



# The Role of Earnings Management in Economic Growth and Corporate Growth Illusion

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## ABSTRACT

The most comprehensive criteria for evaluating management performance is economic value added, accounting added value, and over-valuation, which can best reflect how managers operate because of the information content that they provide. Therefore, considering the importance of earnings, this study investigates The Role of Earnings Management in Economic Growth and the Corporate's Growth Illusion in Tehran Stock Exchange during the period 2012-2018 using systematic elimination method of information of 150 selected companies. The study data and theoretical foundations were collected through library studies. Hypotheses were tested using correlation method and multivariate regression. The results showed that with increasing in real earnings management, economic value added and accounting added value also increased. Also, with the increase in revenue earnings management, economic value added and accounting added value also increase. But there was no significant relationship between accrual earnings management and income with accounting added value. There is a positive significant relationship between actual earnings management resulting from abnormal and overvaluation operating cash flows and, there is a positive and significant relationship between accrual earnings management and overvaluation.

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## 1 Introduction

In an accrual accounting system, managers are confronted with different options for earnings detection time. This function of managers is simply called earnings management, applicable in two ways: accruals management and real earnings management. The former has no direct effect on corporate operations and cash flow. The latter lets managers to manipulate corporate operations, which has a direct effect on cash flow and corporate value. By considering management goals, earnings management can be seen as increased, decreased, or smoothed reported income. Earnings management is done for many possible reasons, including managerial compensation and political costs, as well as tax purposes. Other factors

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contributing to earnings management by managers include increased economic value added (EVA), increased accounting value-added, and company overvaluation. This study examines the role of earnings management in economic growth and corporate growth illusion by examining a sample of the companies listed on the Tehran Stock Exchange (TSE) in 2012-2018. Generally, over the past years, extensive studies have been conducted on earnings management, economic performance enhancement, economic growth, and growth illusion. However, the question “what is the role of earnings management in economic growth and corporate growth illusion?” remains unanswered. Research shows that previous studies have also paid little attention to the role of earnings management in economic growth and corporate growth illusion in transition economies and emerging capital markets.

Nonetheless, some of their unique characteristics in banking and stock markets, including government and government interventions in financial markets, may affect this role differently. Watts and Zimmerman [46] argue that accounting seeks to measure and report economic information to decision-makers. Indeed, financial statements indicate the economic and financial status of a company to inform managers and shareholders (Mathews and Perera, [29]; Moneva and Llena, [33]). They are of great importance in decision-making when considering the interests of shareholders and creditors (American Accounting Association, [4]). The phenomenon of “information asymmetry” occurs in business relations when a contracting party is more knowledgeable than the other. Accounting standards are set and audit activities are performed to prevent manager opportunism. Nevertheless, the existence of information asymmetry between managers and outsiders causes the former to apply their personal opinions in preparing and reporting accounting information and to prepare reports to meet personal interests (Arab Salehi et al., [5]). Actually, earnings management refers to the attempt made by corporate executives to intervene in or affect the information in financial statements to deceive stakeholders who seek to understand corporate performance and status (Sulistyanto, [43]). Lutfie et al. [28] believe that earnings management perception methods can be divided into two parts. First, the corporate representative is regarded as the director of an opportunistic agent seeking to maximize its productivity against compensation agreements, debt covenants, and political costs (i.e., investment opportunity management). Second, observing earnings management for efficient contracting (i.e., efficient earnings management), wherein earnings management helps managers be flexible to safeguard themselves and the company, predicting unforeseen events about the interests of contracting parties. On the other side, economic growth refers to continuous production growth, which is often followed by structural changes (Qarabaghian, [34]).

Undoubtedly, it can be argued that no economic system has been able to organize itself throughout history unless economic growth and prosperity have taken place in all economic sectors (Shahrabadi and Yousefi, [40]). In his well-known book, *Kapital* and Marx [31] predicted the collapse of the capitalist system; he also believed that capital accumulation and the main impetus for growth originated from a capital surplus (Qarabaghian, [34]). According to Wibowo and Ghozali [47], previous studies on earnings management have principally addressed three methods: earnings based on accruals and its consequences, actual earnings management, and balance mechanisms between earnings management accruals and real earnings management. Obviously, these methods are employed by managers to reach any planned earnings, which ultimately results in earnings management. An explanatory example of this is budget recovery, according to which the manager is not paid for his/her work; instead, he/she is paid to reach the goal (Jensen, [24]). In developed countries with capitalist economic systems, value-added is used to measure national wealth, i.e., GDP. In an enterprise, value-added refers to the residual value generated by utilizing productive capacities, such as labor and capital. Value-added denotes the company's share of GDP and its ability to increase the value of manufactured goods and services (For-

qandoust Haghighi and Banimahd, [20]). Moreover, EVA and market value-added are among the criteria that guide managers in the valuation and performance of the business entity, which can also be used by the capital market to evaluate business entities. Based on EVA, value is created when business entities can cover all their operating and capital costs, with the remaining amount as earnings with EVA (Talebna and Shojaei, [44]). Finally, this study aims to examine the role of earnings management in economic growth and corporate growth illusion to determine the role and significance of earnings management in “corporate value creation” and “overvaluation.”

The contribution of this paper are as follows: This paper articulate accounting and economic concepts, that is, this study shows the role of accounting measures such as earnings management in economic development from efficient perspective of positive accounting research. Many accounting capital market research have been conducted on opportunistic perspective of earnings management, therefore, the outcomes of this study can extend accounting studies on efficient perspective of earnings management, therefore, this study helps to expand the theoretical foundations of previous research on earnings management and, the evidence from this study could provide legislators and policymakers with capital markets and the national economy with useful information on the role of earnings management in macroeconomics. Ultimately, this research can provide students, researchers, and accounting professors with a range of new ideas for future study. The remainder of the paper is structured as follows. First, theoretical foundations are presented. Then, research background, research methodology, statistical population, statistical analysis, and hypothesis testing results are expressed. Finally, discussion and conclusion are presented.

