

The Effect of CEO Compensation on Earnings Management: Is It Affected by Leverage Condition? Proving the Prospect Theory

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ABSTRACT

The connection between CEO compensation and earnings management has long become the object of research, ever since a study by Healy in 1985. Generally, the study on earnings management would use agency theory. Still, this study applies prospect theory which serves to explain the behavior of people or organizations when making decisions in a high-risk, uncertain situation. An organization suffering from loss will attempt to take risk, while an organization enjoying a gain will be averse to risk. A company with high leverage is in an unfavorable position compared to one with low leverage. Leverage describes a company's debt situation. The more debt there is, the more obligations the company must fulfill, such as profit numbers. It is then presumed to be the cause for CEO to start managing earnings. This study aimed to prove if leverage condition also influences the relation between CEO compensation and earnings management. The study was done on 217 non-financial companies listed in Indonesia Stock Exchange (IDX) in 2019 and 2020. The data analysis technique utilized panel data regression with the program Gretl. This study prove that the more compensation a CEO receives, the less inclined they are to do earnings management. However, in companies with high leverage, this correlation weakens, meaning CEOs would be more willing to manage earnings. The results of this study are expected to help shareholders in deciding CEO compensation when in a high-leverage condition.

Keywords: CEO compensation, Earnings management, Leverage conditions, Prospect theory.

1. INTRODUCTION

Earnings management is a choice by manager when deciding on an accounting policy in order to reach a certain objective [1]. The relation between CEO compensation and earnings management have been much studied since a study by Healy in 1985 [2], [3], [4]. CEO compensation is any kind of money and goods, whether received directly or indirectly, as a remuneration for services the CEO has done for the company [5]. Previous studies have yielded varying results. Most studies used agency theory as the basis of research [6], [7], [8], [9], [10]. Agency theory is used to explain why a CEO is willing to act in accordance to the principal's wish.

Different from previous studies, this research uses prospect theory to explain the phenomenon of earnings management [11], [12], [13], [14]. Prospect theory states that an individual tends to seek for risks when in an unfavorable situation, or loss. In contrast, an individual will be averse to risks when in a favorable situation, or gain. From this explanation, it is clear that

gain and loss situations are needed to explain prospect theory. In this research, the gain and loss situations are proxied through the company's leverage condition.

Leverage condition is divided into two, a high leverage condition and a low leverage condition. The high leverage represents a loss situation and the low leverage represents a gain situation. A company with high leverage is in a loss because of greater pressure to bear the interest burden from its debt. There is also a bigger chance of violating the debt agreement than a company with lower leverage. Unlike previous studies that used leverage as the independent variable [15], [16], [17] on earnings management, this study uses leverage as a moderating variable based on prospect theory.

In reference to literature studies, there is another factor proven to influence earnings management, namely firm size [18], [19], [20], [21], [22]. Based on the above explanation, this study aims to know if leverage can influence the relation between CEO

compensation and earnings management, using firm size as the control variable.

2. LITERATURE REVIEW

The following part will explain both agency theory and prospect theory that become the foundation of this study. It will also discuss the definition of and the relations between variables.

2.1. Agency Theory

Agency theory describes the association between principal and agent. For this study, shareholders act as the principal and CEO (Chief Executive Officer) as the agent. Agent is responsible for the company operational activities and principal's welfare [23]. Principal and agent have different interests; principal is motivated to increase their prosperity from company profits, while agent is interested in maximizing their economic and psychological needs through investment contracts, credits, and compensation from the company. The contrast between the interest and opinion of agent and principal leads to agency problem [24].

Conflict of interest occurs when the principal does not believe that the agent is working following the principal's wishes, while the principal is also unable to monitor the agent's daily activities. An agent who works directly in the field tends to have more information regarding the company's actual situation and condition than the principal. This causes information asymmetry between principal and agent. According to Hendriksen & Breda [25], information asymmetry happens with the problem of incomplete information, where an agent knows more on the company and its future opportunities than the principal. Agent may achieve their interest by doing long-term actions that harm the company, or using accounting methods such as managing earnings in the financial report [26].

