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How does CEO incentive matter for corporate social responsibility disclosure? Evidence from global corporations based in the USA

Abstract

This study investigates the effect of each component of CEO compensation, including cash-based component (salary and bonus), equity-based component (stock grant and stock option), and other perks on disclosure of corporate social responsibility (CSR) information of global firms. The study uses 2SLS IV estimation method and a sample of 580 US-based firms in a seven-year period. The study finds that equity-based remuneration has a significant and positive impact on a firm's CSR disclosure while CEO salary, bonus, and other perquisites have significant detrimental effects on CSR disclosure. The paper indicates that a CEO's motivation for CSR reporting might arise from stock grant and option; meanwhile, salary, bonus and other perks could demotivate the CEO in this regard. Our findings offer insight into designing CEO compensation packages to meet shareholders' interests and stakeholders' expectations for a sustainable business.

Keywords: Corporate social responsibility; Disclosure; CEO; Incentive; Compensation; Remuneration

1.Introduction

Corporate social responsibility (CSR) has been a concern of stakeholders since the global corporate scandals in the early 2000s. The literature views that it is the CEO's motives that drive a firm's CSR engagement (Chahine *et al.*, 2019). Even in a shareholder-value driven national system, managers have a degree of discretion in their choice of implementation of CSR policy (Crilly *et al.*, 2008). An imperative question arises about how shareholders can

incentivise CEOs to publish CSR information to address worldwide stakeholders' concerns in the implementation of CSR policy across the global supply chain of a global firm.

Several studies (e.g., Flammer *et al.*, 2019; Jian and Lee, 2015) suggest that firms should reward CEOs for undertaking CSR if the stockholders want the firm to do good in terms of more ethical or socially responsible investment. Few studies (McGuire *et al.*, 2019) indicate the correlation between CEO incentive and CSR performance; firms can enhance CSR disclosure to meet stakeholders' expectations by offering executive rewards. However, little attention is paid to examine what type of rewards in a CEO compensation structure contributes to the increase or decrease of CSR disclosure to stakeholders. Our study aims to fill this gap.

The objective of this paper is to investigate the effect of each type of CEO incentive measures, namely salary and bonus (cash base), stock grant and stock option (equity base), and other perquisites, on a firm's CSR disclosure. The US company data is used for this research since this country has a shareholder-value driven system, developed stock market, labour market freedom, and a large number of global-level firms. To test our hypotheses, we use a dataset of 2,662 firm-year observations from 580 US global firms in 30 industries across seven years from 2005 to 2011. We find that, statistically, CEO cash-based compensation is negatively related to CSR disclosure, while the effect of CEO stock-based compensation is significantly positive. At the same time, perks demotivate the CEO to work towards CSR disclosure.

This paper contributes two folds to the current literature. *First*, the study shows how a CEO compensation policy should be designed to align the CEO's self-benefit seeking with the legitimacy of the firm to match shareholders' long-term value with stakeholders' interest. While the literature has little consensus about a CEO's motives to build a socially and environmentally responsible image of his/her company (Friedman, 1962 vs Freeman, 1984), this paper strongly implies that CEOs' motives for CSR reporting may arise from equity-based incentive elements but might be weakened by cash-based and perk incentives. *Second*, the paper extends the agency view that a well-designed compensation package can direct individual efforts toward strategic business objectives. Karim *et al.* (2018) find that a firm's social performance is negatively associated with the proportion of cash-based compensation, while it is positively associated with the proportion of equity-based compensation. Our paper specifies which component in a CEO compensation structure is beneficial or detrimental to a

firm's CSR disclosure. Therefore, our paper shows that CEO stock grant and option but not CEO salary, bonus and other perks are more suitable for CSR-driven corporate governance configurations.

The next section contains a literature review underpinning the hypotheses development. The research methodology is described, followed by the empirical results and discussion. Finally, we present the implications of the study and propose the directions for further research to conclude the paper.

2. Literature Review and Hypotheses Development

2.1. CEO compensation

CEO compensation includes monetary rewards (salary and bonus) and equity-based pay (stock grants and stock options) in addition to other perks (Mallin, 2018). In the last four decades, a significant amount of the literature on CEO incentive's has examined how specific compensation packages affect behaviours and organisational outcomes (Lee *et al.*, 2019).

