



## The Moderating Effect of Audit Quality on CEO Compensation and Tax Avoidance: Evidence from Tunisian Context

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### ABSTRACT

The purpose of this paper is to examine the effect of CEO compensation on corporate tax avoidance. It is also investigated the moderating effect of corporate governance, especially the audit quality on this association. We use a sample of 67 firms listed on the Tunisian stock exchange from 2013 to 2016. Based on GLS regression models, we find that there is a positive and significant relationship between CEO compensation and corporate tax avoidance. This result advances that managers are willing to engage in risky activities that provide them additional compensation by extracting rents from tax-saving positions. However, we find a negative association between variable CEO compensation and tax avoidance in well-audited firms, supporting the moderating effect of audit quality on the relation between CEO compensation and tax avoidance. These findings suggest that audit quality is efficient corporate governance, while protecting users against the opportunistic and fraudulent actions of managers.

**Keywords:** Tax Avoidance, CEO Compensation, Audit Quality

**JEL Classifications:** G30, G32, G34

### 1. INTRODUCTION

Tax is a major concern for companies because its impact on competitiveness. Indeed it remains a misfortune and is considered as a significant cost for companies because it removes a part of the benefits without apparent and immediate compensation. In this context, firms are no longer content to fulfill their obligations and pass from a passive management of the tax burden to a proactive one. Indeed, the manager is called to adopt strategies aimed to minimize the tax instead of undergoing it. Tax avoidance is considered a major problem that threatens the economy. For this reason, tax avoidance has attracted the interest of several recent researches. The latter have studied its determinants such as size, leverage, performance, ownership structure and corporate governance (Graham and Tucker, 2006; Dyreng et al., 2008; 2010; Rego and Wilson, 2012; Annuar et al., 2014; Badertscher and Rego, 2013; Chen et al., 2016; Chee et al., 2017; Gaaya et al., 2017).

However, we noticed that the relationship between tax avoidance and CEO compensation has not been sufficiently studied in the accounting literature whereas they seem to be associated because of their dependence to the firm benefit. Indeed, tax avoidance is considered as risky practice and it depends heavily on the decision of the manager, his orientations and especially his motivations. Few recent studies have recognized CEO compensation as one of the determinants of tax avoidance (Phillips, 2003; Desai and Dharmapala, 2006; Dyreng et al., 2010; Gaertner, 2011; Rego and Wilson, 2012; Ohnuma, 2014; Armstrong et al., 2015; Hsieh et al., 2016; Chee et al., 2017). These studies were based on two competing theories to explain the effect of CEO compensation on tax avoidance. The first theory anticipates a positive relationship between CEO compensation and corporate tax avoidance, because managers make choices that maximize the value of their compensation. Indeed, executive compensation enables them to adopt a behavior that is in line with shareholders' interests.

Thus, the objective of any form of managerial incentive is to make more intimate the link between the firm value and the well-being managers so as to thwart their eventual opportunism. The second theory advances that tax avoidance facilitate managerial rent extraction. Indeed, based on the two theory, the relationship between CEO compensation and corporate tax avoidance is ambiguous: on one side, well paid managers would are more tax aggressive position than low paid one, in order to increase the firm value, and on the other side, decreasing the level of tax avoidance is related with managerial rentextraction. For this reason, Desai and Dharmapala (2006), Ohnuma (2014) and Gaaya et al. (2017) considered corporate governance as a monitoring structure that allows disciplining managers and reducing there opportunistic behavior especially when it concerns tax avoidance. They examined their model across well-governed and weakergoverned firms and found that the association between CEO compensation and tax avoidance varies depending on the strength of corporate governance. Thus, we will study in this paper the moderating effect of corporate governance on the association between CEO compensation and tax avoidance.

