). This disclosure practice is also promoted by the Investment Association, which represents over 200 asset managers in the U.K., and by the Institutional Shareholder Services (ISS), an influential proxy advisor.[4]

While the strategy-pay linkage is often viewed as a desirable disclosure feature by practitioners, there is no empirical evidence that it actually contributes to the usefulness of strategy disclosures. Broadly speaking, although the existing literature shows that firms' strategy disclosures are informative to market participants (e.g., Gu and Li, 2007; Whittington et al., 2016; Baginski et al., 2017), what constitutes useful disclosures remains largely unexplored. Thus, it is also unclear how market participants (can) systematically utilise these disclosures in strategy analysis. This study takes the initial step in filling the knowledge gap by examining the role of strategy-pay linkage in enhancing the usefulness of strategy disclosures. Specifically, it investigates whether the linkage (1) helps predict firms' future operating performance, and (2) informs the investors and/or analysts.

In the strategy field, scholars have long been examining the relationships among strategy, executive compensation, and firm performance. Balkin and Gomez-Mejia (1987; 1990) introduce a contingency theory, which suggests that the effectiveness of a firm's pay policy depends on

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[4] Refer to the Investment Association Principles of Remuneration:
https://www.ivis.co.uk/media/13877/principles-of-remuneration-2020-final.pdf; and the ISS United Kingdom and Ireland Proxy Voting Guidelines:
https://www.issgovernance.com/file/policy/active/emea/UK-and-Ireland-Voting-Guidelines.pdf

how well the policy fits with the firm's strategy (hereafter, the *strategy-pay fit*).[5] Motivated by this theory, subsequent empirical studies (e.g., Gomez-Mejia, 1992; Montemayor, 1996; Rajagopalan, 1997; Ghosh et al., 2010) use various definitions of strategy-pay fit and generally find a contemporaneous positive association between the fit and the firms' operating performance. Based on these findings, a natural conjecture is that if the annual reports provide useful information on firms' future strategies and future pay policies, then the strategy-pay linkage may be a reasonable proxy for the *future strategy-pay fit* and therefore, will be positively associated with *future* operating performance.

Another reason to expect this positive association is that the strategy-pay linkage may serve as a bonding mechanism by which managers signal their commitment to implementing the firms' strategies. According to the regulation, if a KPI is disclosed in the current year's remuneration report because it will affect future executive pay, then the performance of this KPI will also need to be disclosed in the next year's remuneration report.[6] In other words, if the strategy-pay linkage is established for a given strategy, then the performance of this strategy will have to be revealed in the next year; thus, managers are more incentivised to carry out the strategy than if there is no linkage.

However, both the contingency-theory and the bonding arguments rely on the assumption that strategic reports provide useful information on firms' future strategies, which are then linked to the KPIs disclosed in the strategic reports. This assumption can be violated for at least a few reasons. First, given the proprietary nature of strategy information (Verrecchia, 1983), managers

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[5] The term "fit" is commonly used in the strategy literature. However, I refer to my empirical measure as "strategy-pay linkage" to remain consistent with the FRC's terminology and to distinguish this measure from the previous measures of "strategy-pay fit."

[6] Refer to the Large and Medium-Sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013, Part 3, 12(3): https://www.legislation.gov.uk/uksi/2013/1981/schedule/made.

may be reluctant to provide details of the future strategic plans in the strategic reports. Second, anecdotal evidence indicates that firms sometimes disclose certain KPIs in the strategic reports simply because the data are available, rather than because those KPIs are relevant to the strategies.[7] Finally, the strategy-pay linkage may only be a tool for justifying the managers' excess compensation. The managerial rent-extraction view suggests that powerful managers have a great influence on their own pay contracts and thus, can extract rents in the form of excess pay (Bebchuk and Fried, 2003). If so, it is possible that managers attempt to show external stakeholders the "rationale" behind their pay arrangements by "establishing" the strategy-pay linkage in the annual reports, while in fact, their remuneration KPIs are associated with easy targets or could be easily manipulated, thereby allowing the managers to gain excess pay. Overall, whether strategy-pay linkage is positively associated with future operating performance remains an empirical question.

For similar reasons, investors and analysts may or may not find the strategy-pay linkage useful, depending on how they perceive the nature of this disclosure feature (i.e., being informative about future performance vs. being a tool for managerial rent-extraction). Also, it depends on how well the market participants process the information from the annual reports: given their limited information processing capacity (Hirshleifer and Teoh, 2003), they may not fully incorporate the future performance implications of the strategy-pay linkage into the assessment of firm value.[8]

Using a sample of 600 annual reports of FTSE 350 firms disclosed from 2013 to 2018, I construct a strategy-pay linkage measure based on the extent to which the KPIs shown in the

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[7] Refer to the PWC report: https://www.pwc.co.uk/audit-assurance/assets/pdf/kpis-and-the-link-to-strategic-objectives.pdf.
[8] Annual reports are often criticised as being too long and hard to read (FRC, 2014; 2018).

strategic report overlap the KPIs that determine the CEO's future pay, which is consistent with the FRC's guidance (FRC, 2014). I start the empirical analyses by investigating the determinants of strategy-pay linkage. I find that firm size and institutional ownership are positively associated with the linkage. Since prior empirical studies show that disclosure quality increases in firm size (e.g., Lang and Lundholm, 1993) and institutional ownership (e.g., Healy et al., 1999; Bushee and Noe, 2000), the result is consistent with the notion that strategy-pay linkage is an attribute of high-quality disclosure. I also find that firms with higher earnings volatility in the past tend to disclose stronger strategy-pay linkage. An interpretation is that these managers of these firms intend to reduce the uncertainty about future earnings by providing more transparent disclosure.

Next, I investigate the economic implications of strategy-pay linkage. In the main analysis of the study, I find a significant and positive relation between the linkage disclosed in the current year (i.e., year t)'s annual report and the firm's return on net operating assets (RNOA) in each of the next three years (i.e., years $t+1$, $t+2$, and $t+3$). For a one standard deviation increase in the strategy-pay linkage, there is an increase of 9.7% to 15% in future RNOA relative to its median. The results indicate that firms which show stronger strategy-pay linkage in the annual reports tend to have better operating performance in the future.

To test the validity of the inference, I conduct several cross-sectional tests to examine whether strategy-pay linkage is more predictive of future operating performance in situations where the linkage is expected to be a better proxy for future *strategy-pay fit*. In the first test, I partition the full sample based on whether the firm has high proprietary costs of disclosures (i.e., non-zero R&D expense) or low proprietary costs (i.e., zero R&D expense). I expect that firms with high proprietary costs are less likely to provide informative disclosures about their future strategies in the strategic reports (Verrecchia, 1983), in which case the strategy-pay linkage will

be less predictive of future performance. Consistent with the prediction, I find that the main result holds only for the subsample of firms that have low proprietary costs of disclosures, but not for the other subsample.

In the second test, I partition the sample based on whether the firm's investors showed strong dissatisfaction with the directors' remuneration report in the *previous year's* annual general meeting (AGM) or not. The idea is that such prior dissatisfaction would presumably bring more public attention to the current year's annual report disclosures, not only the remuneration report but also the strategic report (as it explains the strategic rationale behind the remuneration policy). Anticipating the rising public scrutiny, managers will try to improve the quality of strategy disclosures in the current year's strategic report; in this case, I expect the strategy-pay linkage to be more informative about future firm performance.[9] To implement the test, I measure investor dissatisfaction using two proxies: (1) the percentage of votes against the approval of the directors' remuneration report at the previous AGM; (2) an indicator variable that equals one if the Institutional Voting Information Service (IVIS) was dissatisfied with the firm's remuneration report in the prior year, and zero otherwise.[10] I first show that both measures of investor dissatisfaction are positively associated with the changes in the level of strategy-pay linkage, consistent with the notion that managers attempt to improve the current disclosure quality if the remuneration report was poorly perceived in the previous year. Next, in line with the expectation, I find that the positive relation between strategy-pay linkage and future

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[9] The reasoning is consistent with the finding of Mukhopadhyay and Shivakumar (2020) that negative Say-on-Pay voting outcomes in the prior year's AGM are associated with increases in the quantity of KPI disclosures in the current year's proxy filings.

[10] The Institutional Voting Information Service (IVIS), a subsidiary under the Investment Association, is one of the leading corporate governance research providers in the U.K. Each year, the IVIS analyses the directors' remuneration reports of all firms in the FTSE All Share Index and the top 50 companies in the FTSE Fledgling Index, and releases a report that outlines the issues for each firm. The IVIS issues a "red" or "amber" report if it is dissatisfied with the firm's remuneration report.

operating performance is mainly driven by firm-years that are associated with strong investor dissatisfaction in the previous year (i.e., if the percentage of votes against the remuneration report is higher than the sample median, or if the IVIS expresses dissatisfaction with the remuneration report).

To investigate whether strategy-pay linkage informs the market participants, I test the relations between the linkage and various market outcomes. First, I find that while the linkage is not significantly associated with the absolute cumulative abnormal returns in the 3-day window around the release date of the annual report, it is negatively associated with the abnormal trading volume in this window. The interpretation is that while the average investor's belief about the firm's future prospect is not affected by the level of strategy-pay linkage shown in the annual report, stronger linkage does lead to greater investor consensus about future firm performance (Holthausen and Verrecchia, 1990; Hagigi et al., 1993). Also, I find that stronger linkage is associated with lower abnormal bid-ask spreads, or in other words, less information asymmetry among the market participants (e.g., Bushee et al., 2010; Blankespoor et al., 2014). Taken together, strategy-pay linkage does convey useful information to the investors. However, it does not seem to inform the analysts, as I do not find a significant relation between the linkage and the absolute analyst forecast error or the analyst forecast dispersion in the year after the annual report is released (Lang and Lundholm, 1996; Barron and Stuerke, 1998).

In additional analyses, I explore whether managers disclose strategy-pay linkage as a way to justify their excess pay. Specifically, I test the relation between the linkage shown in the current year's annual report and the manager's excess pay in the following year, where the excess pay is calculated following Core et al. (2008). I do not find a significant relation between

the two. Taken together, strategy-pay linkage appears to be a meaningful disclosure feature rather than a tool for managerial rent-extraction.

This paper has two major contributions. First, it adds to the nascent literature on strategy disclosures. Despite the large volume of accounting research in corporate disclosures, the literature offers limited insights into the characteristics of strategy disclosures, the importance of which has been recognised by investors and regulators. So far, studies have shown that strategy disclosures convey useful information to the markets (e.g., Gu and Li, 2007; Whittington et al., 2016; Baginski et al., 2017; Athanasakou et al., 2019). However, there is a lack of evidence on what elements constitute useful strategy disclosures. This paper fills the gap in the literature by showing that stronger linkage between strategy disclosures and future pay policies results in more useful disclosures, as the linkage provides a signal about future firm performance.

Second, this paper contributes to the strategy literature by introducing a novel measure of future *strategy-pay fit.* Existing measures are often constructed based on the firms' current strategies and pay policies, and are shown to explain contemporaneous firm performance (e.g., Gomez-Mejia, 1992; Rajagopalan, 1997). However, if the firms intend to change their strategies and/or pay policies in the future, the existing measures will not capture these changes and thus, may not be useful predictors of future performance. In contrast, the U.K. corporate reporting setting offers the unique advantage of providing information on both firms' future strategies and future pay policies, thereby allowing researchers to directly estimate the future *strategy-pay fit,* which theoretically is a better predictor of future firm performance. Moreover, the existing measures are generally constructed using survey data, which are not widely available to researchers, or data from firms within a single industry, which may render the generalisability of the results (e.g., Gomez-Mejia, 1992; Rajagopalan, 1997; Ghosh et al., 2010). This study

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contributes to the literature by developing a method to measure the *fit* using data that are publicly available across a large number of firms and years.

The remainder of this study is organised as follows: Section 2 describes the institutional background of U.K. quoted firms' disclosures on strategies and executives' pay policies; Section 3 discusses the prior literature and the hypothesis development; Section 4 describes the data sources and the sample; Sections 5 and 6 present the empirical analyses; Section 7 concludes.

2. Institutional Background

2.1 Annual reports of U.K. quoted firms

In the U.K., the Companies Act 2006 requires that for each fiscal year, quoted firms deliver their annual reports to the Companies House, usually within six months after the end of the fiscal year. The annual reports must also be made publicly available on the company website as soon as reasonably practicable.[11] In the sample of this study, firms on average release their annual report around 4 weeks after the preliminary full-year earnings announcement, and around 6 weeks before the AGM. The purpose of the annual report, according to the FRC, is to "provide information necessary for shareholder(s) to assess the entity's: (a) development, performance and position; (b) future prospects; (c) strategy for achieving its objectives; (d) business model; (e) governance; and (f) directors' remuneration" (FRC, 2014).

An annual report consists of five main components: the strategic report, the directors' report, the directors' remuneration report, the company's annual accounts, and any separate corporate governance statement.[12] This paper focuses on the strategic report, in which the management is expected to provide a comprehensive discussion of the firm's strategies, as well

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[11] Companies Act 2006 Part 15 Chapter 7: Publication of Accounts and Reports.
[12] Companies Act 2006 Part 15 Chapter 10: Filing Obligations of Different Descriptions of Company.

as the directors' remuneration report, which shows the remuneration policies and the implementation of these policies for the current fiscal year and the following year. In 2019, the average length of a FTSE 350 firm's annual report was 181 pages, 52.9 (20) pages of which were in the strategic report (directors' remuneration report), according to Grant Thornton's Corporate Governance Review (Grant Thornton, 2019). In the following sections, I will provide more institutional details about the strategic report, the directors' remuneration report, and the concept of strategy-pay linkage.