The agency-based view literature, specifically Mehran (1995) and Jensen and Murphy (2004), consider a well-designed compensation package as the factor that motivates CEOs to take actions that maximise firm value and avoid actions that destroy shareholder wealth. According to agency theory (Jensen and Meckling, 1976), the interests and goals of shareholders and CEOs can be congruent if firms offer financial incentives to CEOs. The compensation systems that align a manager's interests more closely to shareholders can reduce agency costs and enhance firm performance (Dias *et al.*, 2020). A corporate pay system, if appropriately structured, can help direct individual efforts toward strategic business objectives, thereby enabling the firm to reach higher performance levels (Barkema and Gomez-Mejia, 1998). For example, Murphy (1985) finds that salary and bonus for top management in large US corporations are positively related to shareholder returns. Mehran (1995) reports that firm performance is positively related to the percentage of equity held by managers and to the percentage of their equity-based compensation. The literature believes that monetary remuneration (salary and bonus) tends to compensate CEOs for the achievements of short-term performance targets, while equity-based compensation is to incentivise them to fulfil long-term commitments in alignment with shareholder goals.

There is a vast amount of literature suggesting that well-designed CEO compensation structures that can enhance corporate performance in term of financial indicators, i.e., Dias *et*

al. (2020), Sheikh (2018), Firth *et al.* (2006), Core *et al.* (1999), Mehran (1995). There are also a significant number of studies arguing on CEOs' motives for allocating firms' resources in CSR activities, e.g., Petrenko *et al.* (2016), Krüger (2015), Borghesi *et al.* (2014), Barnea and Rubin (2010), Margolis and Walsh (2003). However, only a few studies examine the role of CEO compensation in CSR performance. Such studies include Jouber (2019), McGuire *et al.* (2019), Flammer *et al.* (2019), Jian and Lee (2015), Fabrizi *et al.* (2014), Jiraporn and Chintrakarn (2013), and McGuire *et al.* (2003). Jouber (2019) examines the influence of CEO pay slice on CSR performance; the author used sustainability dimensions gathered from the Global Reporting Initiative to capture CSR performance. McGuire *et al*. (2019; 2003) and Fabrizi *et al.* (2014) also examine the effects of CEO compensation incentives on CSR performance. To capture CSR performance, McGuire *et al*. (2019; 2003) employ Kinder, Lydenberg and Domini (KLD) dataset while Fabrizi *et al*. (2014) utilise Ethical Investment Research and Information Service (EIRIS) dataset. Flammer *et al.* (2019) also use KLD to measure CSR in their study of integrating environmental and social performance criteria in executive compensation (CSR-based incentive or CSR contracting) - a recent practice in corporate governance. Jian and Lee (2015) investigate the effect of the total value of CEO compensation on CSR investment, using the KLD dataset to capture CSR investment. Jiraporn and Chintrakarn (2013) examine the effect of CEO power measured by CEO pay slide on CSR engagement; they also employed the KLD dataset to capture CSR engagement.

The review of the literature above indicates that there exists very little research examining the effects of CEO incentive components on CSR disclosure. This paper is aimed to address the existing literature gap by analysing how CEO incentive components can motivate or demotivate CSR disclosure.

2.2.CSR disclosure

While CSR definitions vary, it generally refers to actions taken by companies with respect to their employees, communities, and the environment that goes beyond what is legally required of a company (Barnea and Rubin, 2010). Accordingly, CSR disclosure can be understood as a firm's voluntary disclosure of what the firm has done in relation to employees, society and environment. The information about the firm’s actions in relation to employees, society and environment is also known as sustainability information. A firm's CSR disclosure can be done through its CSR report or sustainability report, a more contemporary name.

Stakeholder management theory (Freeman, 1984) suggests that to survive, a firm has to pay attention to the legitimate interests of stakeholders, implicitly and explicitly, both in the establishment of corporate policies and in daily decision making. The impact of modern economic activities on quality of life has caused growing public concerns about environmental and social issues (Raelin and Bondy, 2013). These concerns have raised the expectations of firms' stakeholders about the firm's accountability and transparency. By disclosing CSR information, a firm can signal its accountability and transparency to stakeholders, gaining more legitimacy (Suchman, 1995). Drawing on stakeholder management theory, the instrumental CSR research initiated by McWilliams and Siegel (2001) and progressed by other studies (e.g., Porter and Kramer, 2006) considers CSR as an instrument for a firm to obtain legitimacy in the eyes of its stakeholders. Consequently, the firm has their support and so, therefore, obtains better economic performance. This research strand is well supported by empirical evidence. For example, using a global dataset of 833 firms from 31 countries, Pham and Tran (2020) provide robust evidence of the significant effect of CSR disclosure on a firm's financial performance.

