



## Chief Executive Officer's (CEO) Age and Risk Taking Behaviour

Dorra Talbi\*<sup>1</sup>

1. Assistant professor, Department of Finance and Economics Saudi Electronic University, Riyadh Branch, Saudi Arabia ([talbi.dorra@gmail.com](mailto:talbi.dorra@gmail.com))

*The purpose of this study is to investigate the impact of CEO Age on risk taking, via their strategies in managing earnings. The empirical study is based on a data composed of 642 US public companies from 2010 to 2015. Firstly, we document a positive and significant relation between CEO Age and the degree of risk taking measured by the manipulation of the real activities. In a supplement analysis, we find that this relation is not monotonic; it has a U-Shape with an inflexion point equal to 46 years. Our study contributes to the existent literature on accounting by identifying that CEO Age is a determinant component of real earnings management. Therefore, stakeholders of firms managed by an old CEO should be more careful when evaluating the quality of firm's financial statements. In addition, external auditors and SEC should be more diligent when dealing with financial reports elaborated by old CEOs.*

*Keywords:* Risk taking, Real earnings management, CEO Age, managerial myopia, risk-taking, behavior

### INTRODUCTION

The purpose of this study is to examine the association between chief executive officer (CEO) age and risk taking through their strategies to manage earnings especially via the real activities. The principal underlying assumption of our research, is that there is a direct relation between individual characteristics of CEO and risk-taking and consequently on the quality of financial reporting.

This research is motive by several raisons. Firstly, in recent period, the increasing manipulation of earnings through real activities (Roychowdhury,

2006; Cohen et al., 2008, Talbi et al., 2015) shed lights on the limit of managers discretion. Second, after the financial scandals (e.g. Enron, WorldCom and Tyco International), regulators have strengthened the role of executives in ensuring the quality of financial reporting (Sarbanes-Oxley act-Section 36). Finally, extant accounting research has confirmed that individual managerial characteristics have an impact on the discretion of CEO (Hambrick and Finkelstein, 1987; Huang et al., 2012).

\*Corresponding author: Dorra Talbi,

Assistant professor, Department of Finance and Economics Saudi Electronic University, Riyadh Branch, Saudi Arabia.

E-Mail: [talbi.dorra@gmail.com](mailto:talbi.dorra@gmail.com)

Literature on the impact of executives' characteristics on the outputs of the firm is very old. The theory of Upper-echelon (Hambrick and Mason, 1984) suggests that the characteristics of executives influence their discretion and then the outcomes of their firms. By nature younger persons are different from older, physically and ethically. Pearson's behaviour and incentives are conditioned by age (Gibbons and Murphy, 1992).

Prior research has investigated the association between age and risk taking. Younger managers are less risk averse, while older managers are more risk averse (Hambrick and Mason, 1984; MacCrimmon and Wehrung, 1990) they are more likely to engage in earnings management (Davidson et al., 2007). In fact, older managers are less likely to adopt risky strategies because they have less ability to generate new ideas and are more concerned about future financial security (Hambrick and Mason, 1984). Additionally, extant literature shows that older executives are more conservative than younger (Vroom and Pahl, 1997; Sundaram and Yermack, 2007).

Another stream of extant literature suggests a positive relation between age and ethical behaviour (Loe et al., 2000). Mudrack (1989) suggests that age is a determinant component of ethical behaviour, older persons are more exposed to traditional customs and culture are more ethical. Wimalasiri (2001) in a study to determine the difference in moral judgment of students based on age, she finds that the moral reasoning increases with age. In a recent research Twenge and Campbell (2008), report that younger generations have a tendency of narcissism that could lead to unethical behaviour.

Our empirical study is focused on a sample of 642 US public firms from the period 2010 to 2015. We first estimate real earnings management (REM) (Roychowdhury, 2006; Cohen et al., 2008; Chi et al., 2011). Following Roychowdhury (2006) we use operating activities manipulation: abnormal cash flow, abnormal production and abnormal discretionary expenses. Then we examine whether CEO age affects real earnings management behaviour.