2.2 Strategic report

The disclosure of strategy information is an important element of corporate reporting. In August 2013, the U.K. Parliament passed the Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013 (hereafter, the "Strategic Report Regulation"), which required that all quoted companies, unless entitled to the small companies exemption, prepare a strategic report as part of the annual report for fiscal years ending on or after September 30, 2013. The report would need to be approved by the board of directors and signed by the board or the company secretary.[13] The main purpose of the regulation was to better provide investors with useful information on company strategies so that the investors can monitor the firms more effectively and make better investment decisions.[14] Before the Strategic Report Regulation, firms were required to disclose a "business review" section, which was similar to the strategic report in terms of the content. However, firms were not strictly required to discuss their strategies in the business review. In fact, investors and regulators expressed the concern that it was too difficult to

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[13] Companies Act 2006 Part 15 Chapter 4A: Strategic Report.
[14] The Impact Assessment of the regulation:
https://www.legislation.gov.uk/ukia/2013/105/pdfs/ukia_20130105_en.pdf.

identify the key strategy information from the long and complex annual reports, which eventually led to the reform.[15]

As the regulatory body, the Financial Reporting Council (FRC) released a non-mandatory guidance document, the *Guidance on the Strategic Report*, in June 2014 to promote high-quality strategy disclosures.[16] The guidance suggested that a strategic report should include the following themes and the associated content elements: strategic management (i.e., strategies, objectives, and business models), business environment (i.e., trends and factors, principal risks and uncertainties, and ESG matters), and performance (i.e., analyses of performance and position, KPIs and employee gender diversity). Also, the guidance listed a few communication principles that the FRC encouraged, one of which was that firms should show the linkage between different parts of the annual report, especially between the strategic report and the directors' remuneration report.

Anecdotally, the disclosure quality of the strategic report has varied dramatically across firms, potentially because the Strategic Report Regulation imposed few "hard requirements" on the content or format of the disclosures. For instance, while firms were required to describe their strategies, what they would need to disclose as the *strategies* was not specified in the legislative document; thus, strategy disclosures in these reports would be largely voluntary in nature. Although the FRC guidance document provided detailed instructions for best reporting practices, firms could ultimately decide on the extent to which they follow the guidance. These variations

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[15] Jo Swinson, the Parliamentary Under-Secretary of State for Business, Innovation and Skills, claimed that the U.K. firms' annual report structure as of July 2013 was unhelpful to investors in finding information about strategy, business model and principal risks. Refer to the Draft Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013: https://publications.parliament.uk/pa/cm201314/cmgeneral/deleg3/130716/130716s01.htm.
[16] The FRC regulates auditors, accountants and actuaries, and sets the U.K.'s Corporate Governance and Stewardship Codes.

in the reporting quality allow researchers to examine the underlying features that constitute useful strategy disclosures.

2.3 Directors' remuneration report

In the U.K., executive remuneration has been a topic that attracts significant attention from investors, regulators, politicians, and other stakeholders. How a firm rewards its senior executives can significantly affect the firm's success in achieving its strategic objectives. To increase the transparency of pay policies, the Directors' Remuneration Report Regulations 2002 first mandated that quoted firms disclose a directors' remuneration report as part of the annual report for each fiscal year ending on or after December 31, 2002.[17] The report should provide information about the remuneration committee and directors' pay policies (e.g., salaries, benefits, bonus plans, long-term incentive plans). Also, the report would be subject to a non-binding shareholder vote at the AGM, a practice commonly referred to as "Say on Pay."

In the decade after the 2002 Regulations, there have been some amendments in terms of disclosure requirements. The most substantial changes occurred when the Large and Medium-Sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013 (hereafter, the "Pay Disclosure Regulation") came into force, which also applied to all fiscal years ending on or after September 30, 2013. The major change that would be relevant to this study was that firms were required to disclose in a given year's annual report how the directors' pay policies would be implemented in the following fiscal year.[18]

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[17] For details of the regulations, refer to http://www.legislation.gov.uk/uksi/2002/1986/contents/made.
[18] Other major changes include for example, 1) the requirement to disclose a "single total figure table" that shows elements of the pay package and the total pay amount for each director; 2) in addition to the original annual non-binding vote on the remuneration report, the remuneration policy will be subject to a separate binding shareholder vote at the AGM every three years or sooner if the firm intends to change the policy.

In terms of the remuneration structure, a pay package usually consists of fixed pay, which typically includes salaries, benefits, and pensions; variable pay, which usually includes bonus plans and long-term incentive plans (LTIPs). The amount of variable pay that managers can eventually be awarded depends on the performance of certain financial and/or non-financial KPIs. The Pay Disclosure Regulation required that in each year's remuneration report, firms disclose the KPIs that determine the variable pay for the current year (i.e., the fiscal year that has just passed) and for the next fiscal year.

2.4 Strategy-pay linkage

The concept of *linkage* in corporate reporting has been frequently emphasised by the FRC. As the 2014 guidance indicates:

"effective linkage enhances the usefulness of individual pieces of information in an annual report and increases their relevance to investors. The [FRC] considers that 'linkage' is a key quality for investors."

The FRC encourages firms to show the strategy-pay linkage in the annual report: the KPIs in the strategic report should match the KPIs that determine future executive remuneration, which are shown in the directors' remuneration report. The purpose is to increase disclosure transparency: when the same KPIs are used, investors can easily see how each strategic objective is linked to executive pay. In other words, the strategy-pay linkage enables investors to better understand the managers' incentives to carry out the strategy and ultimately, to better evaluate the firms' future prospects.

Anecdotally, firms disclose such linkage to different extents. For instance, while some firms such as BP include a KPI section in the strategic report and explicitly highlight which of

those KPIs are used in remuneration, some other firms do not even clearly indicate their KPIs in the strategic report.[19] To learn more about the regulators' perspective on U.K. firms' strategy disclosures, I conducted interviews with two directors of the FRC. The key takeaway was that while there had been an improvement in the reporting practice after 2013, regulators were still concerned about the lack of strategy-pay linkage shown in the annual reports, an issue that the FRC had been discussing in its Annual Review of Corporate Reporting since 2016 (FRC, 2016; 2017; 2018). Grant Thornton's Corporate Governance Review also provides supporting evidence: only 15% of the FTSE 350 firms explained the strategy-pay linkage clearly in their 2019 annual reports (Grant Thornton, 2019).

3. Literature Review and Hypothesis Development

3.1 Strategy, pay and firm performance

A stream of strategy literature focuses on understanding the relationships among firm strategy, pay system, and organizational performance. Balkin and Gomez-Mejia (1987; 1990) develop a framework for understanding these relationships. Specifically, they introduce a contingency theory, which suggests that the effectiveness of managerial compensation in providing proper incentives is a function of the fit between the firm's strategy and its pay system. Both studies indicate that a higher degree of *strategy-pay fit* facilitates more effective compensation. Subsequently, a series of studies examine the performance implications of the strategy-pay fit (e.g., Gomez-Mejia, 1992; Montemayor, 1996; Rajagopalan, 1997; Ghosh et al., 2010). The underlying conjecture is that if a systematic matching of strategy and pay contributes to more effective compensation, it should also have a positive impact on firm performance

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[19] Refer to BP's 2018 Annual Report: https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/investors/bp-annual-report-and-form-20f-2018.pdf.

(Gomez-Mejia, 1992). Consistent with the prediction, these studies generally find that strategy-pay fit is positively associated with contemporaneous firm performance. The main difference among them, however, is that they examine different aspects of firm strategy and/or pay system and thus, define the *strategy-pay fit* differently.

Gomez-Mejia (1992) investigates strategies at the corporate level: the degree of diversification. He defines a good *strategy-pay fit* in several ways, such as one that matches single-product firms with a pay arrangement that offers generous long-term incentives. The reason is that these firms tend to nurture a narrow product or market domain, and such strategic orientation can be reinforced by stronger long-term financial incentives. Other studies (e.g., Montemayor, 1996; Rajagopalan, 1997) classify firm strategies at the business level, using the typology introduced by Porter (1980): cost leadership vs. product differentiation; or the one from Miles and Snow (1978): *Prospectors, Defenders, and Analyzers.*[20] Similar to Gomez-Mejia (1992), these studies define *fit* by matching the strategic types with different aspects of compensation (e.g., the pay level relative to that of the competitors, the characteristics of incentive plans) based on theories and find a positive relation between the *strategy-pay fit* and firm performance. For example, Rajagopalan (1997) find that annual bonus plans that use cash incentives and accounting measures of performance lead to better performance among the Defenders. In contrast, Prospectors perform better when they use stock-based incentive plans and

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[20] Prospectors are firms that rapidly change their product market mix to be innovative leaders in numerous domains, while Defenders focus on narrow and stable products to compete on price, service, or quality. Analyzers have attributes of both prospectors and defenders (Miles and Snow, 1978; Bentley et al., 2013). There is also a fourth type: Reactors, which do not have a clear strategic focus and thus, are generally excluded from the analyses in the studies that examine firms' strategy-pay fit (Miles and Snow, 1978). Also, note that Rajagopalan (1997) examines Prospectors and Defenders only, because there are no Analyzers in their sample.

adopt market measures to evaluate managerial performance. Overall, existing empirical evidence supports the notion that the level of strategy-pay fit is positively related to firm performance.

In the context of U.K. corporate reporting, if the annual reports provide useful information about firms' future strategies and future pay policies, then a natural conjecture is that the strategy-pay linkage shown in the annual reports can potentially serve as a proxy for the future *strategy-pay fit* and therefore, will be positively associated with future firm performance.

3.2 Strategy-pay linkage as a bonding mechanism

Another reason to expect a positive association between strategy-pay linkage and future performance is that the linkage may serve as a bonding mechanism by which managers signal their commitment to implementing the strategy. Scholars in accounting and finance have examined how firms employ bonding mechanisms that mitigate agency problems between firm managers and external shareholders (Jensen and Meckling, 1976). Some studies (e.g., Christensen, 2016) focus on the bonding role of corporate disclosures.

I argue that by establishing the strategy-pay linkage, managers essentially commit to reporting the performance of the relevant strategies. According to the Pay Disclosure Regulation, if a KPI is disclosed in the current year's remuneration report because it will affect future executive pay, then the performance of this KPI will also need to be disclosed in the next year's remuneration report. In other words, once the strategy-pay linkage is established for a given strategy, the performance of this strategy will need to be revealed in the next year; thus, managers are expected to exert more effort to carry out the strategy than if there is no linkage. More specifically, managers would do so for at least two reasons. First, the pay packages generally provide numerous financial rewards. Second, the managers have a reputational

concern: the remuneration report attracts significant attention from the public, and managers may be perceived as failing to implement the strategy if the target of the remuneration KPI is not achieved.

3.3 Why strategy-pay linkage may not be positively associated with future performance

Based on the above reasoning, strategy-pay linkage should be positively associated with future firm performance. However, an important assumption here is that the strategic report provides useful information about the firm's future strategies, which are then linked to the KPIs disclosed in the strategic report. In other words, strategy-pay linkage is assumed to reasonably capture the future *strategy-pay fit* of the firm. This assumption may be violated for at least a few reasons. First, managers may not be willing to clearly articulate their future strategic plans, due to the proprietary nature of the information: they may worry that such disclosures will inform the competitors and thus, undermine the firms' competitive advantage (Verrecchia, 1983). Thus, even though the Strategic Report Regulation mandates firms to discuss their strategies and show the relevant KPIs in the strategic reports, firms may not meaningfully reveal their strategic plans. Second, anecdotal evidence shows that firms sometimes disclose certain KPIs in the strategic report simply because the data are available, rather than because those KPIs are relevant to the strategies. Finally, the managerial rent-extraction view suggests that powerful managers have a great influence over their own pay arrangements and thus, can extract rents in the form of excess compensation, or compensation that is not explained by the economic determinants of pay (Bebchuk and Fried, 2003; Core et al., 2008). These managers may attempt to justify their excess pay by telling investors more about the "rationale" behind their pay arrangements. In other words, managers may indeed show stronger strategy-pay linkage for rent-extraction purposes.

Hypothetically, a firm may claim that part of its future strategy is to reduce the carbon footprint; it discloses a KPI related to carbon emission in the strategic report, and also uses the KPI to determine the CEO's pay in the next year. Here, strategy-pay linkage is established for this carbon-reduction strategy. However, it might not be part of the firm's real strategy at all: the strategy-pay linkage was "established" only to justify the CEO's pay based on a carbon footprint KPI, which could be associated with an easy target or could be easily manipulated, thereby allowing the CEO to gain excess pay.

Overall, for these reasons, the strategy-pay linkage may not be positively associated with future firm performance. Therefore, the relation between strategy-pay linkage and future firm performance is unclear ex-ante. I state the first hypothesis in the null form:

> **H1:** *the level of strategy-pay linkage disclosed in the annual report is not significantly associated with the firm's future operating performance.*

3.4 Proprietary costs and strategy-pay linkage

Verrecchia (1983) suggests that firms with higher proprietary costs of disclosures disclose less than firms with lower proprietary costs. Studies in the voluntary disclosure literature often cite proprietary costs as a reason for low-quality disclosures (Verrecchia, 2001; Beyer et al., 2010). As discussed previously, managers' concern about the proprietary costs can prevent them from providing informative disclosures regarding their future strategies. Therefore, I expect that when firms face lower (higher) proprietary costs, the strategy-pay linkage is a more (less) effective proxy for future *strategy-pay linkage*. In other words, if the strategy-pay linkage is indeed positively associated with future performance, I predict that this association is stronger for firms with lower proprietary costs:

H2: *the positive association between the level of strategy-pay linkage disclosed in the annual report and the firm's future operating performance is stronger when the firm has lower proprietary costs of disclosures.*

3.5 Investor dissatisfaction with previous remuneration report and strategy-pay linkage

Prior research shows that when a firm's disclosures faced strong investor dissatisfaction in the previous year, the firm tends to improve its disclosure quality in the current year. Mukhopadhyay and Shivakumar (2020) find that firms that had previously received an "Against" recommendation from a proxy advisor for compensation-related resolutions at the AGM will increase the level of compensation-related disclosures in the current year. The result is intuitive, because the prior dissatisfaction is likely to bring more public attention to the current year's disclosures. For U.K. quoted firms, prior investor dissatisfaction with the directors' remuneration report would presumably cause more attention not only to the current remuneration report but also to the current strategic report (as it explains the strategic rationale behind the remuneration policy). Managers, who anticipate the rising public scrutiny, will try to improve the quality of strategy disclosures in the current year's strategic report. Thus, again, if there is a positive relation between strategy-pay linkage and future performance, I predict that the relation will be stronger for firms that have experienced a higher level of investor dissatisfaction to the remuneration disclosures in the prior year:

H3: *the positive association between the level of strategy-pay linkage disclosed in the annual report and the firm's future operating performance is stronger when the firm's remuneration report faced a higher level of investor dissatisfaction in the prior year.*

3.6 The usefulness of strategy-pay linkage to market participants

Given that the regulators have been urging firms to show clear strategy-pay linkage in the annual reports, and that the linkage may have important implications for future performance, a

natural question to ask is whether such linkage indeed informs the market participants. Jennings (1987) suggests that the usefulness of corporate disclosures depends on whether there is relevant, credible, and timely information content. In the context of strategy-pay linkage, the *relevance* condition is undoubtedly satisfied, given the practitioners' call for clear demonstration of the linkage; the *timeliness* condition is also met, because firms only disclose their future pay policies in the annual reports; however, the *credibility* condition may or may not be satisfied. Ultimately, it is up to the investors to judge the nature of the strategy-pay linkage (i.e., being informative about future performance vs. being a tool for managerial rent-extraction). On one hand, annual reports are often viewed as credible because they are broadly disseminated and are subject to auditor review and litigation risk (Brown and Hillegeist, 2007). On the other hand, if investors suspect that managers use strategy-pay linkage simply as a cosmetic tool for rent-extraction purposes, they will not view the linkage as credible information.