## 1.1 Literature Review

Earnings Management, “Accounting” and “Economic” Value Added, and Overvaluation: The difference between EVA and the value created for shareholders can be considered as a criterion for accounting figures. If the accounting figures are fully relevant to the value, the EVA, and the value created for shareholders are expected to be convergent or at least separate. In this case, significant experimental differences have been expressed; however, EVA efficacy as a criterion for external and internal performance is questionable (Ahmad and Pettit, [3]; Boulos et al., [9]; Cahan et al., [11]). Contrarily, theoretical and empirical perspectives suggest that EVA is likely to be manipulated as a measure of performance evaluation and management motivation criteria by managers. Wallace [45] acknowledges that the use of EVA encourages managers to move as much as possible to meet the interests of shareholders by improving investment, financing, and operations decisions. Managers also make payments that are largely EVA-based and not income-based and take several steps to potentially improve EVA. EVA may increase due to earnings before interest and taxes (EBIT), capital expenditures, and used assets are reduced. Nevertheless, there are several approaches to increasing EBIT as the depreciation of tangible fixed assets and depreciation of intangible assets, which can reduce cash flow and corporate value.

There are also ways to reduce capital expenditures that are not necessarily positive. By delaying profitable investments, managers can reduce the assets they use. Such management measures are deliberate, assuming that there is a tendency to increase EVA by manipulating its components. Objectives and goals pursued by managers can be reflected indirectly through empirical studies. Thus, some companies will seek to reduce or discontinue EVA (Mir and Seboui, [31]). Biddle et al. [8] studied 40 companies in terms of EVA, economic profit, or cash value added (CVA), as managerial compensation criteria. They compared these companies with 40 other companies that used different reward criteria. They found that companies that exploited the above three metrics were able to achieve higher sales of assets

to reduce the book value of the assets used, compared to those that used other metrics. These companies have bought 21% fewer assets and more market stocks to reduce capital costs. Similarly, Kleiman [25] compared 71 companies with a performance-controlled sample using EVA. He found that companies that use EVA have higher average stock returns than their obvious competitors. He also noted that the debt-to-earnings ratio has incremented slightly and asset sales have increased significantly following the adoption of the EVA. Moreover, Brusco and Tortella [10] show that the adoption of EVA has encouraged managers to increase their investment activities through debt. These measures result in a reduction in capital expenditures. It seems that the adoption of EVA strengthens managers' opportunistic behaviors and manipulates their accounting figures. Hence, the American Association of Certified Public Accountants (AICPA) has decided to set up a special committee to conduct financial reporting so that it can introduce the companies that have adopted EVA to enhance their financial statements and provide more details.

## 1.2 Research Background

Using Chinese data, Chen et al. [12] examined whether and how the incentive to boost government-level GDP growth affects corporate-level earnings management. They find that firms in provinces with lower GDP growth below the national level or the average of adjacent provinces are more involved in earnings management than firms in other provinces. In particular, they are more likely to increase revenues, overproduction, and delay asset impairment losses. In a study, Eng et al. [18] compared Chinese family businesses with American family businesses after the 2008 financial crisis in terms of actual earnings management. For exemplary American companies, real earnings management is mainly done in family companies, not non-family companies in the post-crisis or pre-crisis period. The same is true for Chinese sample companies, except that the actual earnings management in family companies in the post-financial crisis period is less than in the financial crisis, compared to non-family companies. These findings suggest a difference between American and Chinese family businesses in times of crisis and vice versa in terms of actual earnings management activities. Abad et al. [1] explored the relationship between earnings management by manipulating actual activities and information asymmetry in the capital market.

Evidence suggests that, for example, companies listed on the Spanish Stock Exchange, the mechanism used by firms to increase earnings through real earnings management is associated with higher information asymmetry in companies that meet last year's income. Wibowo and Ghozali [47] have studied the effect of the illusion on the growth of corporate market value and the value created by manufacturing companies. The results showed an increase in valuation by real earnings management based on production costs. Nonetheless, corporate valuation measures in the form of earnings management accruals and actual earnings management based on optional costs have likely contributed significantly to an increase in value-added. In a study, Huyghebaert and Wang [23] argued about the impact of ownership structure and board characteristics on value creation and valuation in companies. They figured out that value creation by company profitability, labor productivity, and the effectiveness of asset utilization was more efficient when the largest final shareholder in the company controlled a larger portion of voting rights. Liu and Wang [27] studied the effect of earnings management on economic value added: G20 and African countries study. The results show that there is a positive relationship between earnings management through DA and EVA in African countries. They conclude that companies operate in environments that lack government policy and have an immature market structure. Comparing the mentioned countries, there is a significant positive relationship between earnings management through DA and

EVA in African countries. Based on the results of the analysis, they conclude that there is a negative relationship between earnings management through DA or REM and EVA activities in the G20 countries. Companies in these countries were affected by the 2008 global financial crisis. In a descriptive study entitled “Economic Stagnation and Earnings Management,” referring to the data of 115 companies listed on TSE in 2009-2014, Baghoumian et al. [7] showed that there is a direct significant relationship between economic stagnation and corporate earnings management. In other words, with an increase in negative GDP growth, corporate executives are increasingly turning to earnings management to prevent the company from going bankrupt due to the improvement in its financial position. Sinaei and Rangbari Kheini [41] have examined and compared the explanatory power of EVA, accounting income, and intellectual capital in determining the stock market price of companies. The results showed that the remaining profit calculated using the better accounting method explains the company's stock market price in the period under review, compared to the EVA method. Liu [26] investigated the relationship between earnings management and economic value added. Furthermore, an analysis of the earnings management behavior is presented based on data from 2009 to 2013. The results shown that a significantly inverse relationship exists between earnings management through either discretionary accruals (DAs) or real earnings management (REM) activities and EVA. Moreover, a significantly positive relationship exists between earnings management through either DAs or REM and EVA.

### 1.3 Research Hypotheses

One of the most tangible and fundamental issues raised in research on managers' reward rewards for providing their services is the relationship between managers' motivation, shareholder wealth, corporate value, and value created for them. The vast majority of studies have used Tobin's q criterion to influence the motivation of managers on a company's value (Gong, [22]). These studies include a study by Mehran [30] that showed a positive relationship between shareholder managers and company value. Moreover, Edmans et al. [17] have presented several pieces of evidence of reduced agency problems consequently of the sensitivity of payment to managers and its positive effects on company value. Moreover, in terms of earnings management, managers tend to be involved in maintaining a balanced value condition, increasing profits, and expecting earnings growth with an increase in corporate value as earnings management accruals and REM (Dechow et al., [16]).