Our study contributes to the literature on financial reporting and CEO characteristics, by providing empirical evidence about the association between

real earnings management and CEO age. Our findings report a positive relation between CEO AGE and real earnings management, and as an additional check, we find that this relation is not monotonic but a U-shaped relationship with an inflexion point 46 years old.

The remainder of the paper is organized as follows: Section 2 reviews the theoretical background development of hypotheses. Section 3 describes data collection and the research methods. Section 4 reports the empirical results and Section 5 concludes the study.

## REVIEW OF LITERATURE

### Hypothesis Development

In this study, we will refer to theoretical work that explained the accounting choices according to its own specific behavior of the executive psychological perspective. This relatively new branch in the accounting literature is called the theory of thresholds (Burgstahler and Dichev, 1997; Burgstahler and Eames, 1998; Dechow et al., 1999). This theory admits as theoretical bases: prospect theory and psychological theory of negative accounting numbers.

Prospect theory analyses individual choice in an uncertain environment. It states that decisions made by individuals do not depend as claimed by the utility theory of individual preferences, but rather the value of gains and losses relative to a reference (Kahneman and Tversky, 1979; Stein, 1989). This theory reflects the myopic or short-termism behaviour of executives (this trend is widespread in the United States) characterizing the management of real activities of the company. The short-termism behaviour can be explained by the inability of leaders to withstand the pressures from the financial market (Habib and Hossain, 2008).

Psychological theory of negative accounting numbers is also fostered in the work of accounting and finance to explain the behaviour of leaders desperate to reach or exceed expectations. Burgstahler and Dichev (1997) and Dechow et al. (1999) showed that three psychological effects influence the management decisions: avoid publishing negative results, ensure stable growth in the publication of results and finally reach and

possibly exceed the expectations of financial analysts. Reach or exceed the expectations of financial analysts has become an issue more important for business leaders. Indeed, in major financial markets these actors have become powerful agents and do not get their games of "meeting or beating" of "benchmarks" will inflict heavy losses the company (Bartov and Cohen, 2009) and even the replacement of the leader. This phenomenon is called "the numbers game" by the 25th chairman of the SEC, Arthur Levitt in 1998. At this level, it should be noted that this "obsession" to just "meet or beat analysts' forecasts is primarily related to certain institutional environments (it is much more common in the USA) (Habib and Hossain, 2008). The propensity of managers to manage results, to reach or exceed analysts' forecasts, is the result of the compensation of executives share-based (Cheng and Warfield, 2005) or stock options (Ewert and Wagenhofer, 2005).

In a qualitative study, Graham et al. (2005) interviewed 401 CFO, the authors' show that CFOs are willingly to engage in real earnings management in order to meet the thresholds. In fact, 80% of respondents said they were able to reduce their discretionary spending (R & D, advertising or maintenance) and just over half (55.3%) of this sample confirmed that they can see the starting a new investment project net worth positive. These findings are confirmed by other qualitative studies (Bruns and Merchant, 1990; Lambert and Sponem, 2005).

Theory of upper echelons (Hambrick and Mason, 1984) distinguishes two types of characteristics that influence the decisions taken by executives: the psychological characteristics that are difficult to quantify and observable characteristics. When the manager approaching the age of retirement, he became more risk aversion (Gibbons and Murphy, 1992; Matta and Beamish, 2008). While, young managers are more concerned with their careers, and to boost it they are able to incur to great risks strategies by adopting myopic behavior.

Regarding the relationship between real earnings management and CEO age, we assume that real earnings management increases when the manager

is young, then decreases late career. Based on this discussion we can formulate our hypothesis:

*Hypothesis: Real earnings management and CEO AGE are negatively associated.*

## RESEARCH METHODS

The main purpose of this study is to identify the impact e degree of risk taking measured by the CEO Age on real earnings management. To achieve this, we collected a sample panel composed of 642 US public companies for the period 2010 to 2015.

