

The effects of accounting conservatism on executive compensation

Effects of
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Abstract

Purpose – The purpose of this paper is to identify means of better associating executive remuneration with managerial decision making and firm performance.

Design/methodology/approach – The authors evaluate the influence of conditional accounting conservatism on CEO compensation. The authors focus particularly on the *ex ante* pay-for-performance sensitivity (PPS) of CEO stock option grants. The empirical method used is panel data regression.

Findings – The authors find that accounting conservatism is positively related to the PPS of CEO option-based compensation. The effects of accounting conservatism on the PPS of options are more significant for firms with relatively weaker corporate governance and for the period before the introduction of FAS 123R. The findings suggest that directors reward CEOs for adopting accounting conservatism, both in general terms and incrementally, and that rewards are channelled through incentive-linked compensation. The results are also consistent with the view that accounting conservatism compliments other mechanisms, such as corporate governance, in reducing information asymmetry and agency problems between managers and shareholders and other stakeholders.

Originality/value – This paper provides a number of important contributions to the literature. It is the first to identify a relationship between accounting conservatism and option-based CEO compensation, which has important potential contracting and enforcement implications due to the incomplete nature of option contracts and the reward and risk attributes of CEOs. This paper is also the first to analyse the association between conditional accounting conservatism and CEO compensation at the firm-year level, by employing the firm-year conservatism score approach proposed by Khan and Watts (2009). This provides for greater insight regarding the interaction between accounting conservatism and other firm-specific elements than is otherwise obtainable from an overall firm or year interpretations derived from the traditional Basu (1997) asymmetric timeliness model approach. Furthermore, this paper also provides a comparison of the relative association of accounting conservatism on both explicit and implicit forms of CEO compensation for the same firm sample. This allows for the assessment of whether accounting conservatism relates differently to incentive-based CEO remuneration relative to *ex post* CEO compensation outcomes.

Keywords Corporate governance, Conservatism, Executive compensation, Pay-for-performance sensitivity

Paper type Research paper

1. Introduction

The level and structure of executive compensation packages paid to corporate managers, and particularly the nature and magnitude of CEO compensation, have come to the forefront of corporate finance and corporate governance policy in recent times. The excessive compensation has resulted from governance reforms, such as “say on pay” initiatives and the increasing involvement of corporate governance advisory firms, focusing attention on excess salary levels and generous share and option grants to CEOs. A continuing issue for resolution in the broader corporate governance literature is identifying means of better associating executive remuneration with managerial decision making and firm performance.



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This paper looks to accounting practice, elements of financial reporting quality and managerial attitudes to accounting policy choice and information provision as a potential solution. Specifically, we focus on the role of accounting conservatism as a signal of financial credibility and a key pillar of overall financial reporting quality and a potential agency mitigation mechanism and suggest a role for accounting conservatism in executive compensation setting. Conservatism in accounting reporting, along with other attributes such as persistence, timeliness and transparency, is valued by various firm-level stakeholders, including directors, shareholders and debt providers. This includes accounting conservatism being directly associated with firm value (Watts, 2003a; LaFond and Watts, 2008; LaFond and Roychowdhury, 2008), positively impacting on outcomes of specific corporate events (Kim *et al.*, 2013) and enhancing debt availability and borrowing terms (Ahmed *et al.*, 2002; Zhang, 2008; Wittenberg-Moerman, 2008). It is envisaged that, in return for managers exhibiting accounting conservatism and the associated benefits from this, directors may award managers with increased pay-for-performance sensitivity (PPS) of their compensation.

A further potential benefit from accounting conservatism is in resolving agency problems related to CEO compensation contracting, and particularly incentive-based compensation. A common conclusion in the agency theory literature is that agency problems between managers and other stakeholders are minimised by the use of mechanisms such as managerial shareholdings, the incorporation of share- or option-based incentive plans as part of executive compensation packages or increasing the PPS of managerial compensation. Demand for such mechanisms may come from external monitors, such as shareholders or debtholders, or internally by boards of directors or compensation committees as part of their corporate governance structuring. However, it is well-recognised that share- or option-based remuneration contracts are also typically incomplete and may provide the incentive for risk shifting, earnings management or overinvestment actions, for instance, by managers. In association with the demand for incentive-based compensation as an agency cost mechanism or outcome from the corporate governance design process, accounting conservatism may also serve an important role in controlling these behavioural elements derived from the compensation setting process.

Previous research has found evidence that accounting conservatism can reduce information asymmetry and lower agency cost, and therefore, increase shareholder's value. Zhang *et al.* (2019) argue that adoption of accounting conservatism enables firms to tie executive compensation more closely to firm performance because accounting conservatism can restrict earnings management activities and reduce the noise of accounting performance data. Hence, a higher level of accounting conservatism should be associated with a higher sensitivity of pay-for-performance. So accounting conservatism may be regarded as a substitute for other corporate governance such as the institutional investors and the board of directors' monitoring, which may also improve the sensitivity of pay-for-performance.

In line with the theoretical argument on the effect of accounting conservatism on executive compensation, we evaluate the influence of conditional accounting conservatism on CEO compensation. We focus mainly on the *ex ante* PPS of CEO stock option grants, as there are apparent incentive effects derived from both stock price and firm risk effects in association with option grants, and they also comprise the most significant component of total compensation paid to CEOs in many US firms[1]. We also relate accounting conservatism to the volume and value of option grants to examine whether volatility has a role in determining the nature of any association between accounting conservatism and the PPS of CEO option grants. This research design allows for the evaluation of the incentive (award) effects and agency consequences associated with accounting conservatism, and the channel through which they are directed.

In the accounting literature, asymmetric timeliness approach of Basu (1997) is the most widely used measurement technique for conservatism. However, the Basu (1997) method

has a critical limitation that it can only estimate conservatism at the industry–year level for a cross-sectional study or at the firm level for a time-series study. As such, we use the method proposed by Khan and Watts (2009) to obtain accounting conservatism scores for each firm–year observation included in our sample and employ this as the critical empirical tool to link accounting conservatism with CEO compensation. We compute the PPS of CEO options granted using the method described in Yermack (1995) and directly assess the relationship between firm–year level measures of conservatism and the PPS of CEO options.