Moral hazard may happen due to information asymmetry, usually in the form of earnings management by the managers [27]. Moral hazard is defined as a deliberate action secretly carried out by an agent so as not to be known by the principal. The action may be in a breach of employment contract and may ethically or normatively inappropriate. There are many ways to minimize information asymmetry, one of which is by giving bonus compensation to the CEO acting as an agent. According to Suhendah & Imelda [28], principal rewards the agent with a large bonus in order to control them, the expectation being that after the substantial compensation, the agent will comply with the principal, reducing information asymmetry. This study will attempt to prove if compensation affects the agent's courage to manage earnings.

2.2 Prospect Theory

Prospect theory was first introduced by Daniel Kahneman and Amos Tversky in 1979. Prospect theory explains an individual or an organization's behavior when deciding on a risky, uncertain situation. A company in a profitable condition tends to avoid risk [29]; in an unprofitable situation, it will attempt to take risks [30].

Prospect theory consists of four elements, which are: 1) reference dependence, 2) loss aversion, 3) diminishing sensitivity, and 4) probability weighting [31]. First, an individual obtains utility from gains and losses measured relatively from several reference points, not absolute wealth level. This element is known as "reference dependence". Second, value function describes a loss aversion, in which individuals are far more sensitive to losses than to gains of similar magnitude. Third, "diminishing sensitivity" relates that an individual in a gain position tends to avoid risk, while one in a loss position will try to take risk. Fourth, an individual tends to do "probability weighting" when making decisions. An event with low probability is given a high weight (overweighed), while an event with medium or high probability is given a low weight (underweighed).

Prospect theory in this study is used to explain the connection between high leverage and low leverage conditions with earnings management. In this case, high leverage means companies that have above-average leverage scores of all study samples. In contrast, low leverage means companies with below-average leverage score than all of study samples. Based on prospect theory, a low leverage condition indicates a profitable condition and risk-aversion, while a high leverage condition suggests an unprofitable condition and thus risk-seeking behavior.

2.3 Earnings Management

Earnings management is the choice of managers when deciding on an accounting policy in order to reach a certain objective [1]. Earnings management may be explained as a biased financial reporting in which there is intervention from CEO to achieve some personal gains. This study interprets earnings management as how courageous the CEO is in managing earnings, thus it will not see the decrease or increase of the profits.

The management's courage to manage earnings is measured using the absolute value of discretionary accruals [32]. Discretionary accruals are a component of accruals that can still be adjusted to management's policy. Discretionary accruals are calculated using the difference from total accruals and non-discretionary accruals. The mathematical equation from discretionary accruals is as follows:

$$DA_{i,t} = TA_{i,t} - NDA_{i,t} \quad (1)$$

Where:

$DA_{i,t}$ = discretionary accruals

$TA_{i,t}$ = total accruals

$NDA_{i,t}$ = non-discretionary accruals

TA is obtained from Net Income minus Cash Flow from Operations which has been given the weight of the previous year's total assets. NDA is estimated using the measurement model Modified Jones Model [33]. The Modified Jones Model regression equation that will be used in this study is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_{1,t} [1/A_{i,t-1}] + \beta_{2,t} [(\Delta REV_{i,t} - \Delta AR_{i,t}) / A_{i,t-1}] + \beta_{3,t} [PPE_{i,t} / A_{i,t-1}] + \varepsilon_t \quad (2)$$

Where:

$TA_{i,t}$ = total accruals for company i on year t

$A_{i,t-1}$ = total assets for company i on year t-1

$\Delta REV_{i,t}$ = changes in revenue for company i from year t-1 to year t

$\Delta AR_{i,t}$ = changes in receivables for company i from year t-1 to year t

$PPE_{i,t}$ = fixed assets of company i in period t

$\beta_{1,t}, \beta_{2,t}, \beta_{3,t}$ = company-specific parameters

ε_t = error

Using the above regression coefficient, the value of non-discretionary accruals (NDA) is calculated, so the value of discretionary accruals (DA) can be determined.