To form a homogeneous sample, we exclude financial firms (SIC codes: 6000-6999) and regulated firms (SIC codes: 4400-5000), insofar as they obey the rules well specific regarding the presentation of financial statements. We eliminated from our main sample observations missing data for the calculation of real earnings management and control variables. Negative sales or equal to zero and observations whose total assets are equal to zero were excluded. We also exclude all observations with firm-year sector (according to the first two SIC codes) that has less than 15 observations in a given year.

### TABLE 1 HERE

In order to test our hypothesis, we have highlighted the following model:

$$REM_{i,t} = \alpha_0 CEO\_AGE_{i,t} + \alpha_1 ROA_{i,t} + \alpha_2 MB_{i,t} + \alpha_3 AFLEX_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 SIZE_{i,t} + \alpha_6 BON_{i,t} + \alpha_7 BIG4 + \varepsilon_{i,t} \quad (1)$$

**Where:**

**REM:** The composite measurement of real earnings management;

**CEO\_AGE:** The age of CEO in years;

**ROA:** Return on assets;

**AFLEX:** Firm flexibility;

**LEV:** Leverage;

**SIZE:** Firm size, Logarithm of total assets;

**BON:** Part of incentive remuneration;

**BIG4:** Binary variable, it take 1 if the firm is audited by a Big 4 and 0 otherwise.

All continuous variables are winsorised at 2%. All t-statistics are calculated using two way clusters (industry and year) to take in consideration for heteroskedasticity and serial correlation (Petersen, 2009).

### Real Earnings Management Measures

This variable is equal to all individual management of real activities. In this study, we will take in consideration three real earnings manipulations;

(1) Sales manipulation: According to Roychowdhury (2006), handling sales is a technique that aims to increase the volume of sales for the current period, following the introduction of discounts and favorable payment terms. This technique helps to reduce the receipts of the company. Therefore, it greatly reduces the level of operating cash flow.

$$\frac{CFO_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta Sales_{i,t}}{AT_{i,t-1}} + \varepsilon_{1i,t} \quad (A)$$

(2) Overproduction: Managers of industrial enterprises (which have a low sensitivity of demand with respect to price), may use overproduction to manage their results. The principle of this technique is to produce more than the normal amounts, general fixed costs are spread over a large number of units, and in this case, the fixed costs of production will be absorbed and reduce the fixed cost per unit. Therefore, cost of goods sold will decrease automatically generating greater operating margin (Roychowdhury, 2006). However, the company will incur additional costs of production and relative storage generated by the additional production not sold. Therefore, the operating cash flow is lower than the normal level in relation to sales. All things being equal, the marginal cost of production and additional storage

will result in increased production costs compared to annual sales.

$$\frac{PROD_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta Sales_{i,t}}{AT_{i,t-1}} + \alpha_4 \frac{\Delta Sales_{i,t-1}}{AT_{i,t-1}} + \varepsilon_{2i,t} \quad (B)$$

(3) Manipulation of discretionary expenses: Discretionary expenses are paid in the same period they are incurred. To meet its short-term objectives of increasing its profit for the current year, the company can reduce discretionary spending by reducing expenditures reported. Indeed, these expenses do not generate immediate revenue, they are in the form of cash, and therefore reducing such spending reduces cash outflows increasing cash flow from operations for the current period (Roychowdhury, 2006).

$$\frac{DISC_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{AT_{i,t-1}} + \varepsilon_{3i,t} \quad (C)$$

With;

CFO: Operating cash flow; PROD: Production costs equal to cost of goods sold plus inventory variation; DISC: Discretionary expenses, equal to R& D, advertising and selling, general and administrative expenses; Sales: Turnover; AT: Total assets;  $\varepsilon$ : The measure of real earnings management. All models are estimated for each year t from 2010 to 2015 and for each sector (identified by the first two SIC codes) with at least 15 observations (first two SIC codes-year).