On the other hand, Chi and Gupta [13] found that overvaluation is strongly influenced by earnings management accruals activities in the next period and companies participate in earnings management essentially to maintain the value-added of stock prices. Badertscher [6] has shown that companies are often involved in earnings management accruals in the early stages of overvaluation, later replaced by REM.

Moreover, earnings management can be considered from two perspectives: contractual or financial reporting. In terms of financial reporting, managers may be able to influence the value of a company's stock market through earnings management. From a contractual point of view, earnings management can act as a low-cost way to protect a company against unforeseen contractual conditions (Sedighi, [39]). According to the theoretical foundations and background of the research, the research hypotheses have been developed as follows:

**H1:** Accounting value-added increases with an increase in REM.

**H2:** EVA increases with an increase in REM.

**H3:** Overvaluation increases with an increase in REM.

## 2 Research Methods and Statistical Population

This is a quasi-experimental research project in the field of positive accounting research, a practical research project in terms of purpose. This research uses an inductive research method, a retrospective research project in terms of time because it uses the historical information of sample companies to test the hypothesis. The information required by the companies has been extracted from the Rahavard Novin database and the electronic website of the Securities Exchange Organization. Moreover, to test the hypothesis, a multivariate regression model using a panel data approach using 9EViews software was used. The statistical population consists of companies listed on the TSE from the beginning of 2012 to the end of 2018 for the 7 years that they have maintained their membership in the stock exchange during this period. Besides, the statistical population has been adjusted using the following conditions:

- 1) The company must be listed on the stock exchange before 2012 and its shares have been traded on the stock exchange since the beginning of 2012.
- 2) The financial year of the company ends on March 20 and no change occurs during the research period.
- 3) The company's financial information is available.
- 4) Not be one of the investment companies, holdings, and intermediaries such as banks and insurance. Following these restrictions, 150 companies met all the requirements for membership in the statistical community. Therefore, 150 companies were selected as the statistical population.

### 2.1 Variable Measurement

#### Dependent Variable:

**A) Economic Growth:** It is measured by the criteria of accounting value-added and EVA as follows:

**Economic Value-Added (EVA):** In general, EVA is an indicator that controls the total value created by a company in business. It was developed by Stewart [42] to address the challenges facing companies when it comes to financial performance measurement. EVA states that economic profitability is measured by profitability after deducting the expected return on shareholders. Improved EVA means increased shareholder wealth (Rahnamay Roodposhti et al., [35]).

According to Stewart's [42] calculation, economic value-added (in mathematical relations, EVA) is calculated as follows:

$$EVA = (ROIC * Capital) - (c * Capital) \quad (1)$$

$$ROIC = \frac{NOPAT}{Capital} \quad (2)$$

Then, by substituting Eq. (2) in Eq. (1), we have:

$$EVA = \left( \frac{NOPAT}{Capital} * Capital \right) - (c * Capital) \quad (3)$$

In the above equation:

*ROIC*: Total return on investment

*C*: Capital cost rate

*NOPAT*: Net operating profit after tax (NOPAT)

*Capital*: The capital used

It should be noted that NOPAT is calculated as follows:

After-tax accounting income + interest expense - tax savings from interest expense + termination benefits + impairment of investments + inventory write-down expense + accrued expenses + bad debts expense.

Where the tax savings from interest expense is calculated as follows:

Expense \* effective tax rate = tax savings from interest expense

The following equation is also used to calculate *Capital*:

Impairment of investments + interest-bearing debt + accrued expenses + shareholder equity + allowance for bad debt + provision for inventory write-down.

In which interest-bearing debts are calculated as follows (Sinaei and Rangbari Kheini, [41]):

Received facilities + bonds = interest-bearing debts

**Accounting Value-Added:** It is calculated according to the Forqandoost Haghghi and Bani Mahd [20] as follows:

Payroll + financial expenses + dividends not distributed among shareholders + tax + depreciation expense (including amortization of fixed and intangible assets) + business entity residual income.

**B) Growth Illusion:** It is measured by the following overvaluation criteria:

The present paper estimates overvaluation using the model developed by Rhodes-Kropf et al. [36]. According to this model, if the market is potentially wrong in estimating future discounted cash flows (DCF), or managers are not provided with all the required information, the price reflects the real value (MV) reflects part of the logarithm of misvaluation. Hence, the present study uses the model developed by Rhodes-Kropf et al. [36] as follows:

In the first step, Rhodes-Kropf et al. [36] divided M/B into two parts:

$$\frac{M}{B} = \frac{M}{V} * \frac{V}{B} \tag{4}$$

where  $\frac{M}{V}$  indicates misvaluation and  $\frac{V}{B}$  indicates growth illusion.

In the second step, the following logarithmic equation is used to calculate the logarithmic value:

$$(m - b) = (m - v) + (v - b) \tag{5}$$

where:

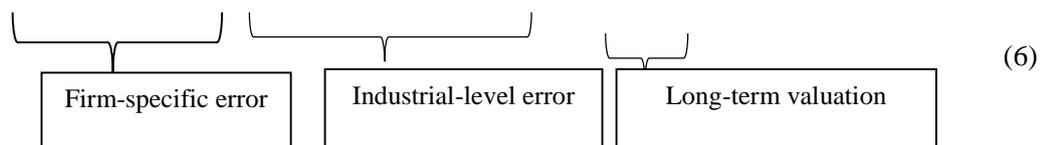
*m*: market value

*b*: book value

*v*: intrinsic value

In the third step, Eq. (5) is divided into three components in which *i* represents the company and *t* indicates the year.

$$m_{it} - b_{it} = m_{it} - v(\theta_{it}; \alpha_{jt}) + v(\theta_{it}; \alpha_{jt}) - v(\theta_{it}; \alpha_j) + v(\theta_{it}; \alpha_j) + b_{it}$$



To perform Equation (5), this study uses the equation by Rhodes-Kropf et al. [36] using estimates  $v(\theta_{it}; \alpha_j)$  and  $v(\theta_{it}; \alpha_j)$ . Therefore, the following decomposed equation is used:

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + \alpha_{2jt}ni_{it}^+ + \alpha_{3jt}I_{(<0)}ni_{it}^+ + \alpha_{4jt}LEV_{it} + \varepsilon_{it} \quad (7)$$

where:

$m_{it}$ : Log of market value

$b_{it}$ : Log of value book

$ni_{it}^+$ : Log of net profit

$I_{(<0)}$ : A slack variable that accepts two values: 1 and 0. If there is a net loss, this value will be equal to 1; otherwise, it will be equal to 0.