We provide evidence of a robust positive relationship between the firm–year conservatism score and the PPS of CEO option-based compensation, focusing mainly on the PPS of option grants in specific fiscal years. We confirm that market volatility, which is an essential determinant of the conservatism score, does not drive this finding. We also find changes in accounting conservatism to be positively associated with changes in cash compensation. Controlling for firm corporate governance structure, we find that the effect of accounting conservatism on CEO compensation is much stronger in firms with weaker corporate governance, suggesting that firm-level corporate governance substitutes for the agency and incentive role of accounting conservatism.

This paper provides several important contributions to the literature. It is the first to identify a relationship between accounting conservatism and option-based CEO compensation, which has important potential contracting and enforcement implications due to the incomplete nature of option contracts and the reward and risk attributes of CEOs. This paper is also the first to analyse the association between conditional accounting conservatism and CEO compensation at the firm–year level by employing the firm–year conservatism score approach proposed by Khan and Watts (2009). This method provides for greater insight regarding the interaction between accounting conservatism and other firm-specific elements than is otherwise obtainable from an overall firm or year interpretations derived from the traditional Basu (1997) asymmetric timeliness model approach. Furthermore, this paper also provides a comparison of the relative association of accounting conservatism on both explicit and implicit forms of CEO compensation for the same firm sample. This method allows for the assessment of whether accounting conservatism relates differently to incentive-based CEO remuneration relative to *ex post* CEO compensation outcomes.

Several papers have also investigated the relationship between accounting conservatism and executive compensation. Our study is closest in spirit to Zhang *et al.* (2019) who found a significantly positive relationship between accounting conservatism and the executive compensation–performance sensitivity of Chinese listed companies. However, we delineate our study from their study in three ways. First, Zhang *et al.* (2019) focus on the total level of compensation but not on the structure of the compensation. There is a significant difference in the compensation structure between Chinese listed firms and the US firms, cash-based payments are the main form of executive compensation, whereas equity-based payments are seldom used by Chinese listed companies (Li *et al.*, 2013). In our US sample, stock options are much larger than the cash compensation. We break down the total compensation into different parts such as stock options, restricted shares and a cash component. Second, the measurement for conservatism in our study is also different from theirs. Third, there is a significant difference in corporate governance between China and the USA. For example, Chinese corporations use a two-tier board structure, namely, a board of directors and a supervisory committee, whereas the US firms use a single tier. The Chinese listed firms have more concentrated ownership than the US firms, and the law system in China generally provide weaker protections for the shareholder than that in the USA. Jeong and Kim (2013) found a positive relationship between equity-based compensation to outside directors and accounting conservatism using the US data between 2006 and 2008. In their paper, the dependent variable is accounting conservatism, and the independent variable is the

compensation to the outsider director, whereas, in our paper, the dependent variable is CEO compensation and the independent variable is accounting conservatism. Using the Japanese data, Iwasaki *et al.* (2018) found a positive relationship between accounting conservatism and the compensation earnings coefficient. In their study, the dependent variable is accounting conservatism, and the independent variable is earnings-based compensation, which is different from us.

The remainder of the paper is structured as follows. Section 2 identifies related literature and provides the hypothesis development for the paper. Section 3 describes the data and the methodological approach adopted in the paper. Section 4 examines the relationship between accounting conservatism and the PPS of CEO compensation. Section 5 examines the relationship between the change in accounting conservatism and the changes in the cash compensation and the restricted shares compensation. Section 6 provides robustness testing and analysis, focusing mainly on addressing issues relating to endogeneity and selection bias inherent to accounting conservatism. Section 7 provides the conclusions of this paper.

2. Prior research and hypothesis development

There appears to be consensus in the literature that CEO compensation is influenced by firm-specific attributes, managerial characteristics and corporate governance and external monitoring influences (see Baber *et al.*, 1998; Oskan, 2007 among others). The accounting conservatism literature emphasises the contracting properties of conditional accounting conservatism and its role in resolving agency problems. Conditional accounting conservatism has been shown to improve contracting efficiency, and particularly debt contracting, through earlier recognition of “bad news” in earnings numbers than “good news” (Basu, 1997). This measurement provides for earlier identification of covenant breaches or potential defaults by borrowers, facilitating more-effective monitoring by debtholders and a reduction in deadweight agency costs (Watts and Zimmerman, 1986; Watts, 1993, 2003a; Ball, 2001). In addition to enhancing the efficiency of the debt contracting process, accounting conservatism has been shown to minimise agency conflicts between managers and shareholders, constrain managerial opportunistic behaviour and reduce managers’ incentives to transfer wealth to themselves at the expense of either debtholders or the overall firm (Watts, 2003a, b; LaFond and Roychowdhury, 2008; Roychowdhury and Watts, 2007). Conservative accounting practice has also been associated with lower levels of information asymmetry (LaFond and Watts, 2008; Hui *et al.*, 2009) and Ahmed and Duellman (2007) and García Lara *et al.* (2009) indicate that accounting conservatism is correlated with stronger firm corporate governance structures.

Baber *et al.* (1998) suggest that one outcome from accounting conservatism is greater earnings persistence and show that compensation committees reward CEOs who increase earnings persistence with higher compensation. O’Connell (2006) shows that accounting conservatism weakens the sensitivity between CEO cash compensation and accounting earnings for UK firms and suggests that compensation committees may directly reward accounting conservatism. Iyengar and Zampelli (2010) find that greater unconditional accounting conservatism increases the sensitivity of executive pay (cash salary and bonuses) to accounting performance, but not to market performance. Iwasaki *et al.* (2012) find that the asymmetric timeliness of earnings is negatively related to the magnitude of excess compensation. Zhang *et al.* (2019) found a significantly positive relationship between accounting conservatism and the executive compensation–performance sensitivity of Chinese listed companies, particularly for executive compensation contracts where accounting-based performance measure is used. Jeong and Kim (2013) found a positive relationship between equity-based compensation to outside directors and accounting conservatism using the US data between 2006 and 2008. Using the Japanese data, Iwasaki *et al.* (2018) found a positive relationship between accounting conservatism and compensation.

Similar to Baber *et al.* (1998) concerning earnings persistence, we propose that directors value accounting conservatism as an outcome of the financial reporting process and are prepared to reward managers for providing conservative accounting numbers. Accounting conservatism is also desirable as it reduces the potential for earnings management and enhances financial credibility. To encourage accounting conservatism as a more-than-transitory managerial trait and to address potential concerns relating to the “horizon problem” associated with managerial decision making, providing long-term equity-based compensation is envisaged as the preferred reward mechanism for directors and compensation committees. On this basis, we expect an association between the nature of accounting conservatism and option-based executive compensation.