Also, as market participants have limited information processing capacity (Hirshleifer and Teoh, 2003), they may not be able to process all of the content in the annual reports, in particular given that annual reports are often criticised as being too long and hard to read (FRC, 2014). If so, even if the strategy-pay linkage has meaningful performance implications, it will not be fully incorporated by the market participants when determining stock prices and earnings forecasts.

Prior studies on management disclosures (e.g., Blankespoor et al., 2014; Hope et al., 2016) use different proxies for disclosure usefulness, such as measures of market reactions (i.e., abnormal stock return, abnormal trading volume). While the abnormal stock return reflects changes in the average investor's belief about the firm value, the abnormal trading volume is determined by the different beliefs among individual investors (Holthausen and Verrecchia,

1990; Hagigi et al., 1993; Hope et al., 2016). The stock price reactions can exist without the trading-volume reactions, and vice versa (Hope et al., 2016). Thus, if the linkage is useful, I expect (1) a significantly positive relation between the linkage and the abnormal stock return, and/or (2) a significant (and either positive or negative) relation between the linkage and the abnormal trading volume.[21] Since there is not a clear prediction for the market consequences of strategy-pay linkage, I state my hypothesis in the null form:

> **H4:** *the level of strategy-pay linkage disclosed in the annual report is not significantly associated with the market reactions to the release of the annual report.*

Moreover, the literature (e.g., Diamond, 1985; Diamond and Verrecchia, 1991) indicates that higher-quality disclosures are associated with lower information asymmetry, which is generally proxied by measures such as bid-ask spread (e.g., Welker, 1995; Healy et al., 1999; Leuz and Verrecchia, 2000), analyst forecast error, analysts forecast dispersion (e.g., Baginski et al., 2017; Athanasakou et al., 2019), and the probability of informed trade (PIN) (Easley et al., 1996). Brown and Hillegeist (2007) suggest that the reduction in information asymmetry is due to the lower likelihood that investors discover and trade on private information.

If strategy-pay linkage is indeed an attribute of high-quality reporting (because it conveys useful information about future performance by increasing the transparency of strategy and remuneration disclosures), then it is expected to reduce the information asymmetry between the firm and the market participants. However, the previous counter-arguments apply here: in the case of managerial rent-extraction and/or limited investor attention, the linkage may not help reduce the level of information asymmetry. I state my hypothesis as the following:

---

[21] The relation between disclosures and trading volume will be positive if the informedness effect dominates the consensus effect, and negative if it is the opposite (Holthausen and Verrecchia, 1990; Hagigi et al., 1993).

H5: *the level of strategy-pay linkage disclosed in the annual report is not significantly associated with the level of information asymmetry.*

4. Data and Sample

Unlike the 10-K filings of U.S. firms, U.K. firms' annual reports are not formatted in a standardised fashion: the structure of the reports can vary drastically within and across firms. Therefore, I need to manually collect the data required to construct the strategy-pay linkage measure (*LINK*). Due to the high cost of data collection, I limit my sample to firms that have ever been included in the FTSE 350 index from 2013 to 2018. These firms represent over 95% of the total market capitalisation of firms listed in the London Stock Exchange and attract a great level of attention from investors and regulators.

I first obtain the historical constituent data of the FTSE 350 index directly from FTSE Russell. For each firm that appears in the index, I then collect data from various sources to construct the variables for the empirical analyses. Data needed to compute the performance variable (i.e., return on net operating assets, or RNOA), all market variables and all controls variables other than the Gunning Fog Index (*FOG*) and the tone (*TONE*) of the strategic reports are obtain from FactSet, or Compustat if Factset does not provide the data. If the release date of the annual report (which is needed to calculate the market variables) is not available from FactSet, I then collect it from Regulatory News Service (RNS) or InvestEgate.[22] To compute the textual characteristics (i.e., *LINK*, *FOG*, and *TONE*), I first collect firms' annual reports from their websites. Next, I manually compute *LINK*, which will be discussed in more detail shortly; I calculate the *FOG* and *TONE* variables using a Python programme that extracts and quantifies the text from each annual report. Finally, I collect data on the level of total CEO compensation

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[22] If the report was published on a non-trading day, I change the release date to the date of the next immediate trading day.

and the IVIS rating for the firm's remuneration report from the IVIS reports, and the AGM voting outcomes for the approval of the remuneration report from the annual reports. Financial firms (i.e., firm with an SIC between 6000 and 6999) are excluded from the analyses. To mitigate the impact of outliers, I eliminate firm-years with RNOA greater than 200% or less than -200%, consistent with prior studies (e.g., Li et al., 2013). All variables are winsorised at the top and bottom 1% level. The final sample includes 600 firm-year observations from 148 firms over the period of 2013-2018.

Consistent with the FRC guidance, I construct a measure of strategy-pay linkage based on the extent to which the KPIs disclosed in the strategic report overlap the KPIs that will affect the CEO's variable pay for the next fiscal year. I focus on the pay arrangement of the CEO instead of that of all the executive directors in the firm because the CEO plays the most important role in the formulation and implementation of firm strategies (Chandler, 1962). From each annual report, I first collect the KPIs disclosed in the strategic report and the future remuneration KPIs that are disclosed in the directors' remuneration report. Then, I categorise the two sets of KPIs into 16 different types: revenue and growth, profitability, shareholder return, cash flow, leverage, operational performance, innovation, investment, costs, working capital, employee, environment, customer, society, supplier, and other. Figure 1 shows the percentage of firm-years associated with at least one KPI that belongs to a certain type (1) in the strategic report, (2) in the directors' remuneration report, or (3) in both. For instance, 81% (41%) of the firm-years are associated with the disclosure of least one KPI related to revenue and growth (e.g., sales, sales growth, market share, M&A) in the strategic report (remuneration report), and 37% of the observations are associated with this type of KPI in both reports. Also, it is interesting to note the wide gap between the reporting of environment KPIs (e.g., carbon emission, water usage) in the strategic

report and the inclusion of these KPIs in the CEO's future pay contracts: while firms on average report at least one environment KPI in the strategic report 35% of the time, only 5% of the time do they explicitly link future CEO pay to the environmental strategy.

Next, in Appendix 1, I provide details about how to calculate the *LINK* variable. Specifically, I define it as the following:

$$LINK = \frac{|SR\_KPI \cap DRR\_KPI|}{|SR\_KPI \cup DRR\_KPI|},$$

where *SR_KPI* represents the set of unique types of KPI disclosed in the strategic report, and *DRR_KPI* represents the set of unique types of KPI that determine the CEO's variable pay for the next fiscal year and are disclosed in the directors' remuneration report. *LINK* is the size of the intersection of *SR_KPI* and *DRR_KPI* as a percentage of the size of the union of *SR_KPI* and *DRR_KPI*. Thus, it is a score between 0 and 1. Intuitively, the stronger the linkage between strategy and future CEO pay, the higher the score. I further illustrate the method using Burberry Group's 2018 Annual Report as an example in Appendix 1.

Table 1 provides descriptive statistics of the full sample. The mean and median of *LINK* are 0.406 and 0.4 respectively. Untabulated results further indicate that *LINK* is relatively stable over the sample period, confirming the FRC's concern that the strategy-pay linkage has not improved much over time (FRC, 2018). Appendix 2 provides the variable definitions. Table 2 presents the Pearson's correlation matrix to allow for a check for multicollinearity issues.

5. Research design and empirical results

5.1 Determinants of strategy-pay linkage

I start the empirical analyses by examining the determinants of strategy-pay linkage such that the nature of this disclosure feature is better understood. I estimate an OLS regression model

in which *LINK* (i.e., the strategy-pay linkage) is regressed on the potential economic

determinants suggested by prior literature (e.g., Li, 2010; Li et al., 2018):

$$
\begin{aligned}
LINK_{i,t} = \ & \alpha + \beta_1 BTM_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 BUSSEG_{i,t} + \beta_5 NMISS_{i,t} + \\
& \beta_6 CAR\_EA_{i,t} + \beta_7 RET_{i,t} + \beta_8 RET\_VOL_{i,t} + \beta_9 EARN\_VOL_{i,t} + \beta_{10} HHI_{i,t} + \\
& \beta_{11} R\&D\_SALES_{i,t} + \beta_{12} FIRM\_AGE_{i,t} + \beta_{13} ACCRUALS_{i,t} + \beta_{14} FOG_{i,t} + \\
& \beta_{15} TONE_{i,t} + \beta_{16} M\&A_{i,t} + \beta_{17} SEO_{i,t} + \beta_{18} INS\_OWN_{i,t} + \beta_{19} RNOA_{i,t} + \\
& \beta_{20} RNOA_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
\tag{1}
$$

where *i* and *t* indicate firm and fiscal year respectively. The variable definitions are provided in

Appendix 2. Also, I control for year and industry fixed effects and cluster standard errors at the

firm level in all OLS regression models throughout this study.

Table 3 shows the results. First, larger firms and firms with higher institutional ownership

tend to disclose stronger strategy-pay linkage in the annual reports, which is reasonable given

that these firms are presumably subject to higher public scrutiny. The result is consistent with

much of the prior literature on voluntary disclosures, which indicates that disclosure quality (e.g.,

measured by AIMR rating) increases in firm size (e.g., Lang and Lundholm, 1993) and

institutional ownership (e.g., Healy et al., 1999; Bushee and Noe, 2000). Also, the result is

consistent with the notion that the strategy-pay linkage is an attribute of high-quality disclosures.

Second, I find that firms whose previous earnings are more volatile disclose stronger linkage. An

interpretation is that these managers of these firms intend to reduce the uncertainty about future

earnings by providing more transparent disclosure.

5.2 Strategy-pay linkage and future performance

In the main analysis of the study, I examine whether strategy-pay linkage disclosed in the

annual report is positively associated with the firm's future operating performance. I use RNOA

as the measure of operating performance. Compared to other measures of operating profitability,

such as return on assets (ROA) and return on equity (ROE), the advantage of RNOA is that it is

not affected by the firm's financing decisions. For this reason, it has become commonly used in

the valuation literature (e.g., Fairfield and Yohn, 2001; Nissim and Penman, 2001; Richardson et

al., 2006). To test H1, I estimate the following OLS regression:

$$
\begin{aligned}
RNOA_{i,t+s} =\ & \alpha + \beta_1 LINK_{i,t} + \beta_2 BTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 BUSSEG_{i,t} + \\
& \beta_6 NMISS_{i,t} + \beta_7 CAR\_EA_{i,t} + \beta_8 RET_{i,t} + \beta_9 RET\_VOL_{i,t} + \beta_{10} EARN\_VOL_{i,t} + \\
& \beta_{11} HHI_{i,t} + \beta_{12} R\&D\_SALES_{i,t} + \beta_{13} FIRM\_AGE_{i,t} + \beta_{14} ACCRUALS_{i,t} + \\
& \beta_{15} FOG_{i,t} + \beta_{16} TONE_{i,t} + \beta_{17} M\&A_{i,t} + \beta_{18} SEO_{i,t} + \beta_{19} INS\_OWN_{i,t} + \\
& \beta_{20} RNOA_{i,t} + \beta_{21} RNOA_{i,t-1} + \varepsilon_{i,t}
\end{aligned} \tag{2},
$$

where *s*=1, 2 or 3. Table 4 shows that strategy-pay linkage disclosed in the current year's annual

report is significantly and positively associated with the RNOA in each of the following three

years. In terms of the economic magnitude, a one standard deviation increase in the level of

linkage is translated into an increase of 9.7% to 15% in future RNOA relative to its median. The

results indicate that firms which show stronger strategy-pay linkage in the annual report tend to

be more profitable in the future.

5.3 Proprietary costs of disclosures, strategy-pay linkage, and future performance

I conduct a series of cross-sectional analyses to test the validity of the main finding.

Specifically, I examine whether strategy-pay linkage is more predictive of future operating

performance in situations where the linkage is expected to be a better proxy for future *strategy-*

pay fit. First, I examine how the proprietary costs of disclosures affect the relation between

strategy-pay linkage and future performance. Following prior studies (e.g., Ellis et al., 2012;

Hope et al., 2016), I measure the proprietary costs using research and development (R&D)

expense.[23] To implement the test, I partition my sample based on whether the firm has non-zero R&D expense, and re-estimate regression model (2) without controlling for the ratio of R&D expense to sales (*R&D_SALES*) using both subsamples. I expect that the positive association between strategy-pay linkage and future RNOA is mainly driven by firms with lower proprietary costs of disclosures (i.e., firms with zero R&D expense).