2.4 Hypothesis Development

This part will explain inter-variable relationships.

2.4.1. The Relation between CEO Compensation and Earnings Management

Agency theory explains the connection between principal and agent. The principal and agent have different interests and both aspire to fulfill it. The agent, running the company's operational activities, tends to have information asymmetry. One of the ways a principal can use to minimize information asymmetry is by giving a large bonus to the agent. By granting a substantial compensation, the principal hopes to control the agent. If the CEO receives a large bonus, it is expected they will feel their interest has been fulfilled, thus reducing the principal's information asymmetry. Consequently, a CEO with large compensation does not usually dare to commit earnings management. On the contrary, a CEO who receives limited compensation will feel that their interest is not fulfilled. Limited compensation will motivate the CEO to exploit information asymmetry by managing earnings, in order to maximize the received bonus. Hence, a CEO with smaller compensation tends to be braver in managing earnings. It is concluded that the larger compensation a

CEO receives, the less courageous they are in doing earnings management. The following hypothesis is thus formed:

H₁: CEO compensation negatively affects earnings management.

2.4.2. The Relation between Leverage Condition and Earnings Management

Leverage shows a company's level of debt. The degree of leverage of a company can influence the management's behavior when managing earnings [34]. Based on the Debt Covenant Hypothesis from the Positive Accounting Theory, the more debt a company owns, the more agreement it must satisfy, one of which is profit numbers. The management must reach the targeted profit so as not to violate the company's agreement. Therefore, companies that violate debt covenant, as in the studies by DeFond & Jiambalvo [35], Sweeney [36], Widyaningdyah [37], Rosner [38], and Herawati & Baridwan [39], tend to be braver in doing earnings management. The company will attempt to fulfill its debt covenant to receive a good score from creditors. It can be concluded that companies with higher leverage conditions are more courageous in managing earnings than companies with lower leverage conditions. The following hypothesis is thus formed:

H₂: Leverage condition positively affects earnings management.

2.4.3. The Effect of Leverage Condition on the Relation between CEO Compensation and Earnings Management

As explained in the first hypothesis, a CEO receiving a large bonus assumes that their interests have been fulfilled, reducing the information asymmetry to the principal. The CEO will be less inclined to do earnings management, as they are concerned of losing their position and compensation. However, it will be different when the CEO faces a gain-or-loss condition as explained in prospect theory.

Prospect theory states an individual will be braver in taking risks in a loss condition, while in a gain condition, an individual tends to avoid risks. The gain and loss conditions here is proxied through the companies' leverage conditions. A loss condition indicates a company with high leverage, and a gain condition shows low leverage. In a loss condition, a CEO will attempt to satisfy the debt covenants by being bolder in managing earnings. This is so the company can be spared from additional costs incurring from violation of its debt covenants. In contrast, in a gain situation, the CEO will avoid risk by not doing earnings management. It is assumed that the CEO receiving higher compensation in a high leverage condition will

be more daring to manage earnings compared to when in a low leverage condition. The following hypothesis is thus formed:

H₃: A high leverage condition weakens the negative relationship between CEO compensation and earnings management.

2.4.4. The Relation between Firm Size and Earnings Management

Firm size is a scale that shows the size of a company. Firm size can be calculated using several methods or point-of-view, such as total assets, total sales, and stock market value. The firm size for this study is measured using total assets. Based on the Political Cost Hypothesis from the Positive Accounting Theory, the more political cost a company faces, the larger is the likelihood that it will choose an accounting procedure that reduces profit. According to Hery [40], large companies have more incentive to do this, compared to small companies, since large companies tend to receive more supervision from government and the public. Meanwhile, companies with lower profits do not receive as much attention both from the government and the public, so regulations are more focused towards companies with high revenue [41]. This condition indicates that firm size can be a motivation for management to manage earnings [42], [43], [44], [45]. In conclusion, the larger a company is, the greater the attention it receives from the public, causing significant political cost. Under the watchful eye of the public, the management is less inclined to do earnings management. The following hypothesis is thus formed:

H₄: Firm size negatively affects earnings management.