One concern, however, when CEOs are awarded stock options as part of their remuneration package is that this may increase their incentive to undertake projects with excessive risk to increase the value of these stock options (so-called managerial risk-shifting). Datta *et al.* (2001) provide evidence that risk shifting in acquisitions is positively related to the level of equity-based compensation in acquiring firms, and Ahmed and Duellman (2013) show that managerial overconfidence is negatively associated with accounting conservatism. Given that conditional accounting conservatism imposes a stricter verification threshold for gains vs losses, such opportunistic managerial actions are likely to be more quickly observable by the firm’s directors and other stakeholders. Hence, a higher level of accounting conservatism could improve the reliability of the performance measurement used in a compensation contract, enabling a closer link between compensation and firm performance. We expect directors or compensation committees, therefore, to implement remuneration actions which increase PPS more readily in firms where CEOs practice greater accounting conservatism.

The related question is the potential channel used by directors or compensation committees to impact on the PPS of equity-based compensation. Yermack (1995) PPS measure is calculated by the proportion of outstanding shares granted as part of the option incentive component and the underlying (Black–Scholes) value of the options. It is not apparent that the nature of conditional accounting conservatism should directly impact the option value, so we propose that accounting conservatism impacts on the PPS via the option grant terms. For example, the directors or compensation committees grant relatively more stock options in compensation contracts of CEOs exhibiting greater accounting conservatism. Thus, we propose our first hypothesis:

H1. There is a positive relationship between accounting conservatism and the PPS of CEO stock option grants.

If support is not found for *H1*, then this might suggest that alternative corporate governance or monitoring mechanisms have a more prominent association with the incentive-pay setting than levels of managerial accounting conservatism, or that accounting conservatism does not have any incremental impact beyond these other mechanisms.

Furthermore, if the accounting conservatism is considered as a substitute mechanism for corporate governance, then its effects on CEO compensation and PPS of options should be found to be more significant for firms with relatively weak corporate governance. Hence we propose our second hypothesis:

H2. The relationship between accounting conservatism and CEO compensation (PPS of options) is more significant for firms with relatively weak corporate governance.

3. Data and research methodology

We obtain the executive (CEO) compensation data from the S&P Capital IQ ExecuComp database for the period between 1992 and 2014. The database covers approximately 1,500

firms per year, including the 500 firms in the S&P 500 Index, the 400 firms in the S&PMidcap Index and the 600 firms in the S&P Smallcap Index. ExecuComp reports compensation package details for CEOs in each firm, including each CEO's salary, bonus, long-term incentive plan payouts, stock and option grants, and other compensation. We obtain the firm stock price data and accounting data from the merged CRSP/Compustat database. We obtain the institutional ownership data from the Thomson Reuters 13F Institutional Holdings database. We obtain the Gompers *et al.* (2003) corporate governance index from RiskMetrics[2].

We focus on compensation components paid in a particular year to measure annual compensation. We do not include the value of the restricted stock or stock option grants awarded in previous periods, as the board is assumed to have no control in the current period over stock options granted in previous periods. Our primary interest is the PPS of CEO option grants during a fiscal year, to examine whether CEOs are rewarded for accounting conservatism through greater PPS of option grants provided by firms. Second, we investigate the major individual components of CEO compensation, namely cash-based compensation (salary and bonus) and relate these with accounting conservatism in a change model setting. The calculation of PPS for options granted during a fiscal year follows the methodology proposed by Yermack (1995), which is given by the following formula:

$$PPS \approx \Delta \cdot \left(\frac{\text{Shares represented by options}}{\text{Shares outstanding at start of year}} \right) \cdot 1,000, \quad (1)$$

where:

$$\Delta = \frac{\partial(\text{Black-Scholes value})}{\partial P} = e^{-dt} \phi \left(\frac{[\ln(P/E) + T(r-d + 0.5\sigma^2)]}{\sigma\sqrt{T}} \right),$$

where P is the price of underlying stock; E is the exercise price of the option; T is time to maturity in years; $d = \ln(1 + \text{dividend yield})$; $r = \ln(1 + \text{interest rate})$; σ is the expected stock volatility over the life of the option; $\phi(\cdot)$ is the cumulative density function of the standard normal distribution.

Because most of the options granted during a fiscal year are at-the-money when they are granted, we set P equal to E , and most of the options have a ten-year maturity when they are granted, so T is set equal to 10. The interest rate used is the 10-year treasury bond rate in that fiscal year. We calculate the dividend yield and the standard deviation (stock volatility) using the methodology described by ExecuComp[3].

Because institutional ownership is also an important factor that affects executive compensation (Hartzell and Starks, 2003), for every firm in the ExecuComp database we obtain institutional shareholdings for each year between 1992 and 2014 from the Thomson Reuters 13F Institutional Holdings database. We first calculate the percentage of the total number of shares held by all institutional investors of a firm for each quarter and use this information to compute the average institutional holding over a year. We then merge the institutional ownership data with Compustat/CRSP for the same period. Following Hartzell and Starks (2003), we measure institutional investor influence using the concentration of institutional ownership, defined as the proportion of total institutional investor ownership accounted for by the top 5 institutional investors in the firm, because institutional investors are likely to have more influence when they are more significant shareholders, and when they have allies in the form of other shareholders.

We calculate a firm-year conservatism score (C score) using the method proposed by Khan and Watts (2009). The C score, which is consistent with the Basu (1997) definition, is

estimated based on three financial variables suggested explaining variation in conservatism: the market-to-book ratio, firm size and firm leverage. First, the following annual cross-sectional regression model is estimated:

$$X_i = \beta_1 + \beta_2 D_i + R_i (\mu_1 + \mu_2 \text{Size}_i + \mu_3 M_i/B_i + \mu_4 \text{Lev}_i) + D_i R_i (\lambda_1 + \lambda_2 \text{Size}_i + \lambda_3 M_i/B_i + \lambda_4 \text{Lev}_i) + (\delta_1 \text{Size}_i + \delta_2 M_i/B_i + \delta_3 \text{Lev}_i + \delta_4 D_i \text{Size}_i + \delta_5 D_i M_i/B_i + \delta_6 D_i \text{Lev}_i) + \varepsilon_i, \quad (2)$$

where D is a dummy variable equal to 1 when $R < 0$ and equals to 0 otherwise. R is the share return, calculated as the holding period return nine months before the fiscal year through to three months after [4]. Size is the natural log of the market value of equity; M/B ratio as the market-to-book ratio; Lev as the sum of long-term and short-term debt deflated by the market value of equity. After obtaining the coefficients from the above regression, a firm-year C score is computed using the following equation:

$$\text{C score}_{i,t} = \lambda_{1,t} + \lambda_{2,t} \text{Size}_{i,t} + \lambda_{3,t} M_{i,t}/B_{i,t} + \lambda_{4,t} \text{Lev}_{i,t}. \quad (3)$$

The C score varies across firms through cross-sectional variation in the firm-year characteristics (size, M/B and Lev), and over time through inter-temporal variation in μ and λ , and in the firm-year characteristics. Conservatism is increasing with the C score.