$LEV_{it}$ : Financial leverage ratio (ratio of total liabilities to total assets)

Besides, Eq. (7) is executed using cross-sectional regression to estimate the overvaluation of each company each year. High overvaluation is described by a high overvaluation level and low overvaluation by overvaluation level.

### Independent Variable:

In this study, the independent variable is REM which is calculated as follows:

According to research by Roychowdhury [37], Cohen et al. [15], and Cohen and Zarowin [14], the study used three criteria: abnormal operating cash flow (OCF), abnormal production costs, and abnormal discretionary attitudes. Measurement of real earnings management, which can be calculated through the remaining values from the estimation of the following models, respectively:

$$\frac{CFO_{it}}{A_{it-1}} = a_1 \left( \frac{1}{A_{it-1}} \right) + a_2 \left( \frac{Sales_{it}}{A_{it-1}} \right) + a_3 \left( \frac{\Delta Sales_{it}}{A_{it-1}} \right) + \varepsilon_{it} \quad (8)$$

$$\frac{PROD_{it}}{A_{it-1}} = a_1 \left( \frac{1}{A_{it-1}} \right) + a_2 \left( \frac{Sales_{it}}{A_{it-1}} \right) + a_3 \left( \frac{\Delta Sales_{it}}{A_{it-1}} \right) + a_4 \left( \frac{\Delta Sales_{it-1}}{A_{it-1}} \right) + \varepsilon_{it} \quad (9)$$

$$\frac{DISCE_{it}}{A_{it-1}} = a_1 \left( \frac{1}{A_{it-1}} \right) + a_2 \left( \frac{Sales_{it-1}}{A_{it-1}} \right) + \varepsilon_{it} \quad (10)$$

In the above models:

$CFO_{it}$ : OCF of Firm  $i$  in Year  $t$ ,

$Sales_{it}$ : Sales of Firm  $i$  in Year  $t$ ,

$A_{it-1}$ : Total assets at the beginning of the period in Firm  $i$  in Year  $t$ ,

$PROD_{it}$ : Production costs (total cost of goods sold (COGS) and product/material inventory changes) of Firm  $i$  in Year  $t$ ,

$DISCE_{it}$ : Discretionary expenses (advertising, general, administrative, and sales costs) of Firm  $i$  in Year  $t$ , and

$\varepsilon_{it}$ : The remaining component of the model and the indicator of the abnormal level of the variable estimated in each model.

Using any of the above criteria alone may result in a REM variable measurement error. Hence, similar to previous research, the above three criteria (i.e., abnormal operating cash flow (OCF), abnormal production costs, and abnormal discretionary costs) are merged into a combined index. For this purpose, following the calculation of these criteria, the standardized values of each of the mentioned criteria are added together to obtain the REM combination criterion for each company. Following the application of this combined criterion, the skew resulting from the use of each of the REM criteria is reduced separately and a more accurate test criterion is provided.

## Control Variables

**Market-to-Book Ratio (MTB):** It is calculated by dividing the market value by the book value of the stock.

**Firm Age (FAGE):** It is obtained from the difference between the year under review and the year of establishment of the company.

**Financing Deficit (FDEFI):** It is obtained by following the research by Frank and Goyal [21], as follows:

$$FDEFI = DIV_t + I_t + \Delta W_t + R_t - C_t \quad (10)$$

Where:

$DIV_t$ : Cash dividend in Year  $t$

$I_t$ : Net investment in Year  $t$

$\Delta W_t$ : Change in working capital in Year  $t$

$R_t$ : Current portion of long-term debt (CPLTD) in Year  $t$

$C_t$ : Cash flow after interest and taxes

**Firm Size (SIZE):** This research will use the natural logarithm of total assets to measure firm size.

**Return on Assets (ROA):** This variable is obtained from the after-tax net income to total assets ratio (Aflatooni, [2]).

**Financial Leverage (LEVE):** This variable is obtained by dividing total debts by total assets.

**Size of Operating Cash Flows (OCF):** It is measured by calculating OCF via net OCF on total assets.

**Sales Growth (GROWTH):** It is calculated using the following equation:

$$GROWTH = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}} \quad (11)$$

$Sales_t$ : Sales revenue in Year  $t$

$Sales_{t-1}$ : Sales revenue in Year  $t-1$

**Percentage of institutional investors' ownership (INSTOWN):** By law, an institutional shareholder is a natural or legal person who owns more than 1% of the shares of a business entity. In stock market terminology, an institutional shareholder is a natural or legal person who owns the largest percentage of a company's stock. However, institutional shareholders refer to all persons who own more than 5% of the entity's shares. To calculate the percentage of institutional investors ownership (INSTOWN), the percentage of shares held by the components of joint-stock companies from the total capital is used (Parandin et al., [33]).

## 2.2 Research Models

Econometrics templates have been used to test the research hypothesis:

$$AVA_{it} = \alpha + \beta_1 REM_{it} + \beta_2 MTB_{it} + \beta_3 FAGE_{it} + \beta_4 FDEFI_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 LEVE_{it} + \beta_8 OCF_{it} + \beta_9 GROWTH_{it} + \beta_{10} Instown_{it} + \varepsilon_{it}$$

$$EVA_{it} = \alpha + \beta_1 REM_{it} + \beta_2 MTB_{it} + \beta_3 FAGE_{it} + \beta_4 FDEFI_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 LEVE_{it} + \beta_8 OCF_{it} + \beta_9 GROWTH_{it} + \beta_{10} Instown_{it} + \varepsilon_{it}$$

$$M_{it} = \alpha + \beta_1 REM_{it} + \beta_2 MTB_{it} + \beta_3 FAGE_{it} + \beta_4 FDEFI_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 LEVE_{it} + \beta_8 OCF_{it} + \beta_9 GROWTH_{it} + \beta_{10} Instown_{it} + \varepsilon_{it}$$

### 3 Research Findings

Table 1 presents the results of descriptive research variables. According to the table 1, the average variables of accounting value-added, EVA, and REM in the studied companies during the tested years were equal to 205360 million Rials and 0.07.