We establish a global measurement of real earnings management. Residual values of models (A) and (C) are multiplied by (-1), because when handling sales and / or discretionary spending, the actual operating cash flows and discretionary spending below the actual respectively operating cash flows and estimated discretionary spending (or normal). To bring changes in various processes into a single unit (Cohen and Zarowin, 2010; Cohen et al., 2008; Chi et al., 2011), this measure is the sum of all the operations of the three standardized residuals. The larger this measure, the greater the degree of manipulation of the real activities of the company.

$$REM_{i,t} = -SR(\varepsilon_{1i,t}) + SR(\varepsilon_{2i,t}) - SR(\varepsilon_{3i,t})$$

(D)

### Control Variables

We control for variables that prior studies suggest are determinants of real earnings management. We include the variables MB and ROA ratios to control for firm growth opportunities. We include this variable since According to Jensen and Meckling (1976), agency conflicts vary with growth opportunities. The more the company has growth opportunities it will need external financing. Consequently, the costs of monitoring officers will increase to force the leader to manage earnings. We therefore expect a negative relation between this ratios and real earnings management.

We include accounting flexibility (AFLEX), Barton and Simko (2002) measured this variable as net operating assets divided by the amount of sales. This variable reflects the reduction in the power manager to use accounting earnings management. Barton and Simko (2002) shown that the ability of managers to manage earnings via accruals decreases with the amount of net operating assets on the balance sheet (Hribar and Yang, 2015). Indeed, because of the interdependence between the balance sheet and the income statement, earnings management to increase in parallel increases the amount of operating assets in the balance sheet. In return for this, operating assets may force leaders or limit their ability to manipulate earnings via accruals. Companies that have low flexibility accounting are more likely to use real earnings management (Ge and Kim, 2010). We assume that the relationship between real earnings management and accounting flexibility is negative.

We include SIZE and LEV to control for the intensity of agency conflicts. In fact, the larger

is company the greater heterogeneous of its ownership structure is, so it is exposed to large agency conflicts (Leftwitch et al., 1981). The same think when the corporate financial structure is diversified. With the increase of agency conflicts, investors impose to firm strengthen internal and external governance mechanisms, in order to reduce its discretion. Also in the same direction and ideas, these companies are usually pursued by a large number of financial analysts, which encourages managers to allow more earnings management. Therefore, we suppose that the relation with real earnings management is positive.

BON variable are included in model to capture the incentive remuneration. According to agency theory, incentive compensation aligns the interests of executives with those of shareholders and reduces allowing to earnings management. We expect a positive relationship between incentive compensation and real earnings management.

We include BIG4 to control for the effects of auditor quality. Extant literature suggests that firms audited by Big 4 auditors are less likely to allow earnings management (Frankel et al., 2002). We therefore expect a negative coefficient on the variable BIG4.

## EMPIRICAL RESULTS

### *Univariate Analysis*

Table 2 summarizes the descriptive statistics for all variables included in this study. The CEO Age is about 57 years old, with relatively a high deviation (8.15). In average American firms, have good investment opportunities. The mean of accounting flexibility is about 50%, which can explain the excessive allowing to real activities manipulation. In average, the part of incentive remuneration of CEO is 13 %. The majority of the firms in our data are audited by a BIG4.

### **TABLE 2 HERE**

### **Variable definitions**

**REM:** The composite measurement of real earnings management;

**CEO\_AGE:** The age of CEO in years;

**ROA:** Return on assets, business Income/total assets;

**AFLEX:** Firm accounting flexibility, net operating assets/total sales;

**LEV:** Leverage, long term liabilities/total assets;

**SIZE:** Firm size, Logarithm of total assets;

**BON:** Part of incentive remuneration, bonus/total remuneration of CEOs;

**BIG4:** Binary variable, take 1 if the firm is audited by a Big 4 audit firm and 0 otherwise.

In table 3 we expose in panel A the correlation matrix (Pearson) and in panel B the variance inflation factor (VIF) between all variables in the model.