We require that a firm must have data available from all sources for a given year to be included in the final sample. We also remove from the sample all firms that have never provided option grants as part of CEO compensation during our sample period. These requirements result in a sample of 16,631 firm-CEO-year observations. Descriptive statistics on the variables of interest are given in Table I. Note that all variables are winsorised at the 1 per cent level to minimised bias or errors resulting from outlying observation. Panel A provides information on CEO compensation. Table I reports CEO compensation in proportional terms, relative to the market value of equity, as we focus predominantly on the PPS and annual changes in compensation rather than the overall level of CEO compensation. Cash (salary and bonus) and the restricted shares compensation averages 0.03 per cent of firm market value, respectively. Option grants represent a substantially higher component of overall compensation (to the extent of around six times as much as the cash compensation). The average of the PPS of options granted during a fiscal year is 1.40, while the median number is 0.51, which indicates that the value of option grants to the average CEO will increase \$1.02 for every \$1,000 change in shareholders' wealth.

Panel B shows that the mean for the C score is 0.01, which is less than its median value of 0.02, which is smaller than the mean C score reported in Khan and Watts (2009) of 0.10, although our sample is much smaller and more recent than theirs. The descriptive statistics for the Sales and Total Assets variable are similar in magnitude and distributional structure, suggesting that either variable should represent an appropriate proxy for firm size. The mean of the stock return variable is 0.19, and the 10th percentile is -0.31 , indicating that firms' market performances are heterogeneous. Mean and median return on assets (ROA) figures are both 0.05, and the descriptive statistics for the market-to-book variable suggests that both the mean and median firms have substantial growth opportunities relative to assets in place. The average institutional ownership concentration is 0.37, which is consistent with that of Hartzell and Starks (2003). The average tenure of CEOs in the sample is 7.56 years, with the median tenure term of five years indicating some entrenched CEOs in the sample.

Table II provides the correlations between the variables in Table I. In general, the correlations are low, indicating that collinearity problems between the explanatory

Variables	Mean	Median	SD	10%	90%
<i>Panel A: executive compensation</i>					
Cash compensation (%)	0.03	0.01	0.10	0.00	0.08
Options granted (number %)	0.08	0.02	0.21	0	0.20
Options granted (value %)	0.18	0.08	0.36	0	0.45
Restricted shares granted (%)	0.03	0	0.13	0	0.09
PPS of options granted during the year	1.40	0.51	2.54	0	3.65
<i>Panel B: firm characteristics</i>					
C score	0.01	0.02	0.11	-0.14	0.13
Total assets	7.39	7.33	1.61	5.32	9.23
Sales	7.15	7.12	1.53	5.19	9.34
Market-to- book	3.02	2.30	2.34	1.14	5.64
Leverage	0.25	0.17	0.26	0.00	0.66
Stock return	0.19	0.13	0.47	-0.31	0.72
Return on assets	0.05	0.05	0.08	-0.01	0.13
CEO tenure	7.56	5	7.49	1	17
Institutional ownership concentration	0.37	0.35	0.13	0.24	0.52

Notes: $n = 16,631$. PPS, pay-performance-sensitivity. This table provides the sample statistics for the variables. The sample period is between 1992 and 2014. There are 16,631 firm-year observations. Panel A shows the summary statistics for CEO compensation. Panel B shows the summary statistics for firm characteristics. The detailed steps of calculation for PPS are shown in Section 3. Cash compensation is a manager's salary plus a bonus for the year, scaled by the market value of equity. Options granted (number) is the number of options granted scaled by the total number of shares. Options granted (value) is the Black-Scholes value of the options granted scaled by the market value of equity. Shares granted is the value of restricted shares granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Total assets are the natural logarithm of total assets at the financial year end. Sales are the natural logarithm of total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top five institutions to the total institutional holdings

Table I.
Summary statistics

variables are not a serious concern. The correlations between the C score and Size variables are negative (-0.50 based on Sales and -0.53 based on Assets), with this negative association being consistent with the view that large firms have lower information asymmetry than small firms and hence have lower contracting demand for conservatism. The correlation between the C score and leverage is positive (0.07), consistent with accounting conservatism providing information relevant to debt monitoring and leverage and accounting conservatism being complementary agency mechanisms. Our data show a negative relation between the C score and M/B ratio (-0.18), which could be explained by the short horizon "buffer problem" described in Roychowdhury and Watts (2007) or, alternatively, it could be that high growth firms have ongoing needs to raise capital, so they have less incentive to understate earnings or net assets because this will make it more difficult for them to attract investors, and issue additional equity capital in particular.

The natural logarithm of firm sales is used to measure size, and the stock market return and ROA (and their lagged values) are employed to represent firm performance. The market-to-book ratio is used to control for growth opportunities. The concentration of institutional ownership is used to proxy for external monitoring influences on CEO compensation setting. We also include a dummy variable for firm membership in the S&P 500 Index. Using industry dummy variables, we control for CEO pay similarities within industries. The industry variables are classified using the Fama-French 12 industry

	Option (number)	PPS	Cash	Option (\$)	C score	Sale	AT	MB	Lev	Ret	ROA	OWN	Tenure
Option (number)	1.00												
PPS	0.93	1.00											
Cash	0.15	0.15	1.00										
Option(\$)	0.81	0.77	0.15	1.00									
C Score	0.18	0.19	0.17	0.19	1.00								
Sale	-0.23	-0.27	-0.17	-0.25	-0.50	1.00							
AT	-0.25	-0.29	-0.20	-0.26	-0.53	0.85	1.00						
MB	0.00	0.03	-0.08	-0.03	-0.15	0.01	-0.06	1.00					
Lev	-0.05	-0.09	0.00	-0.06	0.07	0.22	0.37	-0.30	1.00				
Ret	0.04	0.06	0.03	-0.08	-0.14	-0.01	-0.02	0.18	-0.07	1.00			
ROA	-0.11	-0.13	-0.03	-0.19	-0.21	0.21	0.07	0.30	-0.23	0.13	1.00		
OWN	0.12	0.12	0.14	0.13	0.28	-0.36	-0.34	-0.13	0.04	-0.04	-0.26	1.00	
Tenure	-0.04	-0.04	0.04	-0.05	0.03	-0.09	-0.11	0.00	-0.08	0.01	0.07	0.00	1.00