This study contributes to the literature of tax avoidance triply. First, we tried to specify the nature of the relationship between CEO compensation and the tax avoidance in an emerging country. Tunisia faces many economic challenges today, particularly after being classified by the European Union in the blacklist of tax haven countries. This ranking will encourage him to initiate a series of reforms, especially in terms of taxation. We, then, study the behavior of managers in tax avoidance and their response to these challenges. Secondly, until now, the empirical studies are carried out for the most part in the Anglo-Saxon countries following the availability of the data since the information on CEO compensation is obligatory since 1934 in the United States. More recently, in France and with the law of New Economic Regulations of 2001, listed companies are obliged to disclose the compensation of managers. However, in Tunisia, it was not until the occurrence of the lawn from 2009 to 2016 of March 16, 2009 to break with the silence on CEO compensation in Tunisia. Third, the Tunisian financial market is emerging, where the minority shareholders are not well protected and the governance is a weakly regulated field. It is therefore appropriate to study the effectiveness of governance and in particular, if the audit quality moderate the effect of CEO compensation on tax avoidance. Audit quality is considered one of the most effective governance mechanisms because it protects users against the opportunistic and fraudulent actions of managers. Therefor, if the audit is of high quality, managers are less motivated to engage in in tax-saving positions to extract higher rents, because they would bear damaging consequences if tax authorities detect aggressive positions.

We use a sample of 67 firms listed on the Tunisian stock exchange from 2013 to 2016. Based on GLS regression models, we find that there is a positive and significant relationship between CEO compensation and corporate tax avoidance. This finding suggests that managers are willing to engage in risky activities that provide them additional compensation. Thus, the objective of any form of managerial incentive is to make more intimate the link between the firm value and the well-being managers so as to thwart their

eventual opportunism. However, this relationship varies depending on the audit quality. Thus, we find a negative association between CEO compensation and tax avoidance in well-audited firms.

The remainder of the paper is as follows. Section 2 develops literature review and hypotheses, firstly on the relation between tax avoidance and CEO compensation and secondly on the moderating effect of audit quality. Section 3 presents the sample, data and methodology. We discuss our results in Section 4. The last section concludes the paper.

## 2. THE LITERATURE REVIEW AND RESEARCH HYPOTHESES

### 2.1. CEO Compensation and Corporate Tax Ovoidance

For decades, corporate tax avoidance has been of interest to researchers. Prior accounting studies have identified several firm characteristics as sources of variation in a level of corporate tax avoidance such as size, leverage, capital intensity and profitability. Gupta and Newberry (1997) found that higher tax avoidance is associated with lower profitability, but higher leverage and capital intensity. Other accounting studies interested on the effect of manager on tax avoidance practice. According to the Harvard model, we consider the manager as the designer of the firm strategy especially when it concerns the tax. Hsieh et al. (2016) studied the impact of whether CEO and CFO overconfidence on corporate tax avoidance behavior. They supported the hypothesis that firms with overconfident CEO/CFO are more likely to engage in tax avoidance activities, relative to firms with non-overconfident CEO/CFO. By adopting a multivariate regression models, they found that firms with overconfident CEOs and overconfident CFOs are more likely to engage in tax avoidance activities when compared to firms with non-overconfident CEOs and CFOs. To strengthen their study, they introduce CFO overconfidence in a regression associated tax avoidance to CEO Overconfidence. They found that the association between CEO overconfidence and corporate tax avoidance activities is mitigated by CFO overconfidence. Even if CEOs do not have enough tax expertise, they can be influenced by overconfident CEOs and engage in tax avoidance activities. In this context, Mills and Law (2014) investigated the managerial characteristics which explain managers' behavior towards the tax. Managerial characteristics selected include age, tenure, gender, military experience, MBA education, great depression, graduation in recession, overseas, republican affiliation and % stock options. They found that these characteristics are not strongly associated with corporate tax avoidance except the military experience. Indeed, firms directed by managers with military experience have higher effective tax rates (ETR), indicating that they engage in less aggressive tax activities, because the ETR is an inverse function of tax avoidance (Frank et al., 2009). Accordingly, Dyreng et al. (2010) looked for the determinants of corporate tax avoidance related to manager's characteristics and which can not be explain by firm characteristics. Among the manager's characteristics, they choose the educational background, gender, age, tenure, experience, moves as a steam, optimism and overconfidence. There sample includes 12,958 firm-years of data, corresponding to 1,138 distinct firms, and

908 distinct executives. The regressions indicate that, generally, biographical information are not determinants of corporate tax avoidance because the level of this practice don't vary according to executives. The authors concluded that executives have no impact on corporate tax avoidance. Rather they insist that these findings are evidence that common, observable characteristics are not associated with tax avoidance. Thus, we believe, that there are other factors related to managers such as his compensation.