Table 5 shows the results. Columns 1 to 3 and columns 4 to 6 present the coefficient estimates for the subsample with non-zero R&D expense (R&D_DUMMY=1) and with zero R&D expense (R&D_DUMMY=0) respectively. Consistent with *H2*, the coefficient on *LINK* is significant and positive only for the subsample of firms with zero R&D expense. A one standard deviation increase in the level of linkage is associated with an increase of 13% to 23.7% in future RNOA relative to its median. The coefficient is insignificant for the other subsample. Overall, the evidence shows that when firms have less proprietary costs concern, their annual reports are more likely to be informative about future strategic plans and thus, the strategy-pay linkage is a more useful predictor of the firms' future operating performance.

5.4 Investor dissatisfaction with prior remuneration disclosures, strategy-pay linkage, and future performance

In the second group of cross-sectional tests, I exploit a reasonably exogenous determinant of the quality of strategy-pay linkage: investor dissatisfaction with the firm's remuneration disclosures at the previous AGM. The idea is that when the investors express dissatisfaction to the disclosures in the previous year, the managers, anticipating the rising public scrutiny, will try

---

[23] While industry concentration ratio (i.e., Herfindahl Index) is also a common measure for proprietary costs, empirical studies do not reach a consensus on how industry concentration is related to firms' disclosure behavior (Lang and Sul, 2014), which raises doubt about the validity of this measure. Thus, I do not use it in this study.

to improve the quality of the current year's annual report disclosures, including the strategic report because it explains the rationale behind the pay policies. If so, I expect the strategy-pay linkage to be more predictive of future performance in this case.

To see whether managers would actually try to improve the current disclosure quality if the remuneration report was poorly perceived in the previous year, I first examine whether prior investor dissatisfaction leads to positive changes in the level of strategy-pay linkage. To proxy for the level of dissatisfaction, I use the following two measures: (1) *NEG_VOTE%*, which is the percentage of votes against the approval of the remuneration report at previous year's AGM; (2) *NEG_REPORT*, which is an indicator that equals 1 if the IVIS issues a "red" or "amber" report for the firm's remuneration report in the previous year, and 0 otherwise.[24] I estimate variations of the following OLS regression:

$$
\begin{aligned}
\Delta LINK_{i,t} = \ & \alpha + \beta_1 INVESTOR\_DIST_{i,t} + \beta_2 \Delta BTM_{i,t} + \beta_3 \Delta SIZE_{i,t} + \beta_4 \Delta LEV_{i,t} + \\
& \beta_5 \Delta BUSSEG_{i,t} + \beta_6 \Delta NMISS_{i,t} + \beta_7 \Delta CAR\_EA_{i,t} + \beta_8 \Delta RET_{i,t} + \beta_9 \Delta RET\_VOL_{i,t} + \\
& \beta_{10} \Delta EARN\_VOL_{i,t} + \beta_{11} \Delta HHI_{i,t} + \beta_{12} \Delta R\&D\_SALES_{i,t} + \beta_{13} \Delta ACCRUALS_{i,t} + \\
& \beta_{14} \Delta FOG_{i,t} + \beta_{15} \Delta TONE_{i,t} + \beta_{16} \Delta M\&A_{i,t} + \beta_{17} \Delta SEO_{i,t} + \beta_{18} \Delta INS\_OWN_{i,t} + \\
& \beta_{19} \Delta RNOA_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{3,}
$$

where $INVESTOR\_DIST_{i,t}$ presents either $NEG\_VOTE\%_{i,t}$ or $NEG\_REPORT_{i,t}$. In table 6, Columns 1 and 2 (3 and 4) show results from the tests in which *NEG_VOTE%* (*NEG_REPORT*) is used as the proxy. In line with the predictions, prior investor dissatisfaction is associated with significant and positive changes in the strategy-pay linkage disclosures of the current year.

---

[24] Every year, the IVIS analyses the directors' remuneration report of each firm and releases a report that outlines the issues regarding the remuneration disclosures and/or the remuneration policies. The IVIS rates each remuneration report using one of the four colors: red, amber, blue and green. A red or amber rating indicates dissatisfaction with the remuneration report, whereas a blue or green rating suggests that there are no issues.

Next, I partition the sample based on the level of *NEG_VOTE%* and estimate regression (2) using both subsamples. Columns 1-3 (4-6) in Table 7 present the coefficient estimates for the subsample where *NEG_VOTE%* is lower (higher) than the sample median. For the subsample with high investor dissatisfaction (i.e., *NEG_VOTE%* is higher than the median), there is a significant and positive relation between strategy-pay linkage and future RNOA. A one standard deviation increase in *LINK* is associated with an increase of 17.1% to 28.6% in future RNOA relative to its median. For the subsample with low investor dissatisfaction, only one of the three coefficients on *LINK* is weakly significant; the other two are insignificant.

Similarly, I partition the sample based on whether the firm received a negative report from the IVIS in the previous year and estimate regression (2) using both subsamples. Table 8 shows the results. Strategy-pay linkage is significantly and positively related to future RNOA for each of the next three years, but only when the firm received a negative IVIS report before; otherwise, the linkage is not associated with future RNOA. In sum, the evidence supports the prediction that when firms' remuneration disclosures faced a higher level of investor dissatisfaction in the prior year, managers tend to improve the disclosure quality in the current year; as a result, the strategy-pay linkage is a more useful predictor of future performance.

5.5 The usefulness of strategy-pay linkage to market participants

So far, the results indicate that strategy-pay linkage has meaningful performance implications; however, it is unclear whether market participants have benefited from this disclosure feature. In this section, I examine whether the regulators' intended objective has been achieved: an increase in the usefulness of strategy disclosures in the annual reports. I estimate the following OLS regression model:

$$Market\_Var_{i,t} = \alpha + \beta_1 LINK_{i,t} + \beta_2 BTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 BUSSEG_{i,t} +$$
$$\beta_6 NMISS_{i,t} + \beta_7 |CAR\_EA|_{i,t} + \beta_8 DIFF\_EA\_AR_{i,t} + \beta_9 RET_{i,t} +$$
$$\beta_{10} RET\_VOL_{i,t} + \beta_{11} EARN\_VOL_{i,t} + \beta_{12} HHI_{i,t} + \beta_{13} R\&D\_SALES_{i,t} +$$
$$\beta_{14} FIRM\_AGE_{i,t} + \beta_{15} ACCRUALS_{i,t} + \beta_{16} FOG_{i,t} + \beta_{17} TONE_{i,t} +$$
$$\beta_{18} M\&A_{i,t} + \beta_{19} SEO_{i,t} + \beta_{20} INS\_OWN_{i,t} + \beta_{21} RNOA_{i,t} + \beta_{22} RNOA_{i,t-1} +$$
$$\varepsilon_{i,t} \tag{4},$$

where $Market\_Var_{i,t}$ is one of the following market variables: $|CAR\_AR|_{i,t}$, $ABVOL_{i,t}$ and

$ABSPREAD_{i,t}$, which represent the absolute cumulative abnormal return, the abnormal trading

volume and the abnormal bid-ask spread in the 3-day window centered at the annual report

release date respectively; $|AFE|_{i,t+1}$, which is the absolute analyst forecast error for the full-year

EPS of the next year; and $DISP_{i,t+1}$, which is the dispersion of analyst forecast for EPS in the

100-day window before the next full-year earnings announcement.

The results are shown in Table 9. First, while there is not a significant relationship

between linkage and the absolute cumulative abnormal return, there is a significant and negative

relation between linkage and abnormal trading volume. A one standard deviation increase in

LINK is associated with a 20.9% decrease relative to the median of the absolute $ABVOL_{i,t}$. There

is also a negative relationship between linkage and abnormal bid-ask spread. Although the

statistical significance is not strong (p-value = -1.8), the economic magnitude is non-trivial: a one

standard deviation increase in the linkage is translated into an 18.1% decrease in the bid-ask

spread. Collectively, the evidence suggests that while the linkage disclosures do not change the

average investor's belief about the firm's future prospect, they do convey some useful

information, which leads to more consensus among the investors about the firms' future

prospects and less information asymmetry among the market participants.

Second, strategy-pay linkage does not appear to be related to the absolute analyst forecast

error or the analyst forecast dispersion. The results are not surprising, given that analysts may

rely on other channels to gather information for their research and thus, may not utilize all information disclosed in the annual reports. Overall, strategy-pay linkage contains some useful information to market participants, consistent with the regulatory objective of improving disclosure usefulness.

6. Additional analyses: managerial-rent extraction and strategy-pay linkage

Although the results so far indicate that strategy-pay linkage is a desirable feature in that it positively predicts future performance, the managerial rent-extraction view (Bebchuk and Fried, 2003) suggests that the linkage may simply be cosmetic in nature: it may be a tool managers use to justify the portion of compensation in excess of what they are supposed to receive based on the firm performance (i.e., the excess pay). In this section, I explore whether the level of strategy-pay linkage disclosed in the current year is associated with the CEO's excess pay in the next year. I first calculate the level of excess pay, using a modified version of the model from Core et al. (2008):

$$TOTAL\_COMP_{i,t+1} = TENURE_{i,t+1} + RET_{i,t+1} + RET_{i,t} + BTM_{i,t} + SALES_{i,t} + ROA_{i,t+1} + ROA_{i,t} + CAR\_EA_{i,t+1} + \varepsilon_{i,t+1} \quad (5),$$

where excess pay, denoted as *EXCESS_PAY,* is defined as the residual from the model (5).[25] *TOTAL_COMP* is the natural log of the total CEO compensation (in thousands of GBP); *TENURE* is the natural log of (1+the CEO's tenure in years at the end of the fiscal year); *RET* is the firm's annual stock return; *BTM* is the book-to-market ratio; *SALES* is the natural log of total

---

[25] The original model includes a dummy for whether firm *i* is a part of the S&P 500 index in year *t.* The closest counterpart for my study is a dummy for whether firm *i* is a part of the FTSE 350 index in year *t.* I do not control for it in model (3) since most firms in my sample have constantly been in the FTSE 350 index throughout the entire sample period. However, as a robustness test, I control for the market value of the firm instead and find that the results remain qualitatively the same.

sales (in millions of GBP); *ROA* is the return on assets, calculated as income before extraordinary items divided by average total assets. Differing from Core et al. (2008), I also control for *CAR_EA,* which is the cumulative abnormal stock returns in the 3-day window around the earnings announcement. The purpose is to control for other aspects of firm performance in addition to what *ROA* captures, such that the variable *EXCESS_PAY* will better represent the *real* excess pay. Table 10 Panel A shows the results. The sign of the coefficients and the level of adjusted R-squared are consistent with those from Core et al. (2008). However, *CAR_EA* does not seem to be a major determinant of CEO compensation.

Next, I examine whether strategy-pay linkage is associated with future CEO excess pay by estimating the following regression:

$$
\begin{aligned}
EXCESS\_PAY_{i,t+1} = {} & \alpha + \beta_1 LINK_{i,t} + \beta_2 BTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 BUSSEG_{i,t} + \\
& \beta_6 NMISS_{i,t} + \beta_7 CAR\_EA_{i,t} + \beta_8 RET_{i,t} + \beta_9 RET\_VOL_{i,t} + \\
& \beta_{10} EARN\_VOL_{i,t} + \beta_{11} HHI_{i,t} + \beta_{12} R\&D\_SALES_{i,t} + \beta_{13} FIRM\_AGE_{i,t} + \\
& \beta_{14} ACCRUALS_{i,t} + \beta_{15} FOG_{i,t} + \beta_{16} TONE_{i,t} + \beta_{17} M\&A_{i,t} + \beta_{18} SEO_{i,t} + \\
& \beta_{19} INS\_OWN_{i,t} + \beta_{20} RNOA_{i,t} + \beta_{21} RNOA_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
\tag{6}.
$$

In Table 10 Panel B, the result shows an insignificant coefficient on *LINK*. Thus, there is no evidence that managers use the strategy-pay linkage as a tool to justify the rationale behind their excess pay. As a robustness test, I also exclude the control variable *CAR_EA* from model (5) and repeat the same analyses. The result is qualitatively the same. Overall, this study finds that the strategy-pay linkage disclosed in firms' annual reports is a meaningful predictor of future operating performance, rather than a tool for managerial rent-extraction.

7. Conclusion

Prior research has shown that firms' disclosures on strategies have important implications for capital market participants; however, what constitutes useful strategy disclosures, and how

the market participants (can) systematically utilise these disclosures, remains largely unexplored. This paper investigates whether the *strategy-pay linkage* (i.e., the linkage between company strategies and future executive pay policies) disclosed in firms' annual reports contributes to the usefulness of the strategy disclosures.

Using FTSE 350 firms' annual reports, I construct a measure of strategy-pay linkage based on the extent to which the KPIs that firms use to describe their strategies (in the *strategic report* section) overlap the KPIs affect the CEO's future remuneration (which are disclosed in the *directors' remuneration report* section). I find that the level of strategy-pay linkage is positively associated with the firm's operating performance in each of the subsequent three years. The result is mainly driven by firms that have lower proprietary costs of disclosures, and firms whose strategy disclosures are expected to face more public scrutiny.

Furthermore, I find that stronger strategy-pay linkage leads to greater investor consensus about the firms' future prospects and reduces the level of information asymmetry among the market participants. However, analysts do not seem to incorporate the implications of the linkage into their earnings forecasts, potentially because they rely on other information sources. Finally, in contrast to the managerial rent-extraction view, I do not find evidence that managers use linkage as a tool to justify future excess pay. Overall, these findings suggest that strategy-pay linkage enhances the usefulness of strategy disclosures by serving as a predictor of firms' future operating performance. Besides the strategy-pay linkage, the investigation of other characteristics or types of strategy disclosures appears to be a fruitful avenue for future research.