Notes: PPS, pay-performance-sensitivity. This table provides the correlations between the variables in Table I. The detailed steps of calculation for PPS are shown in this section. Cash compensation is a manager's salary plus a bonus for the year, scaled by the market value of equity. The option granted (number) is the option granted scaled by the total number of shares. Option granted (value) is the Black-Scholes value of the options granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Total assets are the natural logarithm of total assets at the financial year end. Sales are the natural logarithm of total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top five institutions to the total institutional holdings

Table II.
Correlations between
the variables

classifications. Year dummy variables are used to control for the PPS of CEO compensation that varies year by year. The model is specified as follows:

$$\begin{aligned} \text{Compensation}_{i,t} = & \beta_1 \text{C score}_{i,t-1} + \beta_2 \text{Size}_{i,t-1} + \beta_3 M/B_{i,t-1} + \beta_4 \text{Lev}_{i,t-1} \\ & + \beta_5 \text{Ret}_{i,t} + \beta_6 \text{Ret}_{i,t-1} + \beta_7 \text{ROA}_{i,t} + \beta_8 \text{ROA}_{i,t-1} \\ & + \beta_9 \text{Dummy(S\&P500)}_i + \beta_{10} \text{Tenure}_{i,t} + \beta_{11} \text{Inst}_{i,t-1} \\ & + \sum \beta_k \text{Dummy(Industry)}_k + \sum \beta_y \text{Dummy(Year)}_y, \end{aligned} \quad (4)$$

where Compensation is initially measured as the PPS of options granted to CEOs during a fiscal year, as defined in Equation (1). We estimate Equation (4) with firm fixed effects in a panel regression setting.

The primary coefficient of interest in Equation (4) is the coefficient on the conservatism score variable, β_1 . If the directors/compensation committee of firm reward a CEO for adopting a higher level of accounting conservatism by increasing the PPS associated with option grants, a positive sign is expected for the coefficient on the C score variable. The null hypothesis is then that accounting conservatism does not influence the PPS of CEO compensation reflected in options granted in a fiscal year.

4. CEO compensation and accounting conservatism

The results of the regression, provided in the first model (column) in Table III, show that the conservatism score has an important impact on the PPS of options granted. The coefficient of the Conservatism score variable is positive (0.808) and statistically significant at the 5 per cent level. This strong positive relationship holds after controlling for the important variables that have been shown to affect the nature of executive compensation. The evidence supports the hypothesis that accounting conservatism plays a role in determining the option-based compensation paid to CEOs, consistent with the reward argument proposed in *HI*, which may also reflect reduced incentives for risk shifting and other opportunistic CEO behaviours. The model results imply that a one standard deviation increase in the Conservatism score is associated with an increase in the PPS of options granted of \$0.089 per \$1000 (0.11×0.808).

If stock volatility does influence the conservatism score (C score), there is a concern that the results in the first column in Table III may be driven by a mechanical relation between the PPS of option grants and stock volatility, as volatility is a parameter in Equation (1) used to estimate the PPS measure. To investigate this, we re-estimate Equation (4) using two additional dependent variables, namely the number of stock options granted by the board/compensation committee at the grant date, which reflects the reward/compensation decision made but is not contaminated by price and volatility influences and the value of options granted which incorporates both the reward and volatility elements. The coefficients for the C score variable in both these models are positive, as shown in Columns 2 and 3. However, when the value of options is used, the coefficient is positive but insignificant. Overall, this suggests that stock volatility is not driving the overall results about the relationship between C score and PPS sensitivity of option grants.

To examine whether the previously documented result is affected by corporate governance, we divide our sample into two groups based on their G index values. Low G index (high G index) is as the bottom (top) quintile of the sample, which is considered firms with a strong (weak) corporate governance system. This definition follows Shaw and Zhang (2010). We then estimate Equation (4) by adding a dummy variable that equals to 1 if the observation is in the top quintile and 0 if the observation is in the bottom quintile and the interaction term between the dummy variable and C score. Table IV reports the result. As shown in the table, when the dependent variable is the PPS of options, the coefficient on the

Independent variables	PPS	Option (number)	Option (value)
C score _{<i>t-1</i>}	0.808** (2.01)	0.125** (2.31)	0.060 (1.60)
Sales _{<i>t-1</i>}	-0.223*** (-7.29)	-0.026*** (-6.31)	-0.018*** (-7.66)
Market-to-book _{<i>t-1</i>}	0.005 (0.32)	-0.002 (-1.10)	0.002 (1.32)
Leverage _{<i>t-1</i>}	-0.109 (-0.81)	-0.002 (-0.08)	-0.030*** (-2.97)
Stock return	0.232*** (3.52)	0.024** (2.68)	-0.034*** (-7.05)
Stock return _{<i>t-1</i>}	0.022 (0.37)	-0.004 (-0.48)	-0.00** (-0.02)
Return on assets	-2.143*** (-3.90)	-0.212** (-2.88)	-0.334*** (-6.52)
Return on assets _{<i>t-1</i>}	-1.006* (-1.84)	-0.104 (-1.45)	-0.107** (-2.16)
S&P500	-0.234*** (-3.41)	-0.038*** (-3.99)	-0.012*** (-2.70)
CEO tenure	-0.018*** (-5.14)	-0.003*** (-5.45)	-0.001*** (-5.95)
Institutional ownership concentration _{<i>t-1</i>}	-0.007 (-0.03)	0.021 (0.61)	0.005 (0.26)
Industry effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Obs	12,491	12,491	12,491
R ²	0.134	0.098	0.134

Notes: PPS, pay-performance-sensitivity. This table shows the coefficients from the panel data regressions. The dependent variables are the PPS of options granted to CEOs, the number of the options and the value of the options. The detailed steps of calculation for PPS are shown in Section 3. Options granted (number) is the number of options granted scaled by the total number of shares. Options granted (value) is the Black-Scholes value of the options granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Sales are the logarithm of the total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. S&P 500 is an indicator variable that equals 1 if a firm is in the S&P 500 index. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top 5 institutions to the total institutional holdings. Industries are classified using the Fama-French 12 industry definitions. The coefficients of the industry dummies and year dummies are not reported. The regression is estimated with robust standard errors clustered at the firm level. The detailed definitions of the variables can be found in Table I. For each model, *t*-statistics are reported in parentheses. *, **, *** Statistically significant at 10, 5 and 1 per cent levels, respectively

Table III.
Options granted
during a financial
year and accounting
conservatism

interaction term is positive and significant at the 5 per cent level. When the dependent variable is the number of options, the coefficient is positive and significant at the 10 per cent level. Hence the results overall support our *H2*, indicating that the effect of accounting conservatism on PPS is stronger for firms with a relatively weaker corporate governance, which is consistent with the view that accounting conservatism could work as an alternative mechanism for corporate governance.