Relatively, very few researchs have examined the association between CEO compensation and corporate tax avoidance. The pioneering study that examined the effect of manager incentives on tax avoidance is that of Phillips (2003). Based on a sample of 209 corporate executives, the author checked the incidence of compensating CEO and business unit managers based on pre-tax or after-tax earnings on tax avoidance activities. He shows that compensating business unit managers, but not CEOs, based on after-tax earnings increases the level of tax avoidance. He explained the insignificant association between CEO after-tax incentives and corporate tax avoidance by the existence of other forms of compensation which are sufficient for them without engaging in risky activities. Phillips (2003) also noted that compensating CEO based on after-tax earnings has an indirect effect on tax avoidance because CEO who is compensated on after-tax earnings is more likely to compensate their business unit managers on after-tax basis.

Likewise, Desai and Dharmapala (2006) investigated how stock-based compensation affects corporate tax strategy. To defend their study, they relied on two competing theory. The first theory anticipates a positive relationship between CEO compensation and corporate tax avoidance, because managers make choices that maximizing the value of their compensation. Indeed, executive compensation enables them to adopt a behavior that is in line with shareholders' expectations. Thus, the objective of any form of managerial incentive is to make more intimate the link between the firm value and the well-being managers so as to thwart their eventual opportunism. The second theory advances that tax avoidance facilitates managerial rent extraction. In this context, corporate governance intervenes to mitigate the effect of CEO compensation on tax strategy, because weak corporate governance facilitates managerial rent extraction from tax strategy. In front of these two theories, Desai and Dharmapala (2006) investigate their model across well-governed and weaker-governed firms. Their results suggest that there is a negative and significant association between CEO compensation and corporate tax avoidance in weaker-governed firms. In other side, Gaertner (2011) tested the impact of CEOs' after-tax incentives and corporate tax avoidance. Based on a cross section of 1298 firms observed during 2005, he found a positive relationship between the use of after-tax incentives and corporate tax avoidance. Likewise he determined that after-tax incentives has a significant and positive impact on total CEO compensation. This result advances that managers who are compensated after-tax require an additional risk premium. Based on a sample of US firms from 1992 through 2010, Chee et al. (2017) studied the effect of CEO compensation on corporate tax avoidance. Through cross-sectional estimation regression, they found a non linear relationship between the two variables. Their findings suggest

that the corporate tax avoidance increases below a certain level of CEO compensation, and then declines to a higher one. In other words, at low levels of incentives, there is a positive relationship between CEO compensation and corporate tax avoidance because the managers are willing to engage in risky activities that provide them additional compensation. However, at high levels of incentives, there is a negative relationship between the two variables because managers are not longer motivated to take risky actions. This non-linear relationship between corporate tax avoidance and CEO compensation was explained by the existence of two different forces namely, the incentive alignment effect and the risk reduction effect.

Using quantile regression and a sample of 4128 firm-year observations, Armstrong et al. (2015) studied the relationship between managerial incentives and corporate tax avoidance. They found a significant and positive association between two variables suggesting that risk taking equity incentives motivate managers to engage in risky activities like tax avoidance. Similarly, Rego and Wilson (2012) advanced that if managers believe that more aggressive tax avoidance increases stock price volatility, the relationship between managerial incentives and corporate tax avoidance would be positive. In this context, Ohnuma (2014) investigated the association between the executive compensation and risk avoidance activity. By referring on Guay's (1999) theory of equity risk incentives, it is anticipated that equity risk incentives motivate managers to engage in risky tax activities. Thus, the author used a simultaneous system of equations on a Japanese sample of 16895 year-observations from 2006 to 2010. His results suggest that the CEO compensation is significantly associated with corporate tax avoidance. However tax avoidance practice is not necessarily associated with a high level of CEO compensation. According to previous literature review, managers make choices that are consistent with maximizing the value of their compensation, thus we predict that the manager must be motivated to engage in risky activities such as tax avoidance that increases the firm value. Our first hypothesis is then as follows:

Hypothesis 1: There is a positive association between CEO compensation and the level of corporate tax avoidance.