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Figure 1

% Firm-years associated with a type of KPI
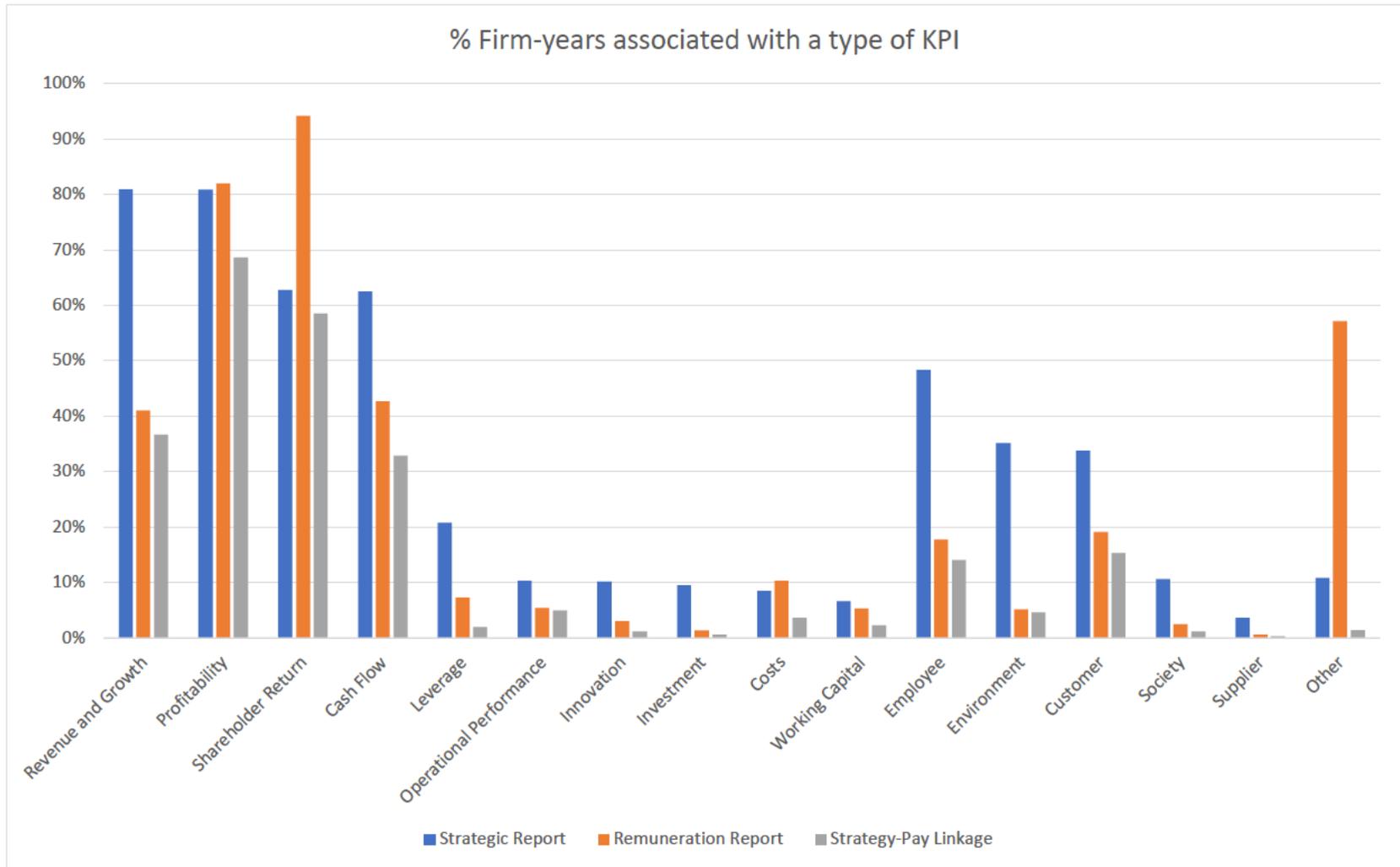
Appendix 1   Measuring the strategy-pay linkage (*Linkage*)
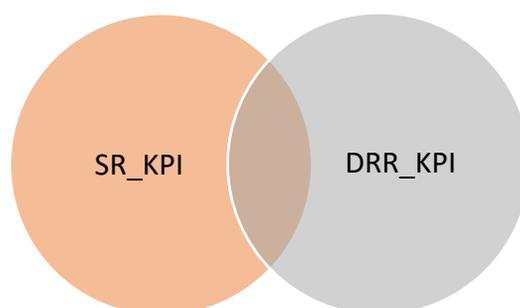
As shown in figure 1, I categorize all KPIs, both in the strategic report and in the directors' remuneration report, into 16 different types (e.g., revenue and growth, profitability). In the above Venn diagram, the orange circle (**SR_KPI**) represents the set of unique types of KPI disclosed in the strategic report, and the grey circle (**DRR_KPI**) represents the set of unique types of KPI will determine the CEO's variable pay for the next fiscal year.

The strategy-pay linkage is meant to capture the extent to which the two sets of KPIs overlap each other. I define the variable *LINK* as the following:

$$\text{LINK} = \frac{|\text{SR\_KPI} \cap \text{DRR\_KPI}|}{|\text{SR\_KPI} \cup \text{DRR\_KPI}|}$$

Example: in Burberry Group's annual report for the fiscal year ending on March 31, 2018, the strategic report shows 12 KPIs that can be categorized into 5 types. The directors' remuneration report shows 3 KPIs that will affect the CEO's pay in the following year (i.e., FY2019), which can be categorized into 2 types.

No.	SR_KPI	Type of KPI	DRR_KPI
1	Revenue growth	Revenue and growth	Included
2	Comparable sales growth	Revenue and growth	
3	Adjusted operating profit growth	Profitability	
4	Adjusted operating profit margin	Profitability	
5	Adjusted profit before tax growth	Profitability	Included
6	Adjusted diluted EPS growth	Profitability	
7	Adjusted retail/wholesale ROIC	Profitability	Included
8	Employee engagement score	Employee	
9	Number of women, globally in director and above roles divided by total number of director and above roles	Employee	
10	Absolute CO2e market based emissions	Environment	
11	Number of individuals positively impacted	Society	
12	% of products with more than one positive attribute	Society	

Therefore:

SR_KPI = {Revenue and growth, Profitability, Employee, Environment, Society}
DRR_KPI = {Revenue and growth, Profitability}

$$\text{LINK} = \frac{|SR\_KPI \cap DRR\_KPI|}{|SR\_KPI \cup DRR\_KPI|}$$

$$= \frac{|\{Revenue\ and\ growth,\ Profitability\}|}{|\{Revenue\ and\ growth,\ Profitability,\ Employee,\ Environment,\ Society\}|}$$

$$= \frac{2}{5}$$

$$= 0.4$$

The level of strategy-pay linkage for Burberry Group FY2018 is 0.4.

Appendix 2 Variable Definitions

Performance Variable	Label	Definition
RNOA	Return on net operating assets	The ratio of operating income to average net operating assets

Market Variables	Labels	Definitions
|CAR_AR|	Absolute cumulative abnormal returns around the release of the annual report	The absolute value of the cumulative stock returns in the 3-day window centered at the annual report release date *minus* the expected stock returns estimated using the market model, where the estimation period is the 250-day period before the 3-day window and the benchmark is the FTSE 350 index
ABVOL	Abnormal trading volume around the release of the annual report	The average daily trading volume in the 3-day window centered at the annual report release date *minus* the average daily trading volume in the 250-day period before the 3-day window, *scaled* by the latter
ABSPREAD	Abnormal bid-ask spread around the release of the annual report	The average daily bid-ask spread in the 3-day window centered at the annual report release date *minus* the average daily bid-ask spread in the 250-day period before the 3-day window, *scaled* by the latter. Bid-ask spread is calculated as 100*(Ask Price-Bid Price)/[(Ask Price +Bid Price)/2]
|AFE|	Absolute analyst forecast error	The absolute value of the analyst forecast error, where forecast error is the actual EPS minus the analysts' consensus (median) forecast in the 100-day period before the full-year earnings announcement, scaled by the stock price at the beginning of the fiscal year
DISP	Dispersion of analyst forecast	The standard deviation of EPS analysts' forecasts in the 100-day window before the full-year earnings announcement, scaled by the stock price at the beginning of the fiscal year

Linkage Variable	Label	Definition
LINK	Strategy-pay linkage	$\frac{\|SR\_KPI \cap DRR\_KPI\|}{\|SR\_KPI \cup DRR\_KPI\|}$, where SR_KPI is the set of unique types of KPI disclosed in the strategic report, and DRR_KPI is the set of unique types of KPI that determine the CEO's variable pay for the next fiscal year and are disclosed in the directors' remuneration report.

Control Variables	Labels	Definitions
BTM	Book to market ratio	The ratio of book value of equity to market value of equity
SIZE	Firm size	The natural log of total assets (millions)
LEV	Leverage ratio	The ratio of total debt to total assets
BUSSEG	Number of business segments	The natural log of the number of business segments
NMISS	Number of non-missing financial items in Compustat	The natural log of the number of non-missing financial items in Compustat
CAR_EA	Cumulative abnormal returns around the earnings announcement	The cumulative stock returns in the 3-day window centered at the full-year earnings announcement date *minus* the expected stock returns estimated using the market model, where the estimation period is the 250-day period before the 3-day window and the benchmark is the FTSE 350 index
|CAR_EA|	Absolute cumulative abnormal returns around the earnings announcement	The absolute value of CAR_EA
GAP_EA_AR	Number of days between the full-year earnings announcement and the release of the annual report	The number of days between the full-year earnings announcement date and the release date of the annual report
RET	Annual stock return	The annual stock return of the current fiscal year

RET_VOL	Stock return volatility	The standard deviation of daily stock returns over the current fiscal year
EARN_VOL	Earnings volatility	The standard deviation of the semi-annual earnings over the past 5 years
HHI	Herfindahl Index	The Herfindahl Index calculated using all firms' sales at the 6-digit GICS level
R&D_SALES	R&D to sales	The ratio of R&D expense to sales
FIRM_AGE	Firm age	The natural log of the number of years since the firm's IPO date
ACCRUALS	Accruals	Earnings minus cash flow from operations, scaled by average total assets
FOG	Gunning Fog Index of the strategic report	The Gunning Fog Index calculated using the text of the strategic report
TONE	Tone of the strategic report	The number of positive words minus the number of negative words (based on the sentiment word list from Loughran and McDonald [2011]), scaled by the number of words in the strategic report
M&A	M&A indicator	An indicator that equals 1 if the firm makes a merger or acquisition in the current fiscal year, and 0 otherwise
SEO	SEO indicator	An indicator that equals 1 if the firm has a seasoned equity offering in the current fiscal year, and 0 otherwise
INS_OWN	Institutional ownership	The total percentage of ownership held by institutional investors
Partitioning Variables	Labels	Definitions
NEG_VOTE	Negative voting outcome	An indicator that equals 1 if NEG_VOTE% is larger than the sample median, and 0 otherwise
NEG_REPORT	Negative report	An indicator that equals 1 if the IVIS issues a "red" or "amber" report for the firm's remuneration report in the previous year, and 0 otherwise

R&D_DUMMY	R&D dummy	An indicator that equals 1 if the firm has non-zero R&D expense in the current year, and 0 otherwise
HIGH_COMP	High competition	An indicator that equals 1 if the firm's HHI is lower than the sample median, and 0 otherwise

Other Variables	Labels	Definitions
NEG_VOTE%	AGM Voting outcome in percentage	The percentage of votes against the approval of the remuneration report at previous year's AGM
ΔVARIABLE	Change in the variable	The current year's value minus the previous year's value for a given variable
EXCESS_PAY	CEO excess pay	The measure of excess pay calculated using the model from Core et al. (2008)

Table 1   Descriptive Statistics

Future Performance	N	Mean	Std Dev	P1	P25	P50	P75	P99
$RNOA_{i,t+1}$	600	0.216	0.191	-0.124	0.110	0.178	0.272	0.900
$RNOA_{i,t+2}$	479	0.209	0.194	-0.170	0.104	0.176	0.267	0.910
$RNOA_{i,t+3}$	349	0.206	0.183	-0.134	0.103	0.171	0.267	0.817

Market Variables	N	Mean	Std Dev	P1	P25	P50	P75	P99
|CAR_AR|	586	0.021	0.022	0.000	0.007	0.014	0.028	0.104
ABVOL	586	0.167	0.641	-0.717	-0.217	0.040	0.401	2.412
ABSPREAD	586	-0.002	0.312	-0.657	-0.137	-0.031	0.071	1.220
|AFE|	576	0.471	1.408	0.002	0.072	0.165	0.394	5.576
DISP	576	0.471	1.152	0.043	0.122	0.198	0.423	4.080

Linkage	N	Mean	Std Dev	P1	P25	P50	P75	P99
LINK	600	0.406	0.210	0.000	0.250	0.400	0.551	1.000

Controls	N	Mean	Std Dev	P1	P25	P50	P75	P99
BTM	600	0.435	0.330	0.041	0.207	0.355	0.566	1.812
SIZE	600	7.709	1.436	5.086	6.678	7.507	8.516	11.559
LEV	600	0.221	0.149	0.000	0.106	0.229	0.310	0.656
BUSSEG	600	1.054	0.531	0.693	0.693	0.693	1.609	2.303
NMISS	600	5.130	0.026	5.069	5.112	5.136	5.147	5.176
CAR_EA	600	0.011	0.068	-0.152	-0.024	0.008	0.047	0.215
|CAR_EA|	600	0.050	0.048	0.000	0.016	0.037	0.071	0.233
GAP_EA_AR	600	27.053	10.598	7.000	20.000	27.000	33.000	63.000
RET	600	0.081	0.329	-0.540	-0.122	0.056	0.240	1.074
RET_VOL	600	0.018	0.007	0.010	0.014	0.016	0.021	0.047
EARN_VOL	600	1.222	2.048	0.100	0.295	0.522	1.161	11.409
HHI	600	0.034	0.028	0.009	0.016	0.025	0.043	0.148
R&D_SALES	600	0.019	0.058	0.000	0.000	0.000	0.009	0.375
FIRM_AGE	600	3.014	0.361	1.946	2.833	3.178	3.296	3.401
ACCRUALS	600	-0.028	0.062	-0.257	-0.057	-0.021	0.008	0.122
FOG	600	3.091	0.049	2.961	3.060	3.091	3.120	3.246
TONE	600	0.011	0.006	-0.005	0.007	0.011	0.015	0.026
M&A	600	0.568	0.496	0.000	0.000	1.000	1.000	1.000
SEO	600	0.042	0.200	0.000	0.000	0.000	0.000	1.000
INS_OWN	600	0.783	0.182	0.259	0.669	0.827	0.923	1.000
$RNOA_{i,t}$	600	0.224	0.200	-0.090	0.117	0.183	0.279	0.979
$RNOA_{i,t-1}$	600	0.239	0.203	-0.066	0.123	0.191	0.286	1.020