**Table 1:** Descriptive Statistics of Research

| Variables                      | Mean   | Median | Max    | Min    | SD   | Skewness |
|--------------------------------|--------|--------|--------|--------|------|----------|
| Accounting Value-Added         | 194365 | 183547 | 436543 | -41352 | 0.07 | 0.16     |
| EVA                            | 205360 | 195784 | 556250 | -52364 | 0.71 | 0.83     |
| Growth Illusion                | 0.08   | 0.04   | 0.19   | 0.01   | 0.15 | 0.09     |
| Abnormal OCF                   | 0.07   | 0.04   | 0.35   | -0.11  | 0.07 | 0.13     |
| Abnormal Discretionary Expense | 0.24   | 0.17   | 0.37   | -0.02  | 0.04 | 0.06     |
| Income Earnings Management     | 0.21   | 0.13   | 0.54   | 0.02   | 0.11 | 0.19     |
| MTB Ratio                      | 3.75   | 3.11   | 6.45   | 1.63   | 0.54 | 0.42     |
| FAGE                           | 33     | 31     | 42     | 11     | 0.20 | 0.38     |
| FDEFI                          | 0.06   | 0.04   | 0.22   | 0.01   | 0.39 | 0.75     |
| FIRM SIZE                      | 5.94   | 5.9    | 7.91   | 4.48   | 0.73 | 0.49     |
| ROA                            | 0.27   | 0.22   | 0.57   | -0.21  | 0.13 | 0.50     |
| Financial Leverage             | 0.59   | 0.63   | 0.78   | 0.10   | 0.09 | 0.11     |
| OCF                            | 0.24   | 0.20   | 0.46   | 0.10   | 0.12 | 0.21     |
| Sales Growth                   | 0.20   | 0.16   | 0.75   | -0.26  | 0.10 | 0.60     |
| INSTOWN                        | 0.51   | 0.43   | 0.75   | 0.05   | 0.14 | 0.19     |
| <b>Observations</b>            | 1050   | 1050   | 1050   | 1050   | 1050 | 1050     |

**Table 2:** Results of the Reliability Test of variables

| Value  | Levin-Lin-Chu |       | Im-Pesaran-Shin |       | Augmented Dickey-Fuller (ADF) |       | Phillips-Perron (PP) |       |
|--|---------------|-------|-----------------|-------|-------------------------------|-------|----------------------|-------|
|  | Statistic     | p.v   | Statistic       | p.v   | Statistic                     | p.v   | Statistic            | p.v   |
| <b>AVA</b>   | -37.47        | 0.000 | -8.17           | 0.000 | 570.62                        | 0.000 | 709.3                | 0.000 |
| <b>EVA</b>   | -75.55        | 0.00  | -15.19          | 0.00  | 706.3                         | 0.00  | 820.2                | 0.00  |
| <b>Growth Illusion</b>                                   | -19.22        | 0.00  | -2.96           | 0.00  | 404.6                         | 0.00  | 488.30               | 0.00  |
| <b>Abnormal Operating Cash Flow</b>                      | -24.86        | 0.000 | -3.88           | 0.000 | 470.9                         | 0.000 | 550.14               | 0.000 |
| <b>Abnormal Discretionary Expenses</b>                   | -1517         | 0.000 | -321.7          | 0.000 | 604.2                         | 0.000 | 666.07               | 0.000 |
| <b>Market-to-Book Value</b>                              | -8.33         | 0.00  | -2.52           | 0.00  | 98.45                         | 0.00  | 142.5                | 0.04  |
| <b>Firm Age</b>  | -1.84         | 0.03  | -14.65          | 0.00  | 140.54                        | 0.00  | 185.35               | 0.00  |
| <b>Financing Deficit</b>                                 | -8.42         | 0.00  | -6.54           | 0.00  | 186.7                         | 0.00  | 250.5                | 0.000 |
| <b>Firm Size</b>   | -18.16        | 0.00  | -2.73           | 0.00  | 381.2                         | 0.00  | 469.1                | 0.00  |
| <b>Return ON Assets</b>                                  | -24.96        | 0.00  | -4.09           | 0.00  | 463                           | 0.00  | 541.10               | 0.00  |
| <b>Financial Leverage</b>                                | -32.38        | 0.00  | -9.69           | 0.00  | 635.7                         | 0.00  | 819                  | 0.00  |
| <b>Operating Cash Flow</b>                               | 32.43-        | 0.00  | -7.07           | 0.00  | 508.3                         | 0.00  | 617.9                | 0.00  |
| <b>Firm Growth</b>                                       | 12.9-         | 0.00  | -7.46           | 0.00  | 622.6                         | 0.00  | 793.1                | 0.00  |
| <b>Ownership Percentage of Institutional Shareholder</b> | -56.01        | 0.00  | -9.26           | 0.00  | 524.3                         | 0.00  | 586.8                | 0.00  |

As illustrated, the average of the variable is 195784 million Rials and 0.04, indicating that half of the data is less than this amount and the other half is more than that. Moreover, the mean of control variables, i.e. MTB ratio is equal to 3.75, OCF-to-asset ratio is equal to 0.24, and financial leverage is equal

to 0.59. One of the most important S parameters is the standard deviation (SD). Among the research variables, abnormal discretionary expense and firm size have the lowest and highest scattering, respectively. The skewness is rightward and if the coefficient is negative the skewness is leftward. The lowest and highest deviations from a normal distribution are related to abnormal discretionary expense and EVA, respectively. See Table. 1 and its caption.