Indeed, CSR disclosure can be considered a firm's performance in social and environmental dimensions. This has been proved to enhance a firm's financial performance. The triple bottom line (TBL) framework initiated by Elkington (1998) and subsequent sustainability research strand clearly show that for sustainability, a firm needs to achieve value-added in all three dimensions: economic part (of which finance is the core), social part, and environmental part. The TBL theory infuses platforms like the Global Reporting Initiative (GRI), Dow Jones Sustainability Indexes (DJSI), and Bloomberg ESG disclosure score that affect corporate accounting, stakeholder engagement, and increasingly, strategy (Elkington (2018). Addressing what management dedicated to a TBL might entail sustainability reporting. Reporting TBL performance is the essential first step for many corporations looking to engage with a sustainability agenda. In other words, for sustainability, CSR disclosure needs to be looked after as much as the firm's economic performance. Accordingly, CEO compensation packages should be designed to align CEO interests with a firm's performance regarding financial measures but also social and environmental pillars.

2.3.CEO incentive and CSR disclosure

While a CEO has a chance to prioritise the fulfilment of his/her labour contract with firm owners rather than a social contract between the firm and the society, the CEO might pass costs on to society to chase for short-term financial performance (Raelin and Bondy, 2013). Therefore, designing a CEO compensation package that can incentivise the CEO to care about sustainable performance and reporting CSR information to the public is also imperative to the firm's owners. To find the answer for how a firm (i.e. firm owners) can incentivise a CEO to care more about the sustainability of the firm, we apply the agency theory in this research. In particular, we adopt the proposition by the agency view of CEO compensation (Jensen and Murphy, 2004) that a well-designed compensation package can direct individual efforts toward business objectives that firm owners require. Similar to McGuire *et al*. (2019; 2003), Mallin (2018), and Fabrizi *et al.* (2014), we disintegrate a CEO compensation package into three types of incentives: cash-based remuneration (CEO salary and bonus), equity-based or long-term remuneration (CEO stock grant and option), and CEO perquisites (e.g., accommodation, car, paid holiday). In the following section, we posit the impact of these types of CEO incentives on the CEO's motivation of CSR reporting to gain further insight into how executive pay components take effect in stakeholder management.

Short-term remuneration in cash (salary and bonus) and in other perks signals ''performance-driven corporate orientation that may influence managerial decision making'' (McGuire et al. 2003, pp. 344). Short-term remuneration motivates executives to make decisions that increase the firm's profits in a year (Fabrizi *et al.*, 2014). Meanwhile, CSR disclosure may increase the reputation of the reporting firm, which helps to increase annual profits (Pham and Tran, 2020). As a result, the CEO who is incentivised with short-term remuneration in cash, i.e., cash-based remuneration and other perks, is likely to be driven by the short-term profitability of a firm. With the belief that CSR information can enable a firm to gain more legitimacy in the eyes of stakeholders and hence their support, CEOs may be in favour of disclosing CSR information to please stakeholders for financial rewards. Therefore, we propose that:

H1: *CEO cash-based remuneration promotes CSR disclosure, ceteris paribus.*

H2: *CEO perk promotes CSR disclosure, ceteris paribus.*

In contrast, equity/stock-based remuneration, which has long-term benefit, can incentivise CEOs to fulfil commitments in alignment with shareholders' long-term goals.

CEOs' with larger shareholdings may try to protect or increase their long term wealth by contributing to the firm's sustainable performance (Petrou and Procopiou, 2016).

CSR has been proved as one of the drivers for competitiveness (Porter and Kramer, 2006) and long-term sustainable performance of a firm. CSR disclosure increases a firm's legitimacy and public trust. The stock market usually has a positive response to good CSR (Luo and Bhattacharya, 2006). It is suggested that CSR can contribute to an increase in future shareholder value (Fabrizi *et al.*, 2014). Seeing the long-term benefit of CSR and CSR disclosure to the firm's future value, CEOs who are driven by long-term wealth are likely to invest the firm's resources in CSR activities and disclosure of CSR information. Thus, by offering stock grants and options to the CEO, shareholders can motivate the CEO long-term engagement in promoting CSR (Kane, 2002) and disclosing CSR information, leading to the following hypotheses:

H3: *CEO equity-based remuneration promotes a firm's CSR disclosure, ceteris paribus.*