Partitioning Variables	N	Mean	Std Dev	P1	P25	P50	P75	P99
NEG_VOTE	600	0.500	0.500	0.000	0.000	0.500	1.000	1.000
NEG_REPORT	575	0.527	0.500	0.000	0.000	1.000	1.000	1.000
R&D_DUMMY	600	0.392	0.489	0.000	0.000	0.000	1.000	1.000
HIGH_COMP	600	0.500	0.500	0.000	0.000	0.500	1.000	1.000

Other Variables	N	Mean	Std Dev	P1	P25	P50	P75	P99
NEG_VOTE%	200	0.074	0.108	0.001	0.010	0.023	0.093	0.447
ΔLINK	200	0.029	0.183	-0.500	-0.081	0.056	0.143	0.491
ΔBTM	200	0.019	0.187	-0.569	-0.045	0.017	0.081	0.610
ΔSIZE	200	0.053	0.157	-0.270	-0.009	0.040	0.125	0.863
ΔLEV	200	0.006	0.059	-0.172	-0.022	0.000	0.023	0.215
ΔBUSSEG	200	0.017	0.154	-0.269	0.000	0.000	0.000	0.916
ΔNMISS	200	-0.001	0.012	-0.030	-0.006	0.000	0.006	0.036
ΔRET	200	0.047	0.313	-0.554	-0.174	0.033	0.218	1.074
ΔCAR_EA	200	-0.008	0.094	-0.304	-0.054	0.000	0.052	0.226
ΔRET_VOL	200	0.000	0.007	-0.017	-0.004	-0.001	0.003	0.020
ΔEARN_VOL	200	-0.694	5.119	-28.232	-0.145	0.000	0.157	12.234
ΔHHI	200	0.000	0.004	-0.017	-0.001	0.000	0.001	0.009
ΔR&D_SALES	200	0.000	0.005	-0.029	0.000	0.000	0.000	0.020
ΔACCRUALS	200	0.000	0.066	-0.166	-0.025	-0.001	0.024	0.216
ΔFOG	200	0.000	0.004	-0.008	-0.002	0.000	0.002	0.011
ΔTONE	200	-0.012	0.286	-0.919	-0.017	0.003	0.015	0.445
ΔM&A	200	-0.060	0.590	-1.000	0.000	0.000	0.000	1.000
ΔSEO	200	0.000	0.284	-1.000	0.000	0.000	0.000	1.000
ΔINS_OWN	200	0.004	0.067	-0.180	-0.032	0.000	0.038	0.196
ΔRNOA$_{i,t}$	200	0.003	0.142	-0.277	-0.027	-0.005	0.018	0.449
EXCESS_PAY$_{i,t+1}$	600	0.000	0.653	-2.384	-0.358	0.036	0.441	1.406

This table reports summary statistics for all firm-years in the sample with sufficient data to be included in at least one of the regression analyses. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are i and t by default, which indicate firm i and fiscal year t respectively.

Table 2 Correlation Table

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
$RNOA_{i,t+1}$	[1]	1.0000														
|CAR_AR|	[2]	-0.0787	1.0000													
ABVOL	[3]	-0.0052	0.1419	1.0000												
ABSPREAD	[4]	0.0237	-0.0087	0.0487	1.0000											
|AFE|	[5]	-0.1596	0.1873	0.0556	0.0415	1.0000										
DISP	[6]	-0.1139	0.2375	-0.0125	-0.0170	0.5241	1.0000									
LINK	[7]	-0.0123	0.0102	-0.0537	-0.0556	0.0461	0.0921	1.0000								
BTM	[8]	-0.4714	0.1076	-0.0088	-0.0468	0.2434	0.3728	0.0618	1.0000							
SIZE	[9]	-0.2326	-0.0387	0.0591	-0.0317	0.0193	0.0877	0.2867	0.2520	1.0000						
LEV	[10]	-0.1718	0.0136	-0.0271	0.0523	0.1310	0.2807	0.2065	-0.0583	0.3424	1.0000					
BUSSEG	[11]	-0.1554	0.0504	-0.0574	0.0277	-0.0083	-0.0489	-0.0277	0.0322	-0.0758	-0.0694	1.0000				
NMISS	[12]	-0.0093	-0.0407	0.0303	0.0263	-0.1258	0.0471	0.1283	0.0060	0.4131	0.1436	0.0776	1.0000			
CAR_EA	[13]	0.0832	-0.0604	-0.1219	0.0344	-0.0489	0.0334	-0.0546	0.0560	-0.0886	-0.0703	0.0178	0.0405	1.0000		
|CAR_EA|	[14]	-0.0620	0.0841	-0.0046	-0.0065	0.1156	0.1723	-0.0169	0.2137	-0.0791	0.0117	-0.0261	-0.0119	0.2550	1.0000	
GAP_EA_AR	[15]	-0.0533	0.0188	-0.0759	0.0088	0.0510	0.0506	-0.0736	-0.0254	-0.0989	0.0386	0.0035	-0.1094	0.0086	0.0336	1.0000
RET	[16]	0.2000	-0.1217	-0.0204	0.0706	-0.1156	-0.0933	-0.0202	-0.1752	-0.0715	-0.0093	-0.0482	-0.0300	0.1371	-0.1018	0.0406
RET_VOL	[17]	-0.1110	0.2874	-0.0675	-0.0385	0.3716	0.5410	-0.0037	0.3872	-0.2023	0.0371	-0.0309	-0.1748	0.0667	0.2909	0.1128
EARN_VOL	[18]	-0.0647	0.0933	-0.0221	-0.0411	0.2053	0.2301	0.1693	0.2457	0.1571	0.1178	-0.0575	-0.0058	0.0781	0.1498	0.0619
HHI	[19]	-0.0473	-0.0089	0.0446	0.0006	-0.0571	-0.0813	0.1455	-0.0768	0.1612	0.0598	-0.0364	-0.0081	-0.0418	0.0031	-0.0112
R&D_SALES	[20]	-0.0232	0.0943	0.0256	0.0208	0.1549	0.0081	-0.0051	-0.0447	-0.2186	-0.2613	0.0525	-0.0962	0.0702	0.0326	0.0908
FIRM_AGE	[21]	-0.0790	-0.0867	0.0098	-0.0352	-0.0945	-0.1794	-0.0459	0.0098	0.1776	-0.1051	0.2270	0.1692	-0.0099	-0.0257	-0.1543
ACCRUALS	[22]	0.1086	-0.0117	0.0311	-0.0852	-0.1796	-0.1048	-0.0517	-0.1477	0.0041	-0.0851	0.0089	0.0556	-0.0072	-0.1086	-0.0738
FOG	[23]	-0.0842	0.0222	-0.0021	0.0861	0.1302	0.1911	-0.0373	0.0563	0.0790	0.2036	0.2007	0.1169	0.0769	0.0803	0.0676
TONE	[24]	0.1053	-0.0964	-0.0395	-0.0153	-0.1875	-0.3144	-0.0359	-0.2117	-0.1643	-0.2139	-0.0509	-0.0595	0.0211	-0.1530	-0.0046
M&A	[25]	-0.0863	-0.0964	0.0259	0.0585	-0.1057	-0.1057	-0.0062	-0.0489	0.2573	0.0998	0.0380	0.3182	0.0233	-0.0731	-0.0315
SEO	[26]	-0.0496	-0.0372	0.0592	-0.0186	0.0344	0.0315	0.0120	0.0180	-0.0542	0.0998	-0.0490	-0.0062	-0.0492	-0.0086	0.0613
INS_OWN	[27]	-0.0108	-0.0311	0.0665	0.0529	-0.0695	-0.2452	0.0466	-0.0214	-0.0803	-0.1732	0.0973	-0.0310	-0.0581	-0.0030	-0.0798
NEG_VOTE	[28]	-0.0524	-0.0052	0.0238	-0.0026	0.0956	0.0331	0.0580	0.0503	0.1913	0.0366	0.0832	0.0908	-0.0250	-0.0388	-0.0481
NEG_REPORT	[29]	0.0199	0.0071	0.0267	-0.0465	0.1075	0.0673	0.0172	0.0251	-0.0060	0.0373	0.0129	-0.0011	0.0067	0.0320	0.0662

(Continued)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
R&D_DUMMY	[30]	-0.0714	0.0189	0.0349	0.0393	-0.0075	-0.0489	-0.0411	-0.1198	-0.0299	-0.1290	0.1387	0.2175	0.0658	0.0521	-0.0185
HIGH_COMP	[31]	-0.0064	0.0316	0.0303	0.0721	0.0920	0.1239	-0.1497	0.0956	-0.0926	0.0784	0.0186	0.0205	-0.0026	0.0754	0.0256

		[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]
RET	[16]	1.0000															
RET_VOL	[17]	0.0029	1.0000														
EARN_VOL	[18]	0.0228	0.2129	1.0000													
HHI	[19]	-0.0756	-0.0719	0.0137	1.0000												
R&D_SALES	[20]	-0.0116	0.0751	0.1143	0.1991	1.0000											
FIRM_AGE	[21]	-0.0533	-0.2452	-0.0671	-0.0730	-0.0661	1.0000										
ACCRUALS	[22]	0.0164	-0.2394	-0.1003	-0.0027	-0.0502	0.1723	1.0000									
FOG	[23]	0.0771	0.1521	0.0870	-0.1438	-0.0321	-0.0973	-0.0212	1.0000								
TONE	[24]	0.0518	-0.2959	-0.1241	0.0854	0.0511	0.0302	0.1570	-0.1544	1.0000							
M&A	[25]	-0.0022	-0.2319	-0.0189	-0.0198	0.0075	0.0806	0.0819	0.1398	0.0395	1.0000						
SEO	[26]	0.0842	0.1239	0.0558	0.0168	0.0240	-0.1094	-0.0959	0.0678	-0.0249	0.0574	1.0000					
INS_OWN	[27]	-0.0926	-0.2055	0.0496	-0.0870	0.1531	0.2382	0.0654	-0.0954	0.1211	0.0163	-0.0717	1.0000				
NEG_VOTE	[28]	0.0063	-0.0021	0.0629	0.1329	-0.0151	-0.0194	-0.1025	0.0348	-0.0925	0.0344	-0.0524	-0.0245	1.0000			
NEG_REPORT	[29]	-0.0162	0.0432	0.0857	0.0229	0.0056	-0.0720	-0.0529	0.1212	-0.0552	0.0087	0.0524	-0.1121	0.2007	1.0000		
R&D_DUMMY	[30]	0.0068	-0.0724	-0.0468	0.1101	0.4167	0.1968	0.0621	0.0332	-0.0399	0.0519	-0.0810	0.2446	-0.0095	-0.1576	1.0000	
HIGH_COMP	[31]	0.0384	0.1051	-0.0100	-0.6430	-0.2415	0.0358	-0.0805	0.1286	-0.1467	0.0448	-0.0303	0.0071	-0.0231	0.0089	-0.0358	1.0000

The table reports Pearson's correlation coefficients for select variables. The sample used here consists of 563 firm-year observations. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are i and t by default, which indicate firm i and fiscal year t respectively.

Table 3 Determinants of strategy-pay linkage

	LINK			
BTM	-0.027		FIRM_AGE	-0.055
	(-0.52)			(-1.33)
SIZE	0.039***		ACCRUALS	-0.055
	(3.26)			(-0.28)
LEV	0.170		FOG	-0.272
	(1.65)			(-0.92)
BUSSEG	0.007		TONE	1.101
	(0.37)			(0.43)
NMISS	0.594		M&A	-0.031
	(1.20)			(-1.38)
CAR_EA	-0.093		SEO	-0.011
	(-0.76)			(-0.19)
RET	0.012		INS_OWN	0.131*
	(0.47)			(1.67)
RET_VOL	1.580		$RNOA_{i,t}$	0.018
	(0.86)			(0.68)
EARN_VOL	0.010*		$RNOA_{i,t-1}$	-0.009
	(1.77)			(-0.36)
HHI	0.363		CONSTANT	-2.123
	(0.54)			(-0.80)
R&D_SALES	0.075			
	(0.39)		Industry FE	Yes
			Year FE	Yes
			Observations	600
			Adjusted R-squared	0.130

The table reports coefficient estimates from the OLS regressions of strategy-pay linkage (i.e., LINK) on its potential economic determinants. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are i and t by default, which indicate firm i and fiscal year t respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 4 Regressions of future operating performance on strategy-pay linkage