3. METHOD

The hypotheses are tested with data panel regression analysis. The independent variable of this study is earnings management, the independent variable is CEO compensation, the moderating variable is leverage condition, and the control variable is firm size. The population is all firm sectors that had been listed in Indonesia Stock Exchange (IDX) between 2019 and 2020. The sampling method as used for this study is purposive sampling, namely to take samples that satisfy certain criteria. The criteria set are:

- 1) All companies except for the financial sector, as the EM measurement used is for non-financial sector;
- 2) Complete data is available for variables measurement;
- 3) The company provides financial statements with fiscal year dated on December 31;
- 4) The company is not experiencing loss on the current year since the CEO assessment requires the company be in a profit situation.

A search in IDX returned 624 firms from a total of 10 industrial sectors in 2019. After sorting based on the above criteria, a final sample of 217 firms per year or 434 firms for two years was obtained. The data source for this study is secondary data in the form of financial statements taken from www.idx.co.id.

The analytical model of this study can be stated in the following mathematical equation:

$$EM_{i,t} = \beta_0 + \beta_1 CEO_{i,t} + \beta_2 D_{i,t} + \beta_3 D * CEO_{i,t} + \beta_4 SIZE_{i,t} + \epsilon_{i,t} \tag{3}$$

Where:

EM_{i,t} = earnings management

CEO_{i,t} = CEO compensation

D_{i,t} = dummy variable, a score of 0 for low leverage condition and 1 for high leverage condition

SIZE_{i,t} = firm size

ε_{i,t} = error

The measurement scale as used in this study is:

Table 1. Measurement Scale

Variable	Measurement
Earnings Management	The absolute value of discretionary accruals, using Modified Jones Model 1995.
CEO Compensation	The total of salary, bonus, allowance, and others received by the CEO, divided with the firm's total net profit.
Dummy	Score 0 for low leverage condition (<i>gain</i>), and score 1 for high leverage condition (<i>loss</i>).
Firm Size	Natural log of total assets.

4. RESULTS & DISCUSSION

Research was done on 434 firms of non-financial sectors, utilizing the financial statements of 2019 and 2020. The result of descriptive statistics is shown on Table 2. From Table 2 it is seen that the EM variable has an average value of 0.0604, meaning the average difference between the actual accrual value and the normal accrual value is 6.04% from the total assets of last year. The average of CEO compensation being 0.1914 means that CEOs, on average, earn compensations which amount to 19.14% of the company's total net profit. The average value of firm size being 29.00 means that firms have total assets of

Table 2. Descriptive Statistics Analysis

	N	Min	Max	Mean	S.D.
EM	434	0.0002	0.7992	0.0604	.097
CEO	434	0.0022	6.6028	0.1914	0.3705
SIZE	434	23.46	33.49	29.00	1.620
EM and D					
D0	280	0.0002	0.7992	0.0568	0.0748
D1	154	0.0004	0.2774	0.0668	0.0592

Source: Processed secondary data, 2021

EM = Earnings Management; CEO = CEO compensation; SIZE = firm size; D0 = low leverage condition; D1 = high leverage condition.

13,211,526,509,962. The dummy variable shows that on high leverage condition, the average value of EM experiences an increase from 5.6% to 6.6% from previous year's total assets.