3. Research Methodology

3.1. Sample and data

We use a sample of 580 US-based global firms to test the hypotheses. Annual data of these firms regarding CEO remuneration components (salary, bonus, perk, stock grant and stock option), total assets, number of employees, the proportion of independent director on board, return on equity (ROE), and environmental, social and governance disclosure score from 2005 to 2011 were collected from Bloomberg. We manually collected the number of countries that a firm has its subsidiary/subsidiaries and foreign operation(s) in from web domains. The industry of a firm is assigned, which is based on the Fortune industrial classification. There are 30 industries in our dataset, including Aerospace/Defense, Agriculture, Apparel footwear and cloth, Automobile, Bank and finance, Beverages and Brewery, Construction, Broadcasting Audio-Video Publishing, Chemicals, Consulting Service, Distribution/Wholesale/Commerce, Electric and energy, Electronics, Engineering/R&D Services, Food, Hotel, Human Resources, Insurance, Information technology, Machinery and equipment, Manufacturing, Medical, Metal and mining, oil and gas, Retail, Real estate, Telecom, Tobacco, Transport and others. After the omission of missing values, 2,662 firm-year observations are left in the final dataset.

3.2. Estimation model

We develop an empirical model (Equation 1) in which CSR disclosure is the dependent variable; CEO cash compensation, stock grant and option, and other perk are the independent variables. We employ the 2SLS estimation method. We control for the variables which potentially affect a firm's CSR disclosure.

Based on the assumption that firm performance of the current year is the outcome of the operations in the previous year (Jo and Harjoto, 2012), we use one-year lag of the key explanatory and control variables in the model. This strategy enables a reduction of potential reversal causality between the dependent variable and the independent variables.

Equation 1:

$$CSRdisclose_{i;t} = \beta 0it + \beta 1CEOcash_{i;t-1} + \beta 2CEOstock_{i;t-1} + \beta 3CEOperk_{i;t-1} + \beta 4asset_{i;t-1} + \beta 5employee_{i;t-1} + \beta 6foreigncountry_{i;t-1} + \beta 7independirector_{i;t-1} + \beta 8industryaverage_{i;t-1} + \beta 9crisis_{i;t-1} + \beta 10industryeffect_{i;t-1} + \beta 11yeareffect_{i;t-1} + \varepsilon it$$

Dependent variable:

CSR disclosure (*CSRdisclose*) is calculated on the amount of environmental, social and governance (ESG) information that a company disclosed. This score was developed by Proprietary Bloomberg ESG group and used in previous studies such as Alareeni and Hamdan (2020), Aragón-Correa *et al.* (2016), and Lai *et al.* (2016). ESG scores are measured in terms of the degree of transparency of a company's reporting on ESG metrics (Lai *et al.*, 2016).

The scores range from 0.1 for companies that disclosed a minimum amount of data to 100 for those that disclosed every data point. Each data point is weighted in terms of importance, with environmental data carrying greater weight than other disclosures in EGS. See Alareeni and Hamdan (2020) for the description of Bloomberg ESG scores.

Key independent variables:

For the key explanatory variables, *CEOcash* is the annual amount of salary and bonuses, i.e., cashed-based incentive paid to a CEO, determined by Bloomberg (in USD millions). *CEOstock* is the annual amount of stock grant and option the firm awarded to the CEO or the equivalent as determined by Bloomberg (in USD millions). It would include more than one

CEO's pay if there were interim or previous CEO that served during the fiscal year. *CEOperk* is the other perks a company offer to the CEO as a component of the CEO compensation package.

Control variables:

Firm size. It is common in previous studies that total assets (Ammann *et al.*, 2011) and/or a number of employees (Glavas and Piderit, 2009) are employed to proxy for firm size. Hence, in this study, firm size is measured by two indicators, total assets (*asset*) and employee number (*employee*). Total asset is calculated based on the total of all short and long-term assets as reported on the balance sheet of the firms, in USD billions. We use the natural logarithm of total assets and the natural logarithm of employee number to reduce skewness and kurtosis of the data.

Firms operating in several geographical markets may expose to the different judgements of CSR. Hence the number of countries in which a firm operates can potentially affect its CSR disclosure. As the US firms in our dataset operate internationally, following Pham and Tran (2019), we control for the number of countries that a firm has a subsidiary/subsidiaries and foreign operation(s) in *(foreigncountry)*.

Board independence is controlled for the potential effect of corporate governance structure on CSR. According to agency theory (Jensen and Meckling, 1976), the use of independent directors provides oversight of the strategic direction of a firm and scrutinises the performance of managers. Therefore, board independence may have an effect on monitoring CSR policy which possibly enhances CSR disclosure. Board independence is measured by the percentage of independent directors in a board member of a firm (*independirector*).

Industry's average performance. The industry is an essential part of the business environment that frames organisational competition strategies and practices (Porter, 1980). Adopting the practice of using the industry-average value of performance to proxy for industry effect as used in Le and O'Brien (2010), we capture the industry effect through the industry's average performance. The industry's average performance is measured by median ROE for each industry in a year (*industryaverage)*.