Future performance	[1] $RNOA_{i,t+1}$	[2] $RNOA_{i,t+2}$	[3] $RNOA_{i,t+3}$
LINK	0.082**	0.113**	0.122**
	(2.19)	(2.55)	(2.42)
BTM	-0.219***	-0.184***	-0.181***
	(-4.85)	(-3.91)	(-3.38)
SIZE	-0.008	-0.012	-0.010
	(-0.77)	(-0.90)	(-0.76)
LEV	-0.207***	-0.154	-0.138
	(-2.62)	(-1.62)	(-1.33)
BUSSEG	-0.026**	-0.026*	-0.021
	(-2.04)	(-1.85)	(-1.44)
NMISS	0.596	0.730	0.929
	(1.32)	(1.29)	(1.60)
CAR_EA	0.181**	0.142	0.108
	(2.35)	(1.27)	(0.85)
RET	0.061***	0.043	0.035
	(2.66)	(1.60)	(0.95)
RET_VOL	1.080	0.597	2.379
	(0.69)	(0.32)	(1.19)
EARN_VOL	0.008	0.005	0.003
	(1.33)	(0.86)	(0.67)
HHI	-0.065	-0.211	-0.346
	(-0.17)	(-0.39)	(-0.69)
R&D_SALES	-0.207	-0.435	-0.630**
	(-0.95)	(-1.22)	(-2.07)
FIRM_AGE	-0.026	-0.038	-0.037
	(-0.96)	(-1.12)	(-0.95)
ACCRUALS	-0.138	-0.166	-0.309
	(-0.74)	(-0.75)	(-1.23)
FOG	0.177	0.274	0.229
	(0.98)	(1.30)	(1.11)
TONE	-0.075	-0.913	-1.146
	(-0.05)	(-0.52)	(-0.61)
M&A	-0.021	-0.035**	-0.036*
	(-1.45)	(-2.19)	(-1.85)
SEO	-0.090***	-0.106***	-0.120***
	(-2.82)	(-2.71)	(-2.93)
INS_OWN	-0.006	0.004	0.016
	(-0.09)	(0.05)	(0.18)
$RNOA_{i,t}$	0.211**	0.112*	0.123*
	(2.13)	(1.78)	(1.69)
$RNOA_{i,t-1}$	0.038*	0.064*	0.040
	(1.66)	(1.75)	(1.36)
CONSTANT	-3.207	-4.132	-5.069
	(-1.26)	(-1.30)	(-1.60)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	600	479	349
Adjusted R-squared	0.491	0.327	0.311

The table reports coefficient estimates from the OLS regressions of future operating performance (i.e., RNOA of year t+1, t+2 and t+3) on strategy-pay linkage (i.e., LINK) and other control variables. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are *i* and *t* by default, which indicate firm *i* and fiscal year *t* respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 5 Regressions of future operating performance on strategy-pay linkage using the high- and low- proprietary-costs subsamples respectively

	[1]	[2]	[3]	[4]	[5]	[6]
Future performance	$RNOA_{i,t+1}$	$RNOA_{i,t+2}$	$RNOA_{i,t+3}$	$RNOA_{i,t+1}$	$RNOA_{i,t+2}$	$RNOA_{i,t+3}$
	R&D_DUMMY = 1			R&D_DUMMY = 0		
LINK	-0.020	-0.066	-0.087	0.110**	0.169***	0.193***
	(-0.41)	(-0.91)	(-0.97)	(2.23)	(2.93)	(2.74)
BTM	-0.266***	-0.199*	-0.124	-0.193***	-0.170***	-0.176***
	(-3.85)	(-1.97)	(-1.26)	(-3.47)	(-2.97)	(-3.02)
SIZE	-0.008	-0.013	-0.014	-0.018	-0.021	-0.024
	(-0.83)	(-1.22)	(-1.34)	(-0.83)	(-0.77)	(-0.84)
LEV	-0.300***	-0.028	0.120	-0.133	-0.074	-0.070
	(-3.24)	(-0.23)	(0.79)	(-1.32)	(-0.64)	(-0.56)
BUSSEG	-0.015	-0.017	-0.007	-0.029*	-0.031	-0.025
	(-1.07)	(-0.98)	(-0.40)	(-1.73)	(-1.51)	(-1.03)
NMISS	1.395**	0.950	0.683	0.788	1.262	1.560
	(2.37)	(1.46)	(1.16)	(1.17)	(1.33)	(1.58)
CAR_EA	0.371***	0.081	0.006	0.095	0.147	0.146
	(3.27)	(0.32)	(0.03)	(0.91)	(1.20)	(1.05)
RET	0.001	-0.009	-0.052	0.087***	0.064**	0.053
	(0.03)	(-0.25)	(-0.91)	(3.56)	(2.07)	(0.95)
RET_VOL	-2.392	-2.044	-3.639	1.946	2.632	4.769**
	(-0.87)	(-0.98)	(-0.92)	(1.19)	(1.27)	(2.07)
EARN_VOL	0.027*	0.010	0.004	0.001	-0.001	-0.005
	(1.93)	(0.71)	(0.37)	(0.23)	(-0.26)	(-1.11)
HHI	0.666*	0.777	0.105	-0.802	-1.057*	-0.887*
	(1.68)	(1.21)	(0.15)	(-1.57)	(-1.84)	(-1.71)
FIRM_AGE	-0.005	-0.028	0.013	-0.010	-0.010	-0.017
	(-0.12)	(-0.53)	(0.21)	(-0.32)	(-0.25)	(-0.34)
ACCRUALS	-0.527**	-0.915**	-1.014**	-0.014	0.197	-0.003
	(-2.35)	(-2.37)	(-2.25)	(-0.06)	(0.77)	(-0.01)
FOG	0.261	0.394	0.080	0.263	0.360	0.359
	(1.16)	(1.37)	(0.24)	(0.99)	(1.02)	(1.00)
TONE	1.172	0.062	0.265	0.155	-0.802	-0.474
	(0.66)	(0.02)	(0.10)	(0.08)	(-0.34)	(-0.17)
M&A	0.020	-0.003	0.001	-0.039**	-0.053**	-0.052*
	(0.85)	(-0.13)	(0.03)	(-2.14)	(-2.28)	(-1.72)
SEO	-0.015	-0.123**	-0.107**	-0.108**	-0.123**	-0.123**
	(-0.58)	(-2.32)	(-2.07)	(-2.45)	(-2.24)	(-2.18)

INS_OWN	-0.053	-0.070	-0.177	0.031	0.020	0.037
	(-0.68)	(-0.61)	(-1.47)	(0.35)	(0.16)	(0.28)
$RNOA_{i,t}$	0.232***	0.250	0.411	0.208*	0.134	0.108*
	(3.25)	(1.31)	(1.65)	(1.75)	(1.46)	(1.83)
$RNOA_{i,t-1}$	-0.000	-0.039	-0.079	0.058	0.057	0.032
	(-0.01)	(-0.26)	(-0.51)	(1.22)	(1.47)	(1.10)
CONSTANT	-7.572**	-5.624	-3.330	-4.460	-7.169	-8.722
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	235	190	139	365	289	210
Adjusted R-squared	0.526	0.282	0.340	0.521	0.379	0.302

The table reports coefficient estimates from the OLS regressions of future operating performance (i.e., RNOA of year t+1, t+2 and t+3) on strategy-pay linkage (i.e., LINK) and other control variables using two subsamples: firms with high proprietary costs, and those with low proprietary costs. Columns 1 through 3 show results from the regressions using the subsample where R&D_DUMMY=1 (i.e., high-proprietary-costs subsample). Columns 4 through 6 show results from the regressions using the subsample where R&D_DUMMY=0 (i.e., low-proprietary-costs subsample). R&D_DUMMY is an indicator that equals 1 if the firm has non-zero R&D expense in the current year, and 0 otherwise. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are *i* and *t* by default, which indicate firm *i* and fiscal year *t* respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 6 Regressions of changes in strategy-pay linkage on the level of investors dissatisfaction with the previous year's remuneration report

Changes in linkage	[1] ΔLINK NEG_VOTE%	[2] ΔLINK NEG_VOTE%	[3] ΔLINK NEG_REPORT	[4] ΔLINK NEG_REPORT
INVESTOR_DIST	0.256***	0.305***	0.063**	0.064***
	(3.24)	(2.79)	(2.58)	(2.76)
ΔBTM		0.012		0.002
		(0.19)		(0.03)
ΔSIZE		0.040		0.069
		(0.47)		(0.89)
ΔLEV		-0.158		-0.219
		(-0.63)		(-0.89)
ΔBUSSEG		-0.247***		-0.254***
		(-3.32)		(-2.99)
ΔNMISS		-1.719		-1.463
		(-1.37)		(-1.20)
ΔRET		0.035		0.024
		(0.72)		(0.51)
ΔCAR_EA		0.131		0.132
		(0.77)		(0.78)
ΔRET_VOL		2.106		2.084
		(0.99)		(0.95)
ΔEARN_VOL		-0.002		-0.002
		(-1.21)		(-0.87)
ΔHHI		0.572		0.695
		(0.17)		(0.23)
ΔR&D_SALES		-0.216		0.072
		(-0.15)		(0.05)
ΔACCRUALS		0.015		-0.036
		(0.08)		(-0.19)
ΔFOG		-0.007		-0.003
		(-0.23)		(-0.08)
ΔTONE		3.738		3.516
		(0.88)		(0.84)
ΔM&A		0.018		0.012
		(0.73)		(0.51)
ΔSEO		0.066		0.068
		(0.79)		(0.82)

	(1)	(2)	(3)	(4)
ΔINS_OWN		-0.414*		-0.371*
		(-1.85)		(-1.77)
$\Delta RNOA_{i,t}$		0.088		0.078
		(1.10)		(1.01)
CONSTANT	0.699	-0.001	-0.007	-0.017
	(0.39)	(-0.04)	(-0.14)	(-0.42)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	200	200	200	200
Adjusted R-squared	0.018	0.052	0.021	0.052

The table reports coefficient estimates from the OLS regressions of changes in strategy-pay linkage in the current year relative to the previous year (i.e., $\Delta LINK = LINK_{i,t} - LINK_{i,t-1}$) on an indicator variable (i.e., INVESTOR_DIST) constructed based on the level of investor dissatisfaction with the remuneration report in the previous year, which is either NEG_VOTE% or NEG_REPORT, and other control variables. Columns 1 and 2 (3 and 4) show results from the regressions in which NEG_VOTE% (NEG_REPORT) is used as the indicator variable for investor dissatisfaction. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are i and t by default, which indicate firm i and fiscal year t respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 7 Regressions of future operating performance on strategy-pay linkage for the low- and high- investor-dissatisfaction subsamples respectively

	[1] $RNOA_{i,t+1}$	[2] $RNOA_{i,t+2}$	[3] $RNOA_{i,t+3}$	[4] $RNOA_{i,t+1}$	[5] $RNOA_{i,t+2}$	[6] $RNOA_{i,t+3}$
Future performance		NEG_VOTE = 0			NEG_VOTE = 1	
LINK	-0.004	0.069*	0.035	0.145***	0.172***	0.233***
	(-0.12)	(1.84)	(0.76)	(3.54)	(3.15)	(3.31)
BTM	-0.162***	-0.070	-0.025	-0.248***	-0.232***	-0.231***
	(-2.74)	(-1.47)	(-0.39)	(-5.27)	(-4.67)	(-4.26)
SIZE	-0.008	-0.011	-0.002	-0.001	-0.007	-0.008
	(-0.70)	(-0.69)	(-0.16)	(-0.13)	(-0.45)	(-0.41)
LEV	-0.148	-0.037	0.058	-0.295***	-0.307**	-0.351**
	(-1.66)	(-0.37)	(0.69)	(-2.87)	(-2.35)	(-2.33)
BUSSEG	-0.017	-0.013	0.006	-0.026*	-0.020	-0.023
	(-1.29)	(-0.78)	(0.35)	(-1.80)	(-1.36)	(-1.23)
NMISS	0.415	0.201	0.378	0.761	1.391*	1.919**
	(0.93)	(0.35)	(0.84)	(1.47)	(1.94)	(2.19)
CAR_EA	0.240**	0.215	0.027	0.229*	0.219	0.250
	(2.58)	(1.61)	(0.14)	(1.71)	(1.46)	(1.33)
RET	0.012	0.037	0.042	0.098***	0.087**	0.017
	(0.35)	(1.02)	(0.94)	(3.68)	(2.42)	(0.28)
RET_VOL	0.441	-1.327	0.773	1.502	1.661	4.690
	(0.34)	(-0.63)	(0.31)	(0.71)	(0.66)	(1.39)
EARN_VOL	0.009	0.001	-0.001	0.003	0.011	0.001
	(1.09)	(0.09)	(-0.22)	(0.56)	(1.64)	(0.13)
HHI	0.365	-0.124	-0.521	-0.320	-0.480	-0.587
	(0.98)	(-0.22)	(-0.98)	(-0.65)	(-0.65)	(-0.80)
R&D_SALES	-0.240	-0.649*	-0.860***	-0.198	-0.054	-0.206
	(-1.10)	(-1.91)	(-2.76)	(-0.92)	(-0.11)	(-0.38)
FIRM_AGE	-0.044	-0.035	-0.025	0.004	-0.025	-0.014
	(-1.54)	(-1.14)	(-0.76)	(0.12)	(-0.55)	(-0.29)
ACCRUALS	-0.093	-0.136	-0.057	-0.280	-0.243	-0.558**
	(-0.48)	(-0.64)	(-0.24)	(-1.27)	(-0.87)	(-1.99)
FOG	-0.007	0.196	0.096	0.204	0.187	0.050
	(-0.03)	(0.79)	(0.45)	(1.04)	(0.79)	(0.21)
TONE	-0.910	-0.542	0.158	1.787	0.006	1.560
	(-0.57)	(-0.29)	(0.08)	(1.22)	(0.00)	(0.77)
M&A	-0.034**	-0.050***	-0.034	-0.020	-0.038	-0.030
	(-2.08)	(-2.72)	(-1.57)	(-0.98)	(-1.63)	(-1.06)

SEO	-0.056**	-0.081	-0.033	-0.057	-0.081*	-0.051
	(-2.01)	(-1.53)	(-0.93)	(-1.51)	(-1.90)	(-0.84)
INS_OWN	0.001	0.004	-0.068	-0.031	0.032	0.089
	(0.02)	(0.05)	(-1.01)	(-0.43)	(0.31)	(0.69)
$RNOA_{i,t}$	0.401**	0.012	0.615***	0.131*	0.073	0.058
	(2.26)	(0.06)	(4.91)	(1.83)	(1.25)	(1.49)
$RNOA_{i,t-1}$	0.049	0.465***	-0.090	0.027	0.029	0.028
	(1.63)	(3.09)	(-0.84)	(1.08)	(1.54)	(1.25)
CONSTANT	-1.686	-1.289	-2.003	-4.278	-7.369*	-9.795**
	(-0.68)	(-0.40)	(-0.85)	(-1.56)	(-1.92)	(-2.11)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	300	239	173	300	240	176
Adjusted R-squared	0.583	0.432	0.509	0.475	0.315	0.309