5. Further analysis

On top of stock options, executive compensation typically comprises a salary, a bonus related to accounting profit and often restricted or unrestricted stock grants. They may directly influence remuneration decision making; for example, managers could manipulate or manage earnings to boost current performance measures, such as accounting profit, to increase their annual bonuses or meet a stock grant hurdle. Such earnings manipulation is costly to shareholders and will adversely impact on the firm stock prices. As previous research has shown that accounting conservatism reduces the incentive for, and the degree of, earnings management (Cornett *et al.*, 2008; García Lara *et al.*, 2009), it is also possible that directors may also reward managers for increasing levels of accounting conservatism, via salary bonus or stock grant channels. Salary bonuses make some sense from a shorter-term incentive perspective, as accounting conservatism should work against earning

Independent variables	PPS	Option (number)	Option (value)
C score _{t-1}	0.723 (0.86)	0.147 (1.21)	0.075 (0.93)
G×C score	1.729** (2.18)	0.251* (1.93)	0.044 (0.41)
G index	0.148 (1.25)	0.036** (2.05)	-0.000 (-0.04)
Sales _{t-1}	-0.277*** (-4.47)	-0.035*** (-4.14)	-0.023*** (-5.14)
Market-to-book _{t-1}	-0.026 (-0.97)	-0.006* (-1.93)	0.000 (0.06)
Leverage _{t-1}	0.224 (0.88)	0.043 (1.23)	-0.013 (-0.52)
Stock return	0.326** (2.56)	0.029* (1.80)	-0.028*** (-2.99)
Stock return _{t-1}	0.204 (1.64)	0.143 (0.85)	0.034 (1.61)
Return on assets	-4.055*** (-3.20)	-0.457*** (-2.75)	-0.643*** (-3.72)
Return on assets _{t-1}	0.787 (0.68)	0.209 (1.43)	0.113 (1.00)
S&P500	-0.161 (-1.30)	-0.027 (-1.55)	-0.007 (-0.74)
CEO Tenure	-0.013** (-2.18)	-0.002*** (-2.99)	-0.001*** (-3.11)
Institutional ownership concentration _{t-1}	-0.509 (-1.14)	-0.055 (-0.84)	-0.036 (-1.05)
Industry effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Obs.	3,080	3,080	3,080
R ²	0.114	0.090	0.100

Notes: PPS, pay-performance-sensitivity. This table shows the coefficients from the panel data regressions. The dependent variables are the PPS of options granted to CEOs, the number of the options and the value of the options. The detailed steps of calculation for PPS are shown in Section 3. Options granted (number) is the number of options granted scaled by the total number of shares. Options granted (value) is the Black–Scholes value of the options granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Sales are the logarithm of the total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. S&P 500 is an indicator variable that equals one if a firm is in the S&P 500 index. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top 5 institutions to the total institutional holdings. Industries are classified using the Fama–French 12 industry definitions. The coefficients of the industry dummies and year dummies are not reported. The regression is estimated with robust standard errors clustered at the firm level. The detailed definitions of the variables can be found in Table I. For each model, *t*-statistics are reported in parentheses. *, **, ***Statistically significant at 10, 5 and 1 levels, respectively

Table IV.
Options granted during a financial year and accounting conservatism with G index

manipulation to meet underlying bonus targets. Baber *et al.* (1998), for instance, found that earnings persistence was strongly associated with earnings-based compensation, but not stock-based compensation.

We evaluate the relationship between annual changes in accounting conservatism and changes in cash and the shares components of CEO compensation. Estimating a change model also controls for any self-selection problems associated with the appointment of conservative CEOs or CEO preferences for particularly compensation structures, and endogeneity effects that may be associated with the level specification of the accounting conservatism (C score) variable. The model being estimated is specified as follows:

$$\begin{aligned} \Delta(\text{Executive compensation})_{i,t} = & \beta_1 \Delta \text{C score}_{i,t-1} + \beta_2 \Delta \text{Ret}_{i,t} + \beta_3 \Delta \text{Size}_{i,t} \\ & + \beta_4 \Delta M/B_{i,t} + \beta_5 \Delta \text{Lev}_{i,t} + \beta_6 \Delta \text{ROA}_{i,t} + \beta_7 \Delta \text{Inst}_{i,t} \\ & + \sum \beta_k \text{Dummy}(\text{Industry})_k + \sum \beta_y \text{Dummy}(\text{Year})_y, \quad (5) \end{aligned}$$

where Executive (CEO) compensation is measured by the change in cash (salary plus bonus) or the restricted shares in a fiscal year; all the dependent variables are expressed in their natural logarithm. In this model, we are again predominantly interested in the coefficients

on the C score variable, β_1 , which reflects the relationship between accounting conservatism and the various CEO compensation components. Our underlying expectations are for positive associations, reflecting firms rewarding CEOs for increasing degrees of accounting conservatism. Table V provides the results of this analysis.

The results in Table V indicate a negative association between the change in accounting conservatism score and the change in cash and a positive association between the accounting conservatism and the restricted components of CEO compensation, but both are statistically insignificant. The result indicates that the accounting conservatism has limited influence on the restricted shares component and the cash component, which is an interesting finding given that options and restricted share both are an equity-based incentive, but the effects of accounting conservatism on the options are much more important than the restricted shares.

6. Robustness analysis

There may be an endogenous relationship between accounting conservatism and CEO compensation, and we have done several things in the former analysis to try and minimise any influence of endogeneity. The model includes lagged values of explanatory variables, industry, year fixed effects and firm fixed effects, and uses robust standard errors clustered at the firm level, which should help to mitigate potential endogeneity problems.