## 2.2. Moderating Effect of Audit Quality

Accordingly to Desai and Dharmapala (2006), tax avoidance facilitates managerial rent extraction and could strengthen its opportunistic behavior. Indeed, managers can profit through tax-saving strategies. In this context, corporate governance intervenes to reduce the managerial power especially in tax strategy. Kim et al. (2011) advanced that corporate tax avoidance reduces stock crash risk in well-governed firms. In this context, Armstrong et al. (2015) confirmed that manager can abuse and engage in tax avoidance activities in low-governed firm. Likewise, Kiesewetter and Mantney (2017) and Pilos (2017) found that good governance structure reduces level of tax avoidance.

Audit quality is considered one of the most effective governance mechanisms because it protects users against the opportunistic and fraudulent actions of managers. According to recent accounting literature, if the audit is of high quality, managers are less motivated

to engage in corporate tax avoidance, because they would bear damaging consequences if tax authorities detect aggressive positions. Richardson et al. (2013) show that, if the firm is audited by a BIG4 and the services of the external auditor have a low proportion of non-audit services, it is less likely to adopt aggressive tax strategies. More recently, Langli and Willekens (2017) examined the effect of horizontal agency costs associated with concentrated ownership, CEO ownership and family ownership on corporate tax avoidance in private firms. They, also, tested if high-quality auditing improves these agency costs through its impact on tax avoidance. Using a sample of Norwegian firms from 2000 to 2014, they found that high audit quality improves the credibility of financial information, which will reduce agency costs, allowing them to avoid tax without adopting aggressive tax strategies. Using an international sample included 31 countries, Kanagaretnam et al. (2016) investigated the effect of audit quality on corporate tax aggressiveness. To measure tax aggressiveness, the authors use a dummy variable, which equal to one if the firm's corporate tax avoidance measure is within the top quintile of each country-industry combination and equal to zero otherwise. Their findings suggest that audit quality is significantly and negatively related to tax aggressiveness and this association is more noticed in countries where investor protection is stronger, auditor litigation risk is higher, the audit environment is better, and capital market pressure is higher. The authors explained their result that high quality auditors are interested about tax avoidance activities, because their involvement in such a practice hurts their reputation and exposes them to litigation. Thus, they try to detect this risky practice and to reduce it in order to save their reputation on the market.

Similarly, Donohoe and Knechel (2014) advanced that firms' greater tax aggressiveness could expose the auditor to litigation and reputational costs, and then, audit effort depend of firms' tax strategy. They noted that auditors demand a higher fee premium to firms who are more tax aggressive, to cover their exposure to risk. More recently, Gaaya et al. (2017) studied the mitigating effect of audit quality on the association between ownership structure and corporate tax avoidance in Tunisia. They found a positive and significant association between family ownership and tax avoidance. This association is moderated by audit quality as a mechanism of governance.

Accordingly, we predict that if the audit is of high quality, managers are less likely to adopt aggressive tax strategies. Thus, because weaker-governed firm facilitates managerial rent extraction from tax strategy, whereas, well governed firm will have negative incidence on corporate tax avoidance levels, leading these managers to be less opportunistic. We then formulate our second hypothesis:

Hypothesis 2: There is a negative association between CEO compensation and tax avoidance in well-audited firms.

### 3. DATA, VARIABLES, MODELS, AND EMPIRICAL METHODOLOGY

Our research design consists of the following four steps detailed in the subsections that follow: First, we select the sample

and justify such selection. Second, we present the variables' measurements. Third, we present the model specification and estimation methodology. Finally, we outline our results in section 4.