The table reports coefficient estimates from the OLS regressions of future operating performance (i.e., RNOA of year t+1, t+2 and t+3) on strategy-pay linkage (i.e., LINK) and other control variables using two subsamples: low- and high- investor dissatisfaction with the previous year' remuneration report. Columns 1 through 3 show results from the regressions using the subsample where NEG_VOTE=0 (i.e., low investor dissatisfaction). Columns 4 through 6 show results from the regressions using the subsample where NEG_VOTE=1 (i.e., high investor dissatisfaction). NEG_VOTE is an indicator that equals 1 if NEG_VOTE% is larger than the sample median, and 0 otherwise, where NEG_VOTE% is the percentage of votes against the approval of the remuneration report at previous year's AGM. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are *i* and *t* by default, which indicate firm *i* and fiscal year *t* respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 8 Regressions of future operating performance on strategy-pay linkage for the low- and high- investor-dissatisfaction subsamples respectively

	[1]	[2]	[3]	[4]	[5]	[6]
Future performance	$RNOA_{i,t+1}$	$RNOA_{i,t+2}$	$RNOA_{i,t+3}$	$RNOA_{i,t+1}$	$RNOA_{i,t+2}$	$RNOA_{i,t+3}$
	NEG_REPORT = 0			NEG_REPORT = 1		
LINK	0.032	0.061	0.023	0.069*	0.087**	0.128**
	(1.09)	(1.14)	(0.44)	(1.93)	(2.20)	(2.30)
BTM	-0.130	-0.115	0.024	-0.198***	-0.103**	-0.170***
	(-1.37)	(-1.17)	(0.41)	(-4.39)	(-2.28)	(-2.74)
SIZE	-0.005	-0.007	-0.009	-0.014	-0.019	-0.011
	(-0.80)	(-0.53)	(-0.53)	(-0.95)	(-1.42)	(-0.81)
LEV	-0.200*	-0.095	0.061	-0.155*	-0.089	-0.158
	(-1.95)	(-0.75)	(0.62)	(-1.81)	(-1.02)	(-1.22)
BUSSEG	-0.011	-0.000	0.020	-0.026*	-0.031**	-0.026
	(-1.06)	(-0.01)	(1.30)	(-1.83)	(-2.21)	(-1.46)
NMISS	0.281	0.585	0.707	1.092*	0.574	1.457**
	(0.92)	(1.03)	(0.98)	(1.86)	(1.05)	(2.29)
CAR_EA	-0.069	-0.137	-0.156	0.282**	0.193*	0.295**
	(-0.58)	(-0.88)	(-0.80)	(2.42)	(1.96)	(2.31)
RET	0.058	0.019	0.002	0.102***	0.112***	0.089
	(1.45)	(0.41)	(0.03)	(3.29)	(3.29)	(1.55)
RET_VOL	1.017	1.299	-1.191	1.019	-1.127	5.701*
	(0.47)	(0.47)	(-0.48)	(0.49)	(-0.52)	(1.76)
EARN_VOL	0.008*	0.010	0.003	0.013	0.011*	0.001
	(1.67)	(1.31)	(0.77)	(1.48)	(1.90)	(0.17)
HHI	0.640**	0.601	0.030	-0.432	-0.831	-1.240**
	(2.09)	(1.09)	(0.06)	(-0.88)	(-1.65)	(-2.50)
R&D_SALES	0.063	0.626	-0.382	-0.220	-0.558***	-0.247
	(0.21)	(0.66)	(-0.52)	(-1.26)	(-2.78)	(-1.01)
FIRM_AGE	-0.028	-0.071*	-0.062	-0.004	0.018	0.009
	(-1.33)	(-1.87)	(-1.52)	(-0.12)	(0.46)	(0.19)
ACCRUALS	-0.022	-0.102	-0.603	-0.166	-0.245	-0.212
	(-0.11)	(-0.36)	(-1.64)	(-0.71)	(-1.07)	(-0.97)
FOG	0.276*	0.200	0.406	0.256	0.426	-0.024
	(1.92)	(0.79)	(1.40)	(0.98)	(1.62)	(-0.11)
TONE	-0.737	-0.663	0.993	-0.302	-0.792	-0.735
	(-0.60)	(-0.39)	(0.46)	(-0.18)	(-0.50)	(-0.40)
M&A	-0.003	-0.019	-0.034	-0.038*	-0.041**	-0.028
	(-0.18)	(-0.94)	(-1.20)	(-1.88)	(-2.04)	(-1.17)

	(1)	(2)	(3)	(4)	(5)	(6)
SEO	-0.067*	-0.087	-0.077*	-0.084**	-0.101***	-0.103***
	(-1.66)	(-1.44)	(-1.90)	(-2.55)	(-3.00)	(-2.68)
INS_OWN	-0.020	0.008	0.003	0.038	0.006	-0.035
	(-0.42)	(0.10)	(0.03)	(0.44)	(0.06)	(-0.34)
$RNOA_{i,t}$	0.591**	0.515**	0.806***	0.114	-0.084	-0.029
	(2.49)	(2.19)	(4.89)	(0.81)	(-1.02)	(-0.42)
$RNOA_{i,t-1}$	-0.053**	-0.039	-0.028**	0.233*	0.489***	0.302**
	(-2.12)	(-1.37)	(-2.32)	(1.81)	(4.15)	(2.27)
CONSTANT	-2.016	-3.262	-4.626	-6.079*	-3.973	-7.171**
	(-1.18)	(-0.97)	(-1.13)	(-1.74)	(-1.26)	(-2.08)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	272	232	174	303	230	164
Adjusted R-squared	0.611	0.408	0.445	0.520	0.490	0.457

The table reports coefficient estimates from the OLS regressions of future operating performance (i.e., RNOA of year t+1, t+2 and t+3) on strategy-pay linkage (i.e., LINK) and other control variables using two subsamples: low- and high- investor dissatisfaction with the previous year' remuneration report. Columns 1 through 3 show results from the regressions using the subsample where NEG_REPORT=0 (i.e., low investor dissatisfaction). Columns 4 through 6 show results from the regressions using the subsample where NEG_REPORT=1 (i.e., high investor dissatisfaction). NEG_REPORT is an indicator that equals 1 if the IVIS issues a "red" or "amber" report for the firm's remuneration report in the previous year, and 0 otherwise. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are *i* and *t* by default, which indicate firm *i* and fiscal year *t* respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 9 Regressions of market variables on strategy-pay linkage

Market Variables	[1] $|CAR\_AR|_{i,t}$	[2] $ABVOL_{i,t}$	[3] $ABSPREAD_{i,t}$	[4] $|AFE|_{i,t+1}$	[5] $DISP_{i,t+1}$
LINK	-0.000	-0.290**	-0.098*	0.026	0.118
	(-0.10)	(-2.27)	(-1.82)	(0.13)	(0.58)
BTM	-0.002	-0.081	0.030	0.278	0.800
	(-0.43)	(-0.54)	(0.62)	(0.91)	(1.56)
SIZE	0.000	0.025	-0.008	0.081	-0.008
	(0.45)	(0.76)	(-0.72)	(1.17)	(-0.12)
LEV	0.006	0.127	0.210**	1.372***	2.001**
	(0.78)	(0.49)	(2.36)	(2.66)	(2.20)
BUSSEG	0.001	-0.047	0.001	-0.038	-0.076
	(1.34)	(-1.12)	(0.09)	(-0.37)	(-1.39)
NMISS	-0.028	0.683	0.436	-7.143*	3.540
	(-0.70)	(0.52)	(0.81)	(-1.84)	(1.20)
$|CAR\_EA|$	-0.012	0.211	-0.061	-0.932	-0.529
	(-0.55)	(0.30)	(-0.23)	(-0.55)	(-0.34)
GAP_EA_AR	-0.000	-0.004*	-0.000	-0.004	-0.002
	(-0.63)	(-1.93)	(-0.20)	(-0.87)	(-0.70)
RET	-0.008**	-0.074	0.066	-0.437	-0.221
	(-2.24)	(-0.86)	(1.44)	(-1.45)	(-1.14)
RET_VOL	0.839***	4.375	-1.353	59.042***	66.404***
	(3.86)	(0.53)	(-0.55)	(3.02)	(4.42)
EARN_VOL	0.001	-0.005	-0.003	0.063	0.040
	(1.02)	(-0.48)	(-0.58)	(1.14)	(0.80)
HHI	-0.019	1.537	0.121	-3.889**	-2.239
	(-0.59)	(1.32)	(0.25)	(-2.08)	(-1.31)
R&D_SALES	0.027	0.209	-0.039	4.202***	1.997**
	(1.20)	(0.32)	(-0.14)	(2.81)	(2.12)
FIRM_AGE	-0.003	-0.115	-0.035	0.144	-0.142
	(-1.26)	(-1.53)	(-1.05)	(0.91)	(-1.05)
ACCRUALS	0.030**	0.239	-0.537***	-1.210	1.391*
	(2.14)	(0.60)	(-2.71)	(-0.71)	(1.68)
FOG	-0.017	0.118	0.555**	1.147	0.629
	(-0.93)	(0.17)	(2.29)	(1.13)	(0.93)
TONE	-0.016	-5.141	-0.403	-5.031	-11.512**
	(-0.13)	(-1.03)	(-0.24)	(-0.64)	(-2.04)
M&A	-0.001	0.001	0.024	-0.127	-0.142
	(-0.43)	(0.03)	(0.79)	(-1.31)	(-1.62)
SEO	-0.005	0.185	-0.050	-0.069	-0.340
	(-1.20)	(1.13)	(-0.96)	(-0.38)	(-1.63)
INS_OWN	-0.001	0.452**	0.090	-0.188	-0.725*
	(-0.20)	(2.55)	(1.51)	(-0.67)	(-1.93)
$RNOA_{i,t}$	0.000	-0.015	0.037	0.142	0.243*
	(0.18)	(-0.26)	(0.70)	(1.63)	(1.91)

RNOA$_{i,t-1}$	-0.005**	-0.080**	-0.048	-0.099	-0.127**
	(-2.29)	(-2.53)	(-0.93)	(-1.08)	(-2.54)
CONSTANT	0.213	-3.750	-3.915	31.450	-20.307
	(0.97)	(-0.49)	(-1.44)	(1.57)	(-1.40)
Industry FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	586	586	586	576	576
Adjusted R-squared	0.142	0.017	0.014	0.244	0.456

The table reports coefficient estimates from the OLS regressions of market variables (i.e., $|CAR\_AR|_{i,t}$, $ABVOL_{i,t}$, $ABSPREAD_{i,t}$, $|AFE|_{i,t+1}$ or $DISP_{i,t+1}$) on strategy-pay linkage (i.e., LINK) and other control variables. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are i and t by default, which indicate firm i and fiscal year t respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Table 10 Future CEO excess pay and strategy-pay linkage

Panel A: Calculating excess pay

	$TOTAL\_COMP_{i,t+1}$
$TENURE_{i,t+1}$	0.289***
	(5.65)
$RET_{i,t+1}$	0.377***
	(2.64)
$RET_{i,t}$	0.404**
	(2.38)
$BTM_{i,t}$	-0.386**
	(-1.99)
$SALES_{i,t}$	0.341***
	(11.39)
$ROA_{i,t+1}$	1.547***
	(2.85)
$ROA_{i,t}$	-1.231*
	(-1.79)
$CAR\_EA_{i,t+1}$	-0.127
	(-0.27)
CONSTANT	11.50***
	(36.28)
Industry FE	Yes
Year FE	Yes
Observations	600
Adjusted R-squared	0.426

This panel reports coefficient estimates from the OLS regression of CEO total compensation (i.e., $TOTAL\_COMP_{i,t+1}$) on its economic determinants, which is a modified version of the Core et al. (2008) model for excess pay. *TOTAL_COMP* is the natural log of the total CEO compensation (in thousands of GBP); *TENURE* is the natural log of (1+the CEO's tenure in years at the end of the fiscal year); *RET* is the firm's annual stock return; *BTM* is the book-to-market ratio; *SALES* is the natural log of total sales (in millions of GBP); *ROA* is the return on assets, calculated as income before extraordinary items divided by average total assets. Differing from Core et al. (2008), I also control for *CAR_EA,* which is the cumulative abnormal stock returns in the 3-day window around the earnings announcement date. See Appendix 2 for variable definitions. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).

Panel B: Regression of future CEO excess pay on current strategy-pay linkage

	EXCESS_PAY$_{i,t+1}$			
LINK	0.174		FIRM_AGE	-0.016
	(0.94)			(-0.14)
BTM	-0.055		ACCRUALS	-0.893
	(-0.36)			(-1.61)
SIZE	0.073**		FOG	0.755
	(2.03)			(1.06)
LEV	-0.274		TONE	8.308
	(-0.79)			(1.27)
BUSSEG	0.080		M&A	-0.011
	(1.56)			(-0.17)
NMISS	-0.889		SEO	0.171
	(-0.51)			(0.99)
CAR_EA	1.245**		INS_OWN	0.673**
	(2.49)			(2.34)
RET	-0.040		RNOA$_{i,t}$	0.092
	(-0.21)			(1.34)
RET_VOL	-9.299		RNOA$_{i,t-1}$	0.082
	(-0.98)			(0.77)
EARN_VOL	0.039*		CONSTANT	1.053
	(1.90)			(0.12)
HHI	1.905			
	(1.42)		Industry FE	Yes
R&D_SALES	-0.829		Year FE	Yes
	(-1.40)		Observations	600
			Adjusted R-squared	0.068

This panel reports coefficient estimates from the OLS regression of the CEO's future excess pay (i.e., *EXCESS_PAY$_{i,t+1}$*, which is the estimated residual term from Table 10 Panel A) on strategy-pay linkage (*LINK*) and other control variables. See Appendix 2 for variable definitions. The variable subscripts, if not shown, are *i* and *t* by default, which indicate firm *i* and fiscal year *t* respectively. The standard errors are clustered by firm. The t-statistics are shown in parentheses. ***, ** and * indicate significance at the 1, 5 and 10 % levels respectively (two-tailed).