Our dataset has the presence of an exogenous shock. Global finance collapsed in September 2008 (Kemper and Martin, 2010). The global financial crisis event (*crisis*) in

2007- 2008 is added to the model for control. *Crisis* takes the value of 1 if the year is either 2007 or 2008, and 0 otherwise.

Industry effect and year effect (*industryeffect* and *yeareffect*). These are to account for the effects of external environment events occurring in a particular industry or a particular year which might affect CSR disclosure of a firm in the industry.

3.3. Estimation procedure

First, we conduct various diagnostic tests on our dataset. The regression test assumptions were checked. To test for normality of the data for *CSRdisclose*, we checked skewness and kurtosis of the data; the standard normal distribution has skewness of 0 and kurtosis of 3. Our results demonstrated skewness of 0.416, respectively, and kurtosis of 3.477, respectively. We checked the multicollinearity problem by examining correlation coefficients among predictors and their Variance Inflation Factor. The linearity test for the assumed linear relationship of each of the independent variables and *CSRdisclose* were conducted; the results show that Prob > chi2 = 0.00. We also checked homoscedasticity of our data (H0: Constant variance). The result is Prob > chi2 = 0.00. Thus we used robust standard errors to control for heteroscedasticity. The results are nearly similar in the robust check output. The Specification test (Ho: The model has no omitted variables) showed that Prob > F = 0.001. Thus, the 2SLS IV method was used to address the endogeneity issue due to omitted variable bias in the second step below.

Second, we dealt with the endogeneity issue and the reversal consequence of higher *CEOcash* [*CEOstock*] [*CEOperk*] caused by higher CSR disclosure. This was achieved by the use of one-year-lag independent variables and the Two-State Least Square Instrumental Variable (2SLS IV) regression method as suggested by Wooldridge (2013). As CEO compensation components are correlated with the total remuneration paid to the top management team of a firm (i.e., total executives' compensation), total executives' compensation was used as the IV for *CEOcash* [*CEOstock*] [*CEOperk*]. "Executives" means top management team, including CEO. Having used the total executives' incentive (*totalexecomp*) as the IV, the p-values of the Durbin and Wu-Hausman tests of endogeneity demonstrates that the variables are exogenous ($p>0.05$). The first-stage regression summary statistics confirm that the instrument variable is not weak ($p<0.05$). Therefore, the endogeneity issue in the model is addressed.

Third, two robustness tests were conducted. For the first test, the exogenous shock (*crisis*) was removed from Equation 1, and the regressions using the same 2SLS IV estimation method as in the baseline model were run.

For the second test, adopting the practice of using the industry-average value of a predictor as an instrumental variable in Jiraporn and Chintrakarn (2013), we employed industry-average CEO incentive components as the instrument variables for our key explanatory variables. *CEOcash* [*CEOstock*] [*CEOperk*] was alternatively instrumented with its corresponding industry-average CEO incentive components (i.e., *industryaverage_CEOcash*, *industryaverage_CEOstock*, *industryaverage_CEOperk*). The logic is that the industry-average CEO's incentive might influence the CEO incentive of a firm in the industry. However, it is less likely that the CSR disclosure of a given firm is related to the industry-average CEO incentive because there are many firms in each industry. Therefore, intuitively, the industry-average CEO incentive meets two criteria of a good IV; that is, it may directly correlate with the key independent variables but not directly correlate with the error term of the models.

4. Results

4.1. Descriptive statistics and correlation coefficients

(Table 1 here)

Table 1: Descriptive statistics and Correlation matrix

	Variable	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10
1	*CSRdisclose*	28.24	10.62	1.51	73.68	1.00									
2	*CEOcash*	2.55	2.60	0.00	46.89	0.02	1.00								
3	*CEOstock*	7.62	8.80	0.00	135.30	0.07**	0.26***	1.00							
4	*CEOperk*	0.49	2.75	0.00	100.20	0.00	0.08***	0.13***	1.00						
5	*asset*	53.74	198.37	0.12	2265.79	0.13***	0.23***	0.15***	0.00	1.00					
6	*employee*	10.07	1.26	5.27	14.56	0.14***	0.14***	0.21***	0.07***	0.28***	1.00				
7	*foreigncountry*	38.21	16.79	1.00	200.00	0.14***	0.06**	-0.00	0.00	0.01	0.13***	1.00			
8	*independirector*	78.35	9.67	0.00	100.00	0.10***	-0.06**	0.03	-0.04	0.11***	0.21***	0.03	1.00		
9	*industryaverage*	14.46	5.51	-58.24	44.57	0.09***	-0.00	-0.01	0.01	-0.10***	0.01	0.03	-0.02	1.00	
10	*crisis*	0.31	0.46	0.00	1.00	-0.12***	-0.04*	0.01	-0.01	-0.01	-0.02	-0.01	0.07***	-0.08***	1.00

* p<0.1, ** p<0.05, *** p<0.01;
CEOcash, CEOstock, and *CEOperk* are in million USD;
asset is the natural logarithm of annual total assets of a firm; *employee* is the natural logarithm of annual total number of employees of a firm.