#### 3.1. Sample of the Study

Our sample includes all firms listed on the Tunisian Stock Exchange between 2013 and 2016. The sample consists of 67 listed companies. Tax data and firm characteristics were extracted from the financial statements of listed companies available on the Tunisian Stock Exchange Website. Information about CEO compensation and audit quality were hand collected from the audit reports of listed companies available in the center of Financial Market Council information. We exclude observations with negative pre-tax income. The final sample includes 266 firm-year-observations.

#### 3.2. Variables Measurement

##### 3.2.1. The dependent variable

The previous accounting literature could not determine the most reliable measure of corporate tax avoidance (Ohnuma, 2014). For this reason and in order to effectively detect all forms of managerial behavior that aims to minimize the tax burden, we use 2 tax attributes including the ETR and Book-Tax Differences (BTD). The ETR is the most used measure in the previous accounting literature to represent tax avoidance. Indeed, the ETR measures the effectiveness of corporate tax management activities (Mills et al., 1998; Phillips, 2003). In general, the ETR is refers to total tax expense scaled by the pre-tax income (Armstrong et al., 2010; Chen et al., 2010). ETR is an inverse function of corporate tax avoidance, as higher values of ETR, the less firms are involved in the tax avoidance practices (Frank et al., 2009). The BTD is a also a measure of tax avoidance which is used frequently in tax literature. This gap represents the differences between the firm's pre-tax book income and the taxable income which serves to detect all the attempts of the tax avoidance (Cheng et al., 2012). This variable refers to the firm's pre-tax book income minus estimated taxable income scaled by total assets (Lin et al., 2014). To calculate the BTD of each company, we must first determine the taxable income based on the tax expense divided by the applied tax rate ie 35%. Thus, BTD is a proportional function of corporate tax avoidance, as the higher the BTD values, the more firms are involved in the tax avoidance practices.

##### 3.2.2. The independent variables

###### 3.2.2.1. Managerial compensation (CEO\_Comp)

Generally speaking, managerial compensation can be classified in two categories. Firstly a fixed compensation, measured by the fixed salary. This form of payment is independent of the firm performance and always being earned by the manager. Secondly, a variable compensation which depend of a series of performance measures. This catégorie is measured by the bonus and stock options. Accordingly to Larcker and Tayan (2011), the executive compensation package generally includes the annual salary<sup>1</sup>, the

<sup>1</sup> The annual salary present the fixed cash payment made evenly during the course of the year and it is typically set at the beginning of the year.

**Table 1: Variables, definitions and sources**

Variable	Abbreviation	Definition	Sources
The book-tax differences	BTD	(Pre-tax book income- taxable income)/total assets	Annual report
The effective tax rate	ETR	Tax expense/pre-tax income	Annual report
The CEO’s compensation	CEO_PAY	The natural logarithm of total fixed compensation and incentive compensation paid to the managers	Audit report
Audit quality	Big4	Dummy variable taking the value 1 if the firm is audited by BIG4 and 0 otherwise	Audit report
Firm leverage	LEV	The ratio of total long-term debts scaled by total assets	Annual report
Firm performance	ROA	Pre-tax income scaled by total assets	Annual report
Financial	FIN	Dummy variable that equals 1 if the firm is financial and 0 otherwise	Annual report

annual bonus<sup>2</sup> and the stock options<sup>3</sup> that provide substantial rewards to executives only if firm performance is outstanding. This form of payment presents a solution to the conflict which operates between the firm’s partners when it is regularly negotiable, Charreaux (1997). In this study, we use the natural logarithm of the sum of base salary, annual bonus payments and stock and option cash payments.