#### TABLE 3 HERE

Referring to Panel A in table 3, we can firstly note that there is no problem of correlation between the variables, and then we see that the relationship between CEO age and real earnings management is positive.

Generally, when the value of the variance inflation factor (VIF) is high it can be explained as a problem of multicollinearity. VIFs values presented in Panel B of table 4 are all less than 10; this indicates that multicollinearity is kept to acceptable levels in our model.

#### **Multivariate Analysis**

Table 4 reports the results of model (1) for the impact of CEO Age and real earnings management. Contrary to our expectations, the coefficient of the interest variable is positive and significant at 1%. This result indicates that real earnings management increase with age of CEO, older CEOs allow more on real earnings management compared to younger. Therefore, our results do not support our main hypothesis.

As inspected ROA and MB are negatively and significantly ( $p < 0.000$ ) associated on real earnings management. The coefficient of the accounting flexibility is negative and significant at

1%, supporting that when firm allow to real earnings management when it exhausts its accounting capacity. Levered firms use more manipulation via real activities in order misleads their stakeholders.

#### TABLE 4 HERE

SIZE and BON have both positive and significant influence on real earnings management. BIG4 have a significant and an inverse relation with real earnings management, indicating that firms audited by a BIG external auditor have a higher quality financial reporting.

#### *Additional Analysis*

In order to explore more our results, we run a second model to determine the monotony of the relation between CEO Age and real earnings management.

$$REM_{i,t} = \alpha_0 + \alpha_1 CEO\_AGE_{i,t} + \alpha_2 CEO\_AGE^2 + \alpha_3 ROA_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 AFLEX_{i,t} + \alpha_6 LEV_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 BON_{i,t} + \alpha_9 BIG4 + \varepsilon_{i,t} \quad (2)$$

The results presented in table 6 shown a non-monotonic the relation between CEO age and real earnings management, it is a U-shaped relationship because the coefficients on CEO\_AGE and CEO\_AGE<sup>2</sup> variables are respectively negative and positive and both significant at 1%. This convex relation suggests the existence of a critical age (around 46 years CEO old) before which CEOs decrease allowing to real earnings management and after which they tend to increase real earnings management as their age rises and approaches to retirement age.

#### TABLE 5 HERE

These results confirm that real earnings management is a very sophisticated manipulation technique that requires great mastery of the real activities of the firm. This mastery comes from experience and the age. Moreover, several studies confirm that the degree of overconfidence and narcissism increases with age. Although, younger CEOs are willing to take more risks in their decisions, we note in this study that this is not the case with real activities manipulation. We can attribute this behaviour to the lack of experience and that real manipulation is very risky technique

that may have adverse consequences on the sustainability (Gunny, 2010) of the company while young CEOs want to develop their human capital.

## CONCLUSION

The purpose of this study is to verify the impact of CEO Age on real earnings management. This research is motivated by the assumption that CEO characteristics have an impact on quality of financial reporting and that opportunism behavior decrease with their age old. Using a sample of 642 public American firms from the period 2010 to 2015, we find a significant and positive association between CEO Age and real earnings management. This suggests that older CEOs are more likely to manage earnings through real activities; in addition, this relation is not monotonic but has a U-Shape, the tendency of the curve change from 46 years.

Our study contributes to the existent literature on accounting by identifying that CEO Age is a determinant component of real earnings management. In additional, our study has useful implications for financial statement users and accounting profession. Firstly, the different stakeholders of firms managed by an old CEO should be more careful when evaluating the quality of firm's financial statements. In addition, external auditors and SEC should be more diligent when dealing with financial reports elaborated by old CEOs.