The descriptive statistics and correlation matrix are presented in Table 1. On mean average, a firm has 53,379 employees and total assets of USD 53,741 billion. The mean average CSR disclosure score of a firm is 28.24. The smallest CSR disclosure score is 1.51, and the largest of 73.68.

In the study sample, the size of the mean stock grant and option is approximately three-time higher than the mean salary and bonus (7.62 vs. 2.55, in million USD). This indicates that the CEO compensation structure of the US-based global firms was designed towards alignment of value maximisation interest of shareholders. In a few observations, however, a CEO has zero salary and bonus, or zero equity incentive, or no perk rewarded.

The correlation matrix demonstrates that the correlation coefficient between each pair of variables is not large. The mean VIFs = 1.10 is less than 4.00, suggesting that multicollinearity is not a problem with our dataset (Mansfield and Helms, 1982).

4.2. Regression results

The baseline regression results are presented in Table 2.

Table 2: 2SLS estimation results – Baseline models

	Model 1 *CSRdisclose*	Model 2 *CSRdisclose*	Model 3 *CSRdisclose*
L.CEOcash	**-0.433**	**-0.444*****	**-0.334*****
	(0.135)	**(0.001)**	**(0.007)**
L.CEOstock	**0.206*****	**0.365*****	**0.189*****
	(0.000)	**(0.000)**	**(0.000)**
L.CEOperk	**-0.176*****	**-0.219*****	**-0.011**
	(0.000)	**(0.000)**	**(0.966)**
L.asset	0.007***	0.006***	0.006***
	(0.000)	(0.000)	(0.000)
L.employee	1.246***	1.020***	1.209***
	(0.000)	(0.001)	(0.000)
L.foreigncountry	0.065***	0.068***	0.064***
	(0.000)	(0.000)	(0.000)
L.independirector	0.187***	0.186***	0.193***
	(0.000)	(0.000)	(0.000)
L. industryaverage	0.052	0.046	0.051
	(0.352)	(0.410)	(0.354)
L.crisis	-0.364	-0.558	-0.333
	(0.601)	(0.425)	(0.632)
industrydummy	Y	Y	Y

yeardummy	Y	Y	Y
N	1280	1280	1280
R^2	0.110	0.101	0.108

p-values in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$;
Total executives' compensation (*totalexecomp*) is the IV for *CEOcash* in Model 1; for *CEOstock* in Model 2; for *CEOperk* in Model 3. "Executives" means top management team, including the CEO.

The results indicate that the effect of CEO cash compensation (salary and bonus) on CSR disclosure is significant and negative. In particular, for CEO salary and bonus, the results are respectively β=-0.433; p=0.135 in Model 1; β=-0.444; p=0.001 in Model 2; β=-0.334; p=0.007 in Model 3. Hence, although the effect is statistically significant but the sign of the effect is opposite to what we predicted. Therefore, H1 is rejected.

Similarly, for CEO perk, the results are respectively β=-0.176; p=0.000 in Model 1; β=-0.219; p=0.000 in Model 2; β=-0.011; p=0.966 in Model 3. In other words, the effect of CEO perk on CSR disclosure is statistically significant but the sign of the effect is contrasting to the positive sign that we proposed in H2. As a result, H2 is rejected, neither.

However, the effects of CEO stock grant and option on CSR disclosure is significant and positive (β=0.206; p=0.000 in Model 1; β=0.365; p=0.000 in Model 2; β=0.189; p=0.000 in Model 3). Thus, H3 is accepted.

Table 3 (Models 4, 5, 6) and Table 4 (Models 7, 8, 9) below present the results of the robustness tests. The 2SLS IV regression results obtained from the estimation models excluding the crisis event are demonstrated in Table 3. The results obtained in the 2SLS IV regressions using the alternative IVs are displayed in Table 4. In Model 7, *industryaverage_CEOcash* is the IV for *CEOcash*; In Model 8, *industryaverage_CEOstock* is the IV for *CEOstock*; In Model 9, *industryaverage_CEOperk* is the IV for *CEOperk*. These estimation outputs support that our baseline results are robust.