**3.2.3. Controls variables**

According to the tax literature, we introduce a set of control variables in our regression model that may affect corporate tax avoidance. The firm size has been proposed in the literature as significant variable in explaining variations in tax avoidance. Rodriguez and Arias (2013), Lin et al. (2014), Asfiyati (2012) and Richardson et al. (2013) document a positive and significant influence towards tax avoidance. The authors have shown that the firm’s profit is positively associated with its size and hence attract government’s attention to apply tax payment to taxpayers. Therefore, firms will tend to take action on tax avoidances since a great tax rate will be bigger in an amount of tax paid. In the present study, we measure firm size by the natural logarithm of total assets. Firm leverage, defined as the ratio of total long-term debts scaled by total assets, is included to capture the extent of the tax shield of debt, Mackie-Mason (1990). According to Richardson et al. (2015), Badertscher et al. (2013) and Jalan et al. (2016), a higher level of debt is associated with a lower ETR. Therefore, we predict a positive association between leverage and corporate tax avoidance.

Prior studies’ evidence on the relationship between firm performances, calculated as the pre-tax income scaled by total assets, and tax avoidance is mixed. According to Lanis and Richardson (2012), performance has a positive incidence on corporate tax avoidance because profitable firms seek to reduce their tax burden. However, Irianto et al. (2017) advanced that that any increase in firm performance can be associated with a possibility to perform tax avoidance. Finally, we include a dummy variable that refers to the industry, coded 1 for the financial sector and 0 for the non financial sector. This variable controls the difference in corporate tax avoidance that may occur because of

industry. In addition, we believe that the financial sector is more regulated and therefore this sector is less subject to the practices of tax avoidance. The following table summarizes the selected measures of the different variables.

**3.3. Model Specification and Estimation Methodology**

In order to achieve our objective, we use the panel data method. In order to identify the existence of heteroscedasticity problems and autocorrelation of errors, we use the Breush-Pagan-Godfrey test, the Wald test and the Wooldridge test respectively. It is in this context that these problems are then resolved using GLS estimation. In the first step, the econometric formulation proposed in this study examines the impact of CEO Compensation on corporate tax avoidance. We test the first following regression model:

$$\text{Tax avoidance}_{it} = \beta_0 + \beta_1 \text{CEO\_PAY}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{FIN}_{it} + \epsilon_{it} \tag{1}$$

In the second step, we looked at the main effect for the moderator variable to determine the relationship between CEO compensation and tax avoidance. The role of mediating and moderating variables is increasingly attractive in demonstrating management theories. According to Aiken and West (1991) and Saunders (1956), the interaction between Independent and dependent variables generates a change in the intensity and/or the form of the relationship between the independent variable and the dependent variable. In the same way, the moderator variable interacts with the independent variable to influence the dependent variable. This interaction corresponds to a nonlinear effect since the combined influence of the independent and moderating variables on the dependent variable is either larger or smaller than the sum of their separate influence.

Several methodological approaches have been used to test the moderating role of a variable. We note the analysis of variance<sup>4</sup>, (Aguinis, 1995; Baron and Kenny, 1986), the Multi-Group Analyzes<sup>5</sup> (MacKenzie and Spreng, 1992) and the

2 The annual bonus present the additional payment usually in the form of cash awarded if the yearly performance of the company exceeds specified financial and nonfinancial targets. It is expressed as a percentage of base salary and might include a guaranteed minimum and specified maximum.

3 The stock options present the right to buy shares in the future at a fixed exercise price, generally equal to the stock price on the grant date.

4 The analysis of variance (ANOVA) is generally used when the independent and moderating variables are categorical, especially dichotomous. Nevertheless, it has two limitations: it is not adapted to latent, ordinal and continuous variables.

5 Based on this method, the groups are formed according to the different levels of the moderating variable. After applying the regression analysis to each group, if the estimates of the coefficients are different between the groups, the moderating effect is established. This method has the advantage of being simple and proven. However, it does have two limitations: (1) the loss of

Multiple Regression Method (Jaccard and Turrisi, 2003). In order to overcome the limitations of the two preceding methods, the multiple regression method is then used. To examine the moderating effect of a variable Z on the relationship between a dependent variable and an independent variable  $X_p$ , the product of two variables  $X_p * Z$ , which represents the non-linear interaction effect, is first calculated. Two regressions are then tested. The first is a test of the main effects of  $X_p$  and Z on Y. The second regression is conducted after introducing the multiplier term  $X_p * Z$ .