Future extension of this study may examine other CEO Characteristics (e.g tenure, gender, religion, matrimonial situation) on real earnings management.

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## APPENDIX

**TABLE 1: Distribution of sample by industry**

Industry	Total
Manufacturing	185
Retail Trade	167
Services	154
Wholesale trade	136
<b>Total</b>	<b>642</b>

**TABLE 2: Descriptive statistics**

Variables	Mean	Std. Dev	Q1	Median	Q3
REM	0.01	2.32	-1.34	0.03	1.46
CEO_AGE	57.23	8.15	53	58	64
ROA	0.03	0.08	0.03	0.07	0.09
MB	2.97	2.38	1.43	2.42	3.65
AFLEX	0.54	0.45	0.18	0.34	0.632
LEV	0.14	0.13	0.02	0.12	0.24
SIZE	7.27	1.44	6.15	7.09	8.11
BON	0.13	0.15	0	0.04	0.18
BIG4	0.93	0.25	1	1	1

**TABLE 3 : Regression Results**

$$REM_{i,t} = \alpha_0 + \alpha_1 CEO\_AGE_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 MB_{i,t} + \alpha_4 AFLEX_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 SIZE_{i,t} + \alpha_7 BON_{i,t} + \alpha_8 BIG4 + \varepsilon_{i,t}$$

Variables	Expected sign	Coefficient	t-Student	p-value
Intercept	+/-	1.43	5.13***	<.0001
CEO_AGE	-	0.012	3.78***	0.0002
ROA	-	-4.57	-9.59***	<.0001
MB	-	-0.22	-15.74***	<.0001
AFLEX	+	-1.35	-12.29***	<.0001
LEV	+	2.39	9.15***	<.0001
SIZE	+	-0.15	-6.49***	<.0001
BON	+	-0.44	-1.76*	0.0795
BIG4	-	-0.38	-2.33**	0.0304
Adj. R <sup>2</sup>	20.26%			
Fisher	61.33			

**p-value** <.0001  
**N** 3852

\* See variable definitions in table 3.

All t-statistics are calculated using two way clusters (industry and year) to take in consideration for heteroskedasticity and serial correlation (Petersen 2009).

\*\*\*, \*\* and \* indicate respectively significance at 1%, 5% and 10%.

**TABLE 4: Additional analysis**

$$REM_{i,t} = \alpha_0 + \alpha_1 CEO\_AGE_{i,t} + \alpha_2 CEO\_AGE^2 + \alpha_3 ROA_{i,t} + \alpha_4 MB_{i,t} + \alpha_5 AFLEX_{i,t} + \alpha_6 LEV_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 BON_{i,t} + \alpha_9 BIG4 + \varepsilon_{i,t}$$

Variables	Expected sign	Coefficient	t-Student	p-value
<b>Intercept</b>	+/-	4.88	4.58***	<.0001
<b>CEO_AGE</b>	-	-0.27	-2.72***	0.005
<b>CEO_AGE<sup>2</sup></b>	+	0.14	3.47***	0.0011
<b>ROA</b>	-	-4.61	-9.46***	<.0001
<b>MB</b>	-	-0.53	-15.73***	<.0001
<b>AFLEX</b>	+	-1.42	-12.48***	<.0001
<b>LEV</b>	+	0.31	10.20***	<.0001
<b>SIZE</b>	+	-0.22	-6.15***	<.0001
<b>BON</b>	+	-0.53	-1.99*	0.0710
<b>BIG4</b>	-	-0.27	-2.31**	0.0381
<b>Adj. R<sup>2</sup></b>	21.34%			
<b>Fisher</b>	61.42			
<b>p-value</b>	<.0001			
<b>N</b>	3852			

\* See variable definitions in table 3.

All t-statistics are calculated using two way clusters (industry and year) to take in consideration for heteroskedasticity and serial correlation (Petersen 2009).

\*\*\*, \*\* and \* indicate respectively significance at 1%, 5% and 10%