Table 3: Robustness test 1 – Omit *crisis* variable

	Model 4 *CSRdisclose*	Model 5 *CSRdisclose*	Model 6 *CSRdisclose*
L.CEOcash	**-0.446**	**-0.446*****	**-0.338****
	(0.176)	**(0.003)**	**(0.022)**
L.CEOstock	**0.205*****	**0.360*****	**0.187*****
	(0.000)	**(0.000)**	**(0.000)**

L.CEOperk	**-0.173***	**-0.215****	**0.003**
	(0.067)	**(0.023)**	**(0.990)**
L.asset	0.007***	0.006***	0.006***
	(0.000)	(0.000)	(0.000)
L.employee	1.247***	1.022***	1.206***
	(0.000)	(0.001)	(0.000)
L.foreigncountry	0.065***	0.068***	0.064***
	(0.000)	(0.000)	(0.000)
L.independirector	0.187***	0.186***	0.193***
	(0.000)	(0.000)	(0.000)
L. industryaverage	0.053	0.048	0.053
	(0.344)	(0.392)	(0.350)
industrydummy	Y	Y	Y
yeardummy	Y	Y	Y
N	1280	1280	1280
R^2	0.110	0.101	0.108

p-values in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$;
Total executives' compensation (*totalexecomp*) is the IV for *CEOcash* in Model 4; for *CEOstock* in Model 5; for *CEOperk* in Model 6. "Executives" means top management team including CEO.

Table 4: Robustness test 2 – Other instrument variables

	Model 7 *CSRdisclose*	Model 8 *CSRdisclose*	Model 9 *CSRdisclose*
L.CEOcash	**-1.637*****	**-0.643*****	**0.163**
	(0.000)	(0.001)	(0.571)
L.CEOstock	**0.292*****	**0.623*****	**0.451*****
	(0.000)	(0.000)	(0.000)
L.CEOperk	**-0.125**	**-0.278*****	**-5.005*****
	(0.205)	(0.007)	(0.000)
L.asset	0.009***	0.005***	0.002
	(0.000)	(0.001)	(0.427)
L.employee	1.383***	0.678*	1.852***
	(0.000)	(0.059)	(0.001)
L.foreigncountry	0.077***	0.076***	0.063**
	(0.000)	(0.000)	(0.030)
L.independirector	0.151***	0.179***	0.129**
	(0.000)	(0.000)	(0.049)
L.industryaverage	0.043	0.038	0.097
	(0.459)	(0.516)	(0.324)
L.crisis	-0.167	-0.825	-1.763
	(0.815)	(0.256)	(0.162)
industrydummy	Y	Y	Y
yeardummy	Y	Y	Y
N	1282	1282	1282
R^2	0.054	0.047	.

p-values in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$;

CEOcash [*CEOstock*] [*CEOperk*] is alternatively instrumented with its corresponding industry-average CEO compensation. Industry average CEO salary and bonus is the IV for *CEOcash* in Model 7, industry average CEO stock grant and option as the IV for *CEOstock* in Model 8, industry average CEO perk as the IV for *CEOperk* in Model 9.

5. Discussion

The empirical evidence from this study shows that salary and bonus to a CEO hinders a firm to achieve a better CSR disclosure. This finding is in the same direction as that of Jian and Lee (2015). Although Jian and Lee (2015) do not disintegrate a CEO package in specific elements like our study does, they also find the negative effect of a CEO compensation package. Note that in their study, the compensation package is computed as the sum of salary, bonus, stock options, restricted stocks, long-term incentive payouts, and other annual compensation. When it comes to a specific element of CEO incentives, our finding of the negative effect of salary and bonus on CSR disclosure indicates a clearer direction than that of McGuire *et al.*'s (2003). Examining the data of 374 US firms, McGuire *et al.*'s (2003) could not confirm the significant effect of salary and bonus on CSR performance. Our explanation for this result is that salary payment and bonus reward to a CEO is conventionally paid to compensate for his/her achievement of financial performance rather than for building long-term potential (McGuire *et al.*, 2003). Meanwhile, investments in CSR take time to create a positive outcome in terms of the financial performance of global firms. Therefore, monetary reward (salary and bonus) may divert the CEO's effort from CSR investments to focus on achieving short-term financial performance and, consequently, decreasing attention and investment for CSR disclosure.