4.1. Regression Analysis Result

This study employed data panel regression analysis passed through the Chow, Hausman, and Breusch-Pagan tests. The test results found that the best model is the Random Effect Model using the Generalized Least Squares (GLS) method. The following is the result of regression analysis that was generated by dividing leverage into two conditions (low leverage and high leverage) using dummy variable:

Table 3. Regression Analysis Result

	B	Sig.	
(Constant)	0.388	9.92e-011	***
CEO	-0.050	0.0081	***
D	0.000	0.9183	
D*CEO	0.053	0.0136	**
SIZE	-0.011	4.91e-08	***
Adjusted R-squared (R2)	0.075		

Source: Processed secondary data, 2021

Based on Table 3, it is known that the value of Adjusted R-squared is 0.075, meaning CEO compensation (CEO), leverage condition (D), leverage condition with CEO compensation (D*CEO), and firm size (SIZE), only affect 0.075 of earnings management (EM). At the same time, the rest of 0.925 is explained by other independent variables. The value of F significance being 4.97792e-007, where this number is smaller than significance value of 0.05, means that all variables simultaneously affect earnings management.

Table 3 shows that significance value (p-value) of the CEO variable is 0.0081, in which this number is smaller than significance level = 0.05, meaning the CEO

variable influences EM. The interaction variable D*CEO has a p-value of 0.0136, smaller than 0.05, which indicates that the interaction variable has a significant influence. This regression analysis can be detailed as follows:

If leverage condition is below the average leverage value of the entire research sample (low leverage < 0.08), or D = 0, then:

$$EM_{it} = \beta_0 + \beta_1 CEO_{it} + \beta_3 D * CEO_{it} \tag{4}$$

$$= 0.388 - 0.050 CEO + 0.053 * 0 * CEO$$

$$= 0.388 - 0.050 CEO$$

If leverage condition is above the average leverage value of the entire research sample (high leverage ≥ 0.08), or D = 1, then:

$$EM_{it} = \beta_0 + \beta_1 CEO_{it} + \beta_3 D * CEO_{it} \tag{5}$$

$$= 0.388 - 0.050 CEO + 0.053 * 1 * CEO$$

$$= 0.388 - 0.050 CEO + 0.053 CEO$$

$$= 0.388 + 0.003 CEO$$

From the above calculations, it can be determined that firms with high leverage conditions have a positive coefficient, meaning the CEO is braver when doing earnings management at high leverage. Thus, it can be concluded that at low leverage conditions, CEO coefficient is -0.050 and at high leverage it is 0.003. High leverage conditions can reverse the direction of the relationship between CEO compensation and earnings management.

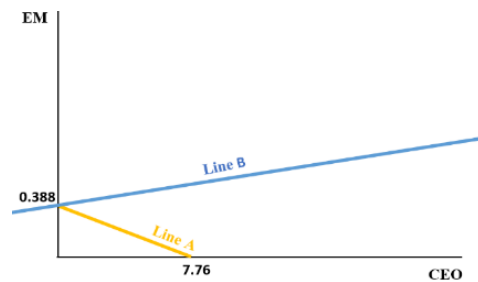


Figure 1 The graph of Leverage Conditions on the relationship between CEO Compensation and Earnings Management

Where:

Line A = Low leverage condition

Line B = High leverage condition

Figure 1 indicates that when leverage condition is low, the CEO does not dare to manage earnings. This is shown by the negative relationship direction. However, when leverage condition is at high, the more CEO is given larger compensation, the braver they are to manage earnings; it does not simply weaken the relationship, but even reverses the direction between CEO compensation and the courage to do earnings management. This is observed from the changing relationship direction from negative into positive.

4.2. Discussion

This part will discuss the results of testing using the explained theories.

4.2.1. The Effect of CEO Compensation on Earnings Management

The first hypothesis in this study is that CEO compensation negatively affects earnings management. Testing found a significant result with negative coefficient direction, which means the hypothesis is accepted. The CEO with smaller compensation has more courage to manage earnings compared to CEO with large compensation. Agency theory is proven to explain the connection between CEO compensation and earnings management. Agency theory describes the difference of interests between agent and principal: where agent desires to maximize its wealth, the principal wishes that the agent does not cause information asymmetry. One of the ways for the principal to overcome the problem of interests is by giving bonus compensation. The conclusion is that the bigger compensation CEOs receive, the more they are dissuaded to manage earnings, as they feel the additional bonus has fulfilled their interest.