We also conduct further analysis incorporating a few corporate governance proxies into our analysis to test the robustness of our main findings. To control for internal firm and external environment corporate governance attributes, we re-estimated our models by individually including a Board of Director composition variable, the Gompers *et al.* (2003) anti-takeover amendments index variable and a dummy variable to indicate the introduction of the Sarbanes–Oxley Act (SOX) in 2002. The main results for the accounting conservatism (C score) variable do not change in these models, suggesting that

Independent variables	Dependent variables	
	Δ Cash compensation	Δ Restricted shares compensation
Δ C score	-0.142 (-1.22)	0.655 (1.61)
Δ Sales	-0.098 (-1.59)	-0.158 (-1.10)
Δ Market-to-book	-0.003 (-0.33)	-0.025 (-1.16)
Δ Leverage	0.073 (1.60)	0.012 (0.05)
Δ Stock return	0.052*** (2.72)	0.083 (1.47)
Δ Return on assets	0.053*** (2.72)	0.531 (1.05)
Δ Institutional ownership concentration	0.170** (2.11)	-0.319 (-1.11)
Industry effects	Yes	Yes
Year effects	Yes	Yes
Obs	10,391	10,391
Adj. R^2	0.051	0.010

Notes: This table shows the coefficients from a regression of the change in CEO compensation against the change in conservatism score (as described in Khan and Watts, 2009). The dependent variables are the logarithm change in cash compensation (cash plus bonus), the logarithm change in share-based compensation (shares granted) and the logarithm change in option-based compensation (options granted). C score is the conservatism score as described in Khan and Watts (2009). Sales are the logarithm of the total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. Institutional ownership concentration is defined as the ratio of the shares held by the top five institutions to the total institutional holdings. Industries are classified using the Fama–French 12 industry definitions. The coefficients of the industry dummies and year dummies are not reported. For each model, *t*-statistics are reported in parentheses. * ** *** Statistically significant at 10, 5 and 1 levels, respectively

Table V.
Change in
compensation and
change in accounting
conservatism

controlling for corporate governance effects does not modify the underlying accounting conservatism results[5].

Ahmed and Duellman (2013) identify a negative relationship between managerial overconfidence and accounting conservatism. To ensure that managerial overconfidence does not have a confounding effect on our results, we also re-estimated the primary analysis results including CEO pay slice (the proportion that CEO pay comprises of total executive pay) to proxy for managerial overconfidence, and find that the underlying accounting conservatism and CEO compensation relationship conclusions are unchanged (see Footnote 5).

As a further control for potential endogeneity with our PPS of CEO option grants model, we also re-estimated the primary model in Table III in the change form. The model estimated is identical to Equation (5), except the dependent variable is the change in the PPS of option grants awarded in a fiscal year. The results indicate that the coefficient on the change in conservatism score (ΔC score) variable is positive and statistically significant at the 10 per cent level. This finding provides further confidence that the results in the paper are not influenced by endogeneity or omitted variable bias (see Footnote 5).

It would be ideal that one can find a natural experiment to solve the endogeneity concern in this study. For example, a regulation change that will only affect the accounting conservatism but not affect the CEO compensation; however, it is hard to find such a change in regulation in our study. La Fond and Roychowdhury (2008) find that managerial ownership that excludes shares granted in options is negatively associated with accounting conservatism, whereas the number of shares granted to managers in their outstanding stock options is not significantly related to accounting conservatism. Hence, we believe that it is reasonable to use the managerial ownership (excluding options) as an instrumental variable for accounting conservatism because the managerial ownership is unlikely to be associated with the PPS of stock options. We use a two-stage least squares regression to check if our main result still holds. In the first stage, we regress the C score on managerial ownership and other control variables using firm fixed and year fixed effects, and then we use the predicted values for C score in the second stage. Tables VI and VII presents the results.

In Table VI, we find that both coefficients for the PPS of options and the number of options are significant at the 10 per cent level, though weaker than our main result. In Table VII, the high F -value and the significance of the coefficient of managerial ownership indicate that the managerial ownership is a good instrumental variable for C score; moreover, the sign of this coefficient on managerial ownership is consistent with the result reported by La Fond and Roychowdhury (2008), indicating a higher managerial ownership leads to a lower conservatism. We also performed the Wu-Hausman test for endogeneity and the Hansen J -statistics for the validity of the instrumental variable. As shown in Table VII, we can reject the null that the variable is exogenous and accept the null that our instrumental variable is a valid one.

FAS 123R is the 2005 financial accounting standard introduced by the Financial Accounting Standards Board that requires firms to expense employee stock option in the income statement at fair value. Consistent with FAS 123R increasing the perceived cost of stock options (Murphy, 2013), various studies have documented a significant decrease in the use of stock options after its introduction (Carter *et al.*, 2007). Hence, we re-estimate our regression model for the two sub-periods in our sample, respectively, one is before 2005 and the other is after 2005; we exclude the observations in the year 2005. Table VIII presents the result.

As shown in Table VIII, the coefficient on PPS of options is significant at the 5 per cent level in the time period before 2005; however, after the introduction of FAS 123R, it is no longer significant in the post-2005 period, this result indicates that the change in accounting reporting standard has significant impact on the effect of accounting conservatism on the PPS of stock options because stock option incentive no longer play a dominant role compared to other forms of compensation[6].

Independent variables	PPS
C score _{<i>t-1</i>}	6.903* (1.71)
Sales _{<i>t-1</i>}	-0.524 (1.60)
Market-to-book _{<i>t-1</i>}	-0.041 (-0.56)
Leverage _{<i>t-1</i>}	0.682 (0.38)
Stock return	0.189 (0.77)
Stock return _{<i>t-1</i>}	-0.082 (-1.24)
Return on assets	-0.286 (-0.36)
Return on Assets _{<i>t-1</i>}	-0.393 (-0.49)
S&P500	-0.211 (-0.86)
CEO tenure	-0.027*** (-6.44)
Institutional ownership concentration _{<i>t-1</i>}	0.002 (0.00)
Industry effects	Yes
Firm effects	Yes
Year effects	Yes
Obs	12,491
R ² (between)	0.089