**Table 3:** F-Limer test results (analogous cross-sectional intercepts)

| Chow Test                                | Model    | F-statistic | p-v  | Result             | Test Type  |
|--|----------|-------------|------|--------------------|------------|
| H0: Analogous cross-sectional intercepts | Model #1 | 0.58        | 0.74 | H0 is not rejected | Panel Data |
| H0: Analogous cross-sectional intercepts | Model #2 | 0.14        | 0.99 | H0 is not rejected | Panel Data |
| H0: Analogous cross-sectional intercepts | Model #3 | 0.87        | 0.51 | H0 is not rejected | Panel Data |

**Table 4:** Results of homoscedasticity test of regression model residuals

| Model Description |             | Breusch-Pagan | Glejser | White | Lagrange | Result          | Selected Method |
|-------------------|-------------|---------------|---------|-------|----------|-----------------|-----------------|
| Model #1          | F-statistic | 5.97          | 19.55   | 5.7   | 121.2    | Heteroscedastic | EGLS            |
|                   | p.v         | 0.00          | 0.00    | 0.00  | 0.00     |                 |                 |
| Model #2          | F-statistic | 5.63          | 20.42   | 4.63  | 85.65    | Heteroscedastic | EGLS            |
|                   | p.v         | 0.00          | 0.00    | 0.00  | 0.00     |                 |                 |
| Model #3          | F-statistic | 6.13          | 21.98   | 5.36  | 115.6    | Heteroscedastic | EGLS            |
|                   | p.v         | 0.00          | 0.00    | 0.00  | 0.00     |                 |                 |

**Table 5:** Test results for normality of the dependent variable and error term

| Variable                   | Model Residual | EVA  | AVA  | Overvaluation |
|----------------------------|----------------|------|------|---------------|
| Test                       |                |      |      |               |
| Jarque-Bera Test Statistic | 1.75           | 1.33 | 1.70 | 0.91          |
| Error Level                | 0.43           | 0.51 | 0.45 | 0.72          |

### Reliability Test of Research Variables

The reliability of research variables should be examined before analyzing and testing hypotheses. The reliability test was performed using Levin-Lin-Chu Test, Fisher type unit root test, Augmented Dickey-Fuller (ADF) test, Im-Pesaran-Shin panel unit root test, and Phillips-Perron (PP). Unit root test. The variability test results of the variables indicate an error level of less than 5% for all variables and their reliability. Moreover, the institutional ownership variable is stable because it is limited to two values, 0 and 1. The results of this test are presented in Table 2. See Table. 2 and its caption.

### Estimation of the Model by Panel Data

The Chow test is presented in Table 3. As shown, the results of the Chow test of the null hypothesis have confirmed that this test is similar to the intercept in all periods because its significance level was greater than 5%. Therefore, it is more appropriate to use panel data. See Table. 3 and its caption.

### Homoscedascity Test

The Breusch-Pagan-Godfrey Test (or Breusch-Godfrey Serial Correlation LM Test), Glejser Heteroskedasticity Test, White Test, and Lagrange Multiplier (LM) test were used to homoscedasticity of the

model's residuals. The results showed that the heteroscedasticity, id est, and the remaining estimates of the research model did not have a constant variance. Thus, the estimated generalized least squares (EGLS) method is used to estimate the research model. The results of the homoscedasticity test are presented in Table 4. See Table. 4 and its caption.

**Normal Dependent Variables and Error Term of the Research Model**

A common test used here is the Jarque-Bera Test. As demonstrated, the test statistics showed that the variables were normal and their significance level was confirmed by confirming the H0 hypothesis and rejecting the H1 hypothesis. In other words, the results of testing the normality of the rest of the research model and the dependent variable indicate that the remainder of the model is normal. See Table. 5 and its caption.

**Table 6:** Test results of the first model at the panel data level (EGLS)

| $AVA_{it} = \alpha + \beta_1 REM_{it} + \beta_2 MTB_{it} + \beta_3 FAGE_{it} + \beta_4 FDEFI_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 LEVE_{it} + \beta_8 OCF_{it} + \beta_9 GROWTH_{it} + \beta_{10} Instown_{it} + \epsilon_{it}$ |          |             |                |             |      |
|--|----------|-------------|----------------|-------------|------|
| Description  | Abbr.    | Coefficient | T-Student      | Error Level | VIF  |
| Equation's Fixed Component   | $\alpha$ | -1.41       | -0.24          | 0.22        |      |
| Real Earnings Management   | REM      | 0.10        | 2.44           | 0.01        | 1.12 |
| Market-to-Book Value   | MTB      | 0.08        | 4.02           | 0.00        | 1.01 |
| Firm Age   | FAGE     | 0.09        | 1.50           | 0.13        | 1.1  |
| Financing Deficit  | FDEFI    | -0.03       | -1.24          | 0.21        | 1.01 |
| Firm Size  | SIZE     | 0.12        | 2.63           | 0.00        | 1.1  |
| Return on Assets   | ROA      | 0.09        | 2.01           | 0.04        | 1.05 |
| Financial Leverage   | LEVE     | -0.08       | -2.19          | 0.02        | 1.06 |
| Operating Cash Flow  | OCF      | 0.06        | 3.05           | 0.00        | 1.01 |
| Sales Growth   | Growth   | 0.12        | 3.19           | 0.00        | 1.1  |
| Ownership Percentage of Institutional Shareholder  | Instown  | 0.07        | 2.63           | 0.00        | 1.05 |
| Adjusted R <sup>2</sup>  |          |             | 0.523          |             |      |
| Regression F (Error Level)   |          |             | 110.33 (0.000) |             |      |
| Durbin-Watson  |          |             | 1.93           |             |      |

**Estimation of the First Model**

The results of data analysis for testing the first model are shown in Table 6. As indicated, the significance level of F-statistic (110.33), i.e., 5%, indicates the overall significance of the estimated model. Thus, the research model as a whole is significant and independent and control variables can explain the dependent variable. Moreover, the adjusted R2 is 0.52. It indicates that approximately 0.52 of the dependent variable changes can be attributed to independent and control variables and another 0.48 to other factors beyond the researcher's reach. The Durbin-Watson statistic value (1.93) indicates that the first-order serial autocorrelation problem is missing in the error terms of the estimated model; therefore, the results of the estimated model are not false and the estimation of the model is reliable (its normal value should be in the range of 1.5-2.5). The value of the variance inflation factor (VIF) indicates that

there is no severe multicollinearity between the independent variables of the first model. When the VIF statistic is less than 5 (some other sources refer to 10), there is no evidence of multicollinearity between the independent variables of the model. See Table. 6 and its caption.

**H1:** Accounting value-added increases with an increase in REM.

According to the results of the T-student statistic related to the independent variable, REM and its significance level (p.v) are 2.44 and 0.01, respectively, and its coefficient is 0.05. In other words, with an increase of 0.01 in REM, the accounting value-added increases by 0.05. Since the error level considered for this study was 0.05, the REM variable had a significant effect on accounting value-added, and H1 was confirmed at a 95% significance level. The variable coefficient (REM) is positive. Consequently, there is a significant positive relationship between REM and accounting value-added.