4.2.2. The Effect of Leverage Condition on Earnings Management

The empirical data of this study failed to prove that leverage condition has a positive effect on earnings management. Based on the hypothesis test results in Table 3, the p-value of the leverage condition variable is 0.9183, bigger than significance value of 0.05. It shows that the second hypothesis is not proven: leverage condition does not affect CEO's courage to manage earnings. This study failed to prove Debt Covenant Hypothesis which states that the more debt a company owes, the more agreement it has to fulfill. However, based on the result of descriptive statistics, on average, firms with high leverage condition also have higher EM score. Any leverage conditions, whether high or low, do

not influence the courage to manage earnings. According to DeAngelo *et al.*, [46], this may happen because the company wants to show its actual condition rather than seek ways to fulfill its debts' covenants. There would be no reason, then, for the management to manage earnings because of the differing leverage conditions. Despite this, when leverage condition interacts with CEO compensation, it will affect the relationship between CEO compensation and the courage to manage earnings, as will be explained below.

4.2.3. The Effect of Leverage on The Relationship between CEO Compensation and Earnings Management

The hypothesis that leverages condition weakens the negative effect between CEO compensation and the courage to manage earnings was supported by its p-value of 0.0136, smaller than 0.05. On the other hand, the relation between CEO compensation and the courage to manage earnings was significantly negative. This proves that high leverage condition significantly weakens the negative relation between CEO compensation and earnings management. This result particularly confirms Prospect Theory, which explains that in a loss situation, an individual will be more inclined to take risks, the loss situation being a high-leverage condition. This study provides empirical proof that in a high leverage condition, a CEO with substantial compensation who originally is not inclined to manage earnings now has more courage to do so. The reason is that loss situation caused by high leverage encourages the CEO to take further risks, despite being overcompensated. The Prospect Theory states that in a loss situation, an individual will be far more sensitive to losses than to gains of similar magnitude. The conclusion is that a CEO who receives a big compensation in a high leverage condition will dare more to manage earnings, compared to in a low leverage condition.

4.2.4. The Effect of Firm Size on Earnings Management

The empirical data of this study managed to prove the association between firm size and earnings management. The size of a company is proven to be linked with the CEO's courage in managing earnings, and is in line with the Political Cost Hypothesis, which states that the bigger the possible political cost a company may face, the bigger the chance a company will choose an accounting procedure that reduces profits. It is because larger companies tend to receive stricter supervision, in addition to the immense pressure from the public and the government. To solve this, big companies will move some of the profits from the current period to the upcoming period. It is concluded

that the bigger a company is, the less they are inclined to manage earnings.

5. CONCLUSION

This study prove that CEO compensation negatively affects earnings management. The more compensation a CEO receives, the less brave they are to manage earnings. It empirically proved that Agency Theory can be used to explain how the amount of compensation affects the CEO's courage to do earnings management. This study also proved that leverage conditions weaken the negative relation between CEO compensation and the propensity to do earnings management. Leverage conditions cause the CEO to be bolder to do earnings management. Further, this study also proved the phenomenon of Political Cost Hypothesis, that the bigger a company is, the less tendency they have to manage earnings.

The leverage condition variable in this study was not proven to affect earnings management. The assumption that when a company is in a high leverage condition, the managers would be more encouraged to manage earnings compared to in a low leverage condition was not proven. The reason might be because companies want to show their actual condition, rather than seeking ways to fulfill the covenants their debts.

This study only investigated companies in non-financial sectors using the Modified Jones Model; naturally, the result of this study is inapplicable to the financial sector. If further studies want to apply a similar topic in the financial sector, they will have to employ a different earnings management measurement scale. The results of this research are expected to help shareholders in making decisions of providing compensation to the CEO in a high-leverage condition, as the empirical result proved that in a high leverage condition, a CEO will become encouraged to manage earnings.

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