Notes: PPS, pay-performance-sensitivity. This table shows the coefficients from the 2SLS panel data regressions. The dependent variables are the PPS of options granted to CEOs, the number of the options and the value of the options. The detailed steps of calculation for PPS are shown in Section 3. Options granted (number) is the number of options granted scaled by the total number of shares. Options granted (value) is the Black-Scholes value of the options granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Managerial ownership is used as an instrument for C score. Sales are the logarithm of the total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. S&P 500 is an indicator variable that equals 1 if a firm is in the S&P 500 index. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top 5 institutions to the total institutional holdings. Industries are classified using the Fama-French 12 industry definitions. The coefficients of the industry dummies and year dummies are not reported. The regression is estimated with robust standard errors clustered at the firm level. The detailed definitions of the variables can be found in Table I. For each model, *z*-statistics are reported in parentheses. *, **, ***Statistically significant at 10, 5 and 1 levels, respectively

Table VI.
Options granted during a financial year and accounting conservatism_2SLS regression: second-stage result

Panel A	C score
Dependent variable	
Managerial ownership	-0.0003** (2.89)
Controls	Yes
Industry effects	Yes
Firm effects	Yes
Year effects	Yes
Obs	12,491
R ² (between)	0.699
F	1,240.91

Panel B

Tests of endogeneity H_0 : variables are exogenous

Durbin (score) $\chi^2(1)$	16.3482 ($p = 0.0001$)
Wu-Hausman $F(1, 12,221)$	16.3113 ($p = 0.0001$)
Hansen <i>J</i> -statistic (overidentification test of all instruments)	5.587
$\chi^2(2)$ <i>p</i> -val	0.367

Notes: This table shows the coefficients from the 2SLS panel data regressions. Panel A shows the results from the first-stage regression, and Panel B shows the result from the Wu-Hausman test and the Hansen *J* statistic. The dependent variable is the C score, and the instrument variable is managerial ownership. The definitions of the control variables are defined in the previous tables. *t*-statistics are reported in parentheses. *, **, ***Statistically significant at 10, 5 and 1 levels, respectively

Table VII.
Options granted during a financial year and accounting conservatism_2SLS regression: first-stage result

Independent variables	PPS (before 2005)	PPS (after 2005)
C score _{<i>t-1</i>}	1.218** (2.11)	0.337 (0.76)
Sales _{<i>t-1</i>}	-0.302*** (-6.65)	-0.150*** (-4.72)
Market-to-book _{<i>t-1</i>}	-0.013 (-0.70)	0.021 (1.20)
Leverage _{<i>t-1</i>}	-0.043 (-0.23)	-0.205 (-1.38)
Stock return	0.294*** (3.24)	-0.035 (-0.45)
Stock return _{<i>t-1</i>}	0.085 (1.02)	-0.055 (-0.66)
Return on assets	-2.943*** (-3.80)	-1.067 (-1.55)
Return on assets _{<i>t-1</i>}	-0.209 (-0.30)	-2.527** (-2.49)
S&P500	-0.308*** (-3.22)	-0.053 (-0.79)
CEO tenure	-0.022*** (-4.53)	-0.013*** (-2.86)
Institutional ownership concentration _{<i>t-1</i>}	-0.220 (-0.72)	-0.057 (-0.17)
Industry effects	Yes	Yes
Firm effects	Yes	Yes
Year effects	Yes	Yes
Obs	7,268	4,290
R ²	0.119	0.116

Notes: This table shows the coefficients from the panel data regressions. The dependent variables are the PPS of options granted to CEOs, the number of the options and the value of the options. PPS stands for pay-performance-sensitivity. The detailed steps of calculation for PPS are shown in Section 3. Options granted (number) is the number of options granted scaled by the total number of shares. Options granted (value) is the Black-Scholes value of the options granted scaled by the market value of equity. C score is the conservatism score as described in Khan and Watts (2009). Sales are the logarithm of the total sales at the financial year end. Market-to-book is the ratio of the market value to the book value of equity. Leverage is the ratio of long-term debt to total assets. Stock return is the compounded monthly return from the ninth month before the financial year end to the third month after the financial year end. Return on assets is the ratio of net profit after tax to total assets. S&P 500 is an indicator variable that equals one if a firm is in the S&P 500 index. CEO tenure is the length of the CEO appointment measured in years. Institutional ownership concentration is defined as the ratio of the shares held by the top five institutions to the total institutional holdings. Industries are classified using the Fama-French 12 industry definitions. The coefficients of the industry dummies and year dummies are not reported. The regression is estimated with robust standard errors clustered at the firm level. The detailed definitions of the variables can be found in Table I. For each model, *t*-statistics are reported in parentheses. *, **, *** Statistically significant at 10, 5 and 1 levels, respectively

Table VIII.
Options granted during a financial year and accounting conservatism

7. Conclusions

We find a positive relation between firm conservatism scores and the PPS of options granted to CEOs. The relation between accounting conservatism and other compensation components, including cash compensation and the restricted shares, is not significant. The effect of accounting conservatism on PPS is found more significant for firms with weaker corporate governance system and the period before the introduction of FAS 123R. Beyond statistical significance, we also document that the economic influence of variation in accounting conservatism levels on CEO PPS is also substantial. These empirical findings are robust after controlling for important factors that affect executive compensation, such as size, operating and market performance, growth opportunities, CEO tenure, institutional ownership tenure and the internal and external corporate governance environments, and also employing different variable definitions and under various model specifications. We also estimate a 2SLS regression to control for the possible endogenous relation between conservatism and the PPS of options, which our result still holds.

Overall, these results support the view that accounting conservatism choices by CEOs are rewarded by firms compensation, and that accounting conservatism has an incrementally important role to play in the compensation setting environment. This association between accounting conservatism and CEO compensation is found after controlling for other recognised agency mechanisms such as corporate

governance and institutional ownership, suggesting that the benefits of accounting conservatism are incremental to corporate governance influences on executive remuneration, rather than necessarily being determined by them which has been a common suggestion in the literature.

Notes

1. The sample descriptive statistics to be discussed later in Table I of the paper indicated the dominant contribution of option grants to the underlying value of total CEO compensation for our firm sample.
2. Note that including G index reduces the sample size of regression models, primarily because the G index information is only available up until 2006.
3. The volatility is calculated using the previous 60 monthly returns. If a company is in the bottom or top 5 per cent of volatilities, we increase or decrease its volatility to the 5th or 95th percentile values. This prevents us from using a volatility calculation that is so far outside of the norm that it will not likely repeat in the future. If a stock has traded for less than 60 months, we use as many months as possible to do the calculation. The dividend yield is estimated using the average of the past three years' dividend yield.
4. This definition is consistent with that in Basu (1997).
5. The result will be available upon request.
6. We also re-estimate the model for the cash compensation and the restricted share compensation for the two sub-periods, and the results are similar to that reported in Table VI. The result will be available upon request.

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