Our results also reveal a bad scenario in which CEO perk lowers CSR disclosure. This finding is in line with that of Fabrizi *et al.* (2014), who report a significant negative effect of CEO bonus on CSR investment. This is because CEO perks could drive managers to focus on short-term performance and less investment in CSR. Therefore, compensating CEOs with a high level of perquisites could harm a firm's CSR performance and, accordingly, weaken CSR disclosure.

Our finding that CEOs are incentivised to engage with CSR disclosure by stock grant and option is in line with previous research on the link between CEO's incentives and CSR performance. Similar to our study, McGuire *et al.* (2017; 2003) and Fabrizi *et al.* (2014) report the significant and positive effect of equity-based incentives on CSR

performance. Other authors who investigate the effect of long-term incentives on corporate social performance (Flammer and Bansal, 2017; Flammer *et al.*, 2019) also find that long-term compensation (i.e., the amount of compensation that is received in the form of restricted shares, restricted stock options, and long-term incentive plan, and payouts) have a positive effect on a firm's stakeholder relationships. The theory sketched by Flammer and Bansal (2017) and Flammer *et al.* (2019) on CSR-based incentives (CSR contracting) supports our findings.

If rewarded with shares, CEOs are more likely to promote a firm's engagement in CSR and disclosing CSR information. The stock market usually has a positive response to the share of a firm if the firm has a good CSR image (Luo and Bhattacharya, 2006). Hence, we suggest that being rewarded by share probably motivates CEOs to enhance CSR ratings by stakeholders, hence more CSR disclosure.

In summary, the results of our study show that monetary incentives, including CEO salary and bonus, and CEO perk weaken a firm's CSR disclosure while equity-based incentives tend to enhance CSR reporting. Our results that different incentive measures in a comprehensive CEO compensation structure might have contradictory effects on CSR disclosure represent an interesting contribution to the field. More importantly, our findings indicate that the CEO incentive structure should be incorporated with stock elements to guard against the possibility that performance benchmarks are rewarding luck more than sustainable, long-run performance. Our empirical evidence supports the agency view. There ought to be a relevant long term compensation structure to incentivise CEOs if shareholders are interested in the firm's sustainability. Such compensation package should be designed with less cash and perquisites but more shares.

6. Conclusion

This study examines the effect of CEO compensation structure, including salary, bonus, stock grant and option, and other perks, on CSR disclosure of a firm. We used the data of 580 US global firms in 30 industries across seven years from 2005 to 2011. We find that equity-based incentives (stock grant and option) have a significantly positive impact on a firm's CSR reporting. In contrast, cash-based incentives (salary and bonus) and other perk have significantly detrimental effects on CSR disclosure.

Our paper makes two contributions to literature. *First,* our article is among the first showing how CEO long-term compensation policy should be designed to align CEO's self-benefit seeking with CSR reporting of his/her firm. While there is little consensus about CEO motives to boost socially and environmentally responsible brand and image of a firm, this paper provides evidence that the CEO's motive of CSR reporting might come from equity-based incentive while salary, bonus and other perquisites demotivate the CEO in doing so. This is an important insight into the management motives underlying the enhancement of CSR disclosure of the firm. Although there are several studies relevant to our research (i.e., Jiraporn and Chintrakarn, 2013; Fabrizi *et al.*, 2014; Jouber, 2019; McGuire *et al.*, 2003; 2019; Flammer *et al.*, 2019), no previous studies are found to examine the effects of CEO incentive elements on CSR disclosure. Specifically, while most previous research focuses on the link between CEO incentive packages and CSR performance in general, our study identifies the effect of each component of the CEO compensation package on CSR disclosure.

Second, our paper extends the agency view that a well-designed compensation package can direct individual efforts toward strategic business objectives. Our study provides evidence that CEO stock serves to align executive's benefits with shareholders' and stakeholders' interests in the longer term. Our study restates that equity-based CEO incentives are helpful to stimulate a firm's responsible business strategy.

This study has a limitation. The paper rests on the agency-based assumption that the interests and goals of shareholders and CEOs can be congruent if firms offer incentives to CEOs. This assumption implies that all CEOs are homogeneous. The literature, however, suggests that CEOs are heterogeneous in their personal characteristics, which might affect CSR decisions (Bridoux and Stoelhorst, 2014) and, subsequently, CSR disclosure by a firm. Thus, it could be worthwhile for future research to add CEO individual characteristics and CEO turnover in the regression models. Another limitation is related to our data which is not the most up to date. Hence one should be cautious when interpreting our findings derived from practice in the period 2005-2011.

Conflict of Interest: The authors declare that they have no conflict of interest.

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