**Table 7:** Test results of the second model at the panel data level (EGLS)

| $EVA_{it} = \alpha + \beta_1 REM_{it} + \beta_2 MTB_{it} + \beta_3 FAGE_{it} + \beta_4 FDEFI_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} + \beta_7 LEVE_{it} + \beta_8 OCF_{it} + \beta_9 GROWTH_{it} + \beta_{10} Instown_{it} + \varepsilon_{it}$ |          |             |           |                |      |
|---|----------|-------------|-----------|----------------|------|
| Description   | Abbr.    | Coefficient | T-Student | Error Level    | VIF  |
| Equation's Fixed Component  | $\alpha$ | 0.08        | -1.95     | 0.05           |      |
| Real Earnings Management  | REM      | 0.12        | 2.70      | 0.00           | 1.12 |
| Market-to-Book Value  | MTB      | 0.10        | 3.65      | 0.00           | 1.01 |
| Firm Age  | FAGE     | 0.07        | 1.45      | 0.15           | 1.1  |
| Financing Deficit   | FDEFI    | -0.05       | -1.28     | 0.20           | 1.01 |
| Firm Size   | SIZE     | 0.13        | 2.85      | 0.00           | 1.1  |
| Return on Assets  | ROA      | 0.10        | 2.05      | 0.04           | 1.05 |
| Financial Leverage  | LEVE     | -0.07       | -2.33     | 0.01           | 1.06 |
| Operating Cash Flow   | OCF      | 0.09        | 3.12      | 0.00           | 1.01 |
| Sales Growth  | Growth   | 0.15        | 2.17      | 0.02           | 1.1  |
| Ownership Percentage of Institutional Shareholder   | Instown  | 0.10        | 2.49      | 0.01           | 1.05 |
| Adjusted R <sup>2</sup>   |          |             |           | 0.55           |      |
| Regression F (Error Level)  |          |             |           | 135.40 (0.000) |      |
| Durbin-Watson   |          |             |           | 1.99           |      |

### Estimation of the Second Model

Table 7 shows the results of data analysis for testing the second model. As indicated, the significance of F-statistic (135.40), i.e., %, 5 indicates the overall significance of the estimated model. Thus, the research model as a whole is significant, and independent and control variables can explain the dependent variable. Furthermore, the adjusted R2 is 0.52. It indicates that approximately 0.55 of the dependent variable changes can be attributed to independent and control variables and another 0.44 to other factors beyond the researcher's reach. The larger the value of this indicator, the greater the scattering of points around the regression line. The Durbin-Watson statistic value (1.99) indicates the absence of a first-order serial autocorrelation problem in the error terms of the estimated model. Hence, the results of the estimated model are not false and the estimation of the model is reliable (its normal value should be in

the range of 1.5-2.5). It indicates that there is no severe multicollinearity between the independent variables of the first model. When the VIF statistic is less than 5 (some other sources refer to 10), there is no evidence of multicollinearity between the independent variables of the model. See Table. 7 and its caption.

**Table 8:** Test results of the third model at the panel data level (EGLS)

| $M_{it} = \alpha + \beta_1 \text{REM}_{it} + \beta_2 \text{MTB}_{it} + \beta_3 \text{FAGE}_{it} + \beta_4 \text{FDEFI}_{it} + \beta_5 \text{SIZE}_{it} + \beta_6 \text{ROA}_{it} + \beta_7 \text{LEVE}_{it} + \beta_8 \text{OCF}_{it} + \beta_9 \text{GROWTH}_{it} + \beta_{10} \text{Instown}_{it} + \varepsilon_{it}$ |          |             |                |             |      |
|---|----------|-------------|----------------|-------------|------|
| Description   | Abbr.    | Coefficient | T-Student      | Error Level | VIF  |
| Equation's Fixed Component  | $\alpha$ | 0.25        | 2.11           | 0.03        |      |
| Real Earnings Management  | REM      | 0.02        | 2.02           | 0.04        | 1.12 |
| Market-to-Book Value  | MTB      | 0.05        | 2.12           | 0.03        | 1.01 |
| Firm Age  | FAGE     | 0.05        | 1.03           | 0.30        | 1.1  |
| Financing Deficit   | FDEFI    | -0.07       | -2.05          | 0.04        | 1.01 |
| Firm Size   | SIZE     | 0.06        | 2.29           | 0.01        | 1.1  |
| Return on Assets  | ROA      | 0.04        | 3.05           | 0.00        | 1.05 |
| Financial Leverage  | LEVE     | -0.04       | -2.75          | 0.00        | 1.06 |
| Operating Cash Flow   | OCF      | 0.03        | 3.05           | 0.00        | 1.01 |
| Sales Growth  | Growth   | 0.07        | 2.08           | 0.03        | 1.1  |
| Ownership Percentage of Institutional Shareholder   | Instown  | 0.07        | 1.98           | 0.04        | 1.05 |
| Adjusted R <sup>2</sup>   |          |             | 0.48           |             |      |
| Regression F (Error Level)  |          |             | 102.65 (0.000) |             |      |
| Durbin-Watson   |          |             | 2.02           |             |      |

**H2:** EVA increases with an increase in REM.

According to the results of the T-student statistic related to the independent variable, REM and its significance level (p.v) are 2.70 and 0.00, respectively, and its coefficient is 0.12. In other words, with an increase of 0.01 in REM, EVA increases by 0.12. Since the error level considered for this study was 0.05, the REM variable had a significant effect on EVA and the third sub-hypothesis was confirmed at a 95% significance level. The variable coefficient (REM) is positive.

### Estimation of the Third Model

Table 8 shows the results of data analysis to test the third model. See Table. 8 and its caption.

**H3:** Overvaluation increases with an increase in REM.

According to the results of the T-student statistic related to the independent variable, REM and its significance level (p.v) are 2.02 and 0.040, respectively, and its coefficient is 0.02. In other words, with an increase of 0.01 in REM, overvaluation increases by 0.02. Since the error level for this study was 0.05, the REM variable has a significant effect on overvaluation and the fifth sub-hypothesis is confirmed at a 95% significance level. The variable coefficient (REM) is positive. Consequently, there is a significant positive relationship between REM and overvaluation.

#### 4 Results and Discussion

Given the importance of earnings in reporting and financial decision making, the study examined the role of earnings management in economic growth and growth illusion of companies listed on TSE over 7 years (from 2012 to 2018) using data from 150 companies. This paper is the first study on real earnings management and its impact on the growth illusion of companies that follows an efficiency perspective of positive accounting research. In the efficiency approach of the earnings management, unlike its opportunistic approach, earnings management is not a bad thing. In this approach, earnings management can be a useful tool to maintain the value of the company's stock. Therefore, earnings management can reduce brokerage costs and increase shareholder wealth. Also, earnings management can be beneficial for the society's economy. Whenever the company's earnings increases due to manipulation in the real activities of the company, this will increase the accounting and economic value of the company. Because earnings is part of the accounting and economic value added. With the improvement and promotion of added value, it can be said that the society's economy has also grown. In other words, manipulating real activities can improve economic indicators in society.

With this argument, it can be said that real earnings management is an efficient tool in the economy. In summary, the efficiency approach to earnings management emphasizes that the manipulation of accounting figures by the manager is not only related to the personal interests of the manager and earnings management can align the interests of managers, shareholders, society and other groups, value creation for the company and reduce conflict of interest and information asymmetry between the above groups [Scott, 38]. The results showed an increased EVA, accounting value-added, and overvaluation following an increase in REM. This finding is consistent with theoretical foundations such as earnings management performance approach. According to this approach, if earnings management results are consistent with the interests of business entities, shareholders, and other stakeholders, managers' behavior in earnings overstatement is effective. Moreover, this is consistent with the results of a study by Flores et al. [19]. They confirmed that there could be a direct relationship between earnings management and macroeconomic variables. Signalling theory can be used to explain the direct effect of REM on EVA. That is, to reduce information asymmetry, managers try to convey their confidential information to other stakeholders through financial statement figures. In other words, companies with high EVA have more incentives and incentives to signal confidential information about the company's future performance through earnings management. Consequently, investors will recognize these incentives and encourage this information. Therefore, it is inferred that company executives with higher EVA and accounting value-added use the earnings management to send the signal to the market. Furthermore, regarding the positive relationship between earnings management and overvaluation, it can be stated that managers intend to elongate overvaluation time by using REM through accepted accounting principles. Nevertheless, with the passage of time and the overaccumulation of this bad news (overvaluation) and the time spent by the market to understand growth illusion, it will ultimately have a negative impact on corporate value, resulting in an incremental risk of falling stock price. Thus, the relationship between earnings management and the firm's value-added will be positive in the short term, albeit reverse in the long run.

Unlike any previous studies highlighting the consequences of overvaluation and focusing on predicting the occurrence of overvaluation as a result of earnings management practices, this study mainly focuses on the role of earnings management in economic growth and growth illusion. Also, this paper explains the relationship between the concepts of economics and accounting. Based on this, it can be claimed that accounting and economic data are important and correlated with each other and are compatible like

twins. Also, the results of this research can provide new perspectives on the usefulness of accounting numbers in emerging markets and thus promote accounting research in emerging capital markets. These results are consistent with the findings of research by Wallace [45], Jensen [24], Badertscher [6], and Wibowo and Ghozali [47]. Finally, the findings of the present study can be interpreted as follows: First, the study confirms that corporate executives, legislators, and policymakers can be provided with REM as a useful tool in economic planning. Moreover, the results of this study confirm that accounting information can play an important role as information in economic decisions. Furthermore, the evidence suggests that accounting information, including REM, is closely related to economic data. Hence, it can be argued that accounting and economics are paronymous. The evidence presented in this paper emphasizes the need to use accounting data in macroeconomic planning. In other words, as an information system, accounting can play an important role in economic development and growth. Moreover, regarding the positive relationship between earnings management and overvaluation, managers tend to elongate overvaluation time using REM through accepted accounting principles. Notwithstanding, with the passage of time and the overaccumulation of this bad news (overvaluation) and the time spent by the market to understand growth illusion, it will ultimately have a negative impact on corporate value, resulting in an incremental risk of falling stock price. Therefore, the relationship between earnings management and the firm's value-added will be positive in the short term, reverse albeit in the long run. Also, this paper acts as a guide to investors to exhibit management's ability to manage earnings for opportunistic objectives. Furthermore, by thoroughly outlining the REM, this paper has been evaluated EVA, AVA and growth illusion. Moreover, this study alerts decision makers to assess the role of earnings management in economic growth and the corporate's growth illusion. Likewise, guides shareholders to consider the role of these evaluating systems in improving the understanding of REM. If shareholders are capable of acquiring reliable information about the manager's performance, then their financial decisions may turn out to be more accurate and effective. Really, our findings contribute to the literature on earnings management by providing additional evidence regarding its effects on stakeholders.

## 5 Conclusion and Suggestions

The results provide critical implications for managers, researchers, investors, and regulators. Liu [27] showed that, managers of firms in NAFTA and EU nations should increase EVA without using earnings management; however, in NIC and ASEAN nations, EVA can be increased through earnings management. The results of this paper showed an increased EVA, accounting value-added, and overvaluation following an increase in REM. Based on the findings of this study, policymakers and legislators are encouraged to use accounting data such as REM and accruals-based earnings in forecasting and economic planning, leading to improved predictability of economic models. Furthermore, earnings management behavior is considered a significant phenomenon in earnings reporting. Understanding this phenomenon and the factors that motivate it will help to better understand the concept of accounting income and identify its features and limitations. Hence, academics and other educators are encouraged to consider this.

For researchers, these empirical findings show that REM activities are substitutes because they vary in the same nation groups and countries. Investors can analyse the true value of enterprises, regardless of whether the enterprises have adopted earnings management. Regulators (e.g., governments) should establish stricter security measures and laws or regulations for listed firms to prevent earnings management after a financial tsunami and to encourage them to report their real true value.

Future studies should pay attention refining the measurements of the earnings management model because not all of them are equal, and it is unlikely that the consequences of engaging in earnings management are the same in all capital markets. In addition, researchers may consider focusing on identifying intermediary variables that affect these relationships or establishing an optimal theory for explaining the relationship between earnings management and EVA, particularly because this study examined this relationship only from the efficiency perspective of positive accounting research.

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