$$Y = a + b_1 X_p + B_2 Z \tag{a}$$

$$Y = a + b_1 X_p + B_2 Z + b_3 X_p * Z \tag{b}$$

The moderating effect of Z is detected when the relationship (b) is significant. According to El Akremi (2005), the determination coefficient  $R^2$  of regression (b) must also be better than that of the regression (a) to show that the addition of the moderator effect improves the predictive ability of the model. However, the detection and estimation of the moderator effect will be lower under Use of the Moderate Multiple Regression Method in the case of using unreliable measurements, dichotomous variables, a small sample size and the presence of strong multicollinearity among the independent variables (Aguinis and Stone-Romero, 1997). To examine the moderating effect of audit quality as a governance mechanism, we introduce an interaction variable between the CEO Compensation and audit quality and we test the following model:

$$\text{Tax Ovoidance} = \beta_0 + \beta_1 \text{CEO\_PAY}_{it} + \beta_2 \text{CEO\_PAY}_{it} * \text{Big}_4 + \beta_3 \text{SIZE}_{it} + \beta_4 \text{LEV}_{it} + \beta_5 \text{ROA}_{it} + \beta_6 \text{FIN}_{it} + \varepsilon_{it} \tag{2}$$

Where: Big 4 refers to Audit Quality which is measured by a dummy variable to proxy for audit quality (BIG4). This variable takes the value of 1 if the firm is audited by a Big4 company and 0 otherwise.  $\text{CEO\_PAY} * \text{Big}_4$  is the interaction term between CEO Compensation and audit quality.

## 4. DATA ANALYSIS AND DISCUSSION OF RESULT

This section presents the descriptive results of the study, the correlation matrix and the results of hypotheses testing.

### 4.1. Descriptive Statistics

Table 2 present's descriptive statistics for the 266 firm-years in our sample and shows tax attributes including ETR and BTD. The ETR is calculated as total tax expenses scaled by pre-tax income. This table reveals a 17% average ETR of firms in Tunisia. This argues that Tunisian firms work hard to decrease their tax burden. We also measure firms' Book Tax Differences as total pre-tax book income minus estimated taxable income scaled by total assets (Lin et al., 2014). This table shows a 4% average BTD of firms in Tunisia. These values imply a reasonable level of corporate tax avoidance compared to those found by Lin et al. (2014) and Gaaya et al.

important information due to the dichotomisation of moderating variables to constitute the groups; (2) the reduction of sample size following its sharing into subgroups.

(2017) respectively in the US and Tunisian context. Likewise, the table shows that the standard deviation values for ETR and BTD are respectively 15% and 5%. This indicates that ETR is more volatile than BTD and this is consistent with prior research including Dyreng et al. (2010). These values argue that the firm's behavior towards tax is not so different which confirms the homogeneity of our sample.

Table 2 presents also a series of exogenous variables that will be used to test the impact of CEO Compensation on tax avoidance. These nontax variables are CEO compensation and other moderator variable including audit quality as a mechanism of corporate governance. We notice that the mean values for CEO compensation is 5.21. This value implies a high level of compensation compared to those found by Ohnuma (2014) in Japanese context. Indeed, reading the CEO compensation from the special reports of the auditors, we note that these salaries are not far from those noted in France knowing that French CEO are the best paid behind the English. In front of them are the Swiss and the Americans (Potin, 2009). Likewise, the table shows that the standard deviation value for CEO Compensation is 43%. This indicates that there is a wide disparity in CEO compensation in Tunisia which varies between 2.12 and 6.47.

### 4.2. Correlation Matrix

Table 3 gives the Pearson correlation matrices of the variables in our sample. The correlation matrix between the independent variables shows that the coefficients are low and do not exceed the threshold of 0.8 as indicated by Kervin (1992). Thus the problem of multi-collinearity does not arise, which allows us to keep all the independent variables in the same model.

**Table 2: Descriptive statistics**

Variables	Obs.	Mini.	Max.	Mean	Median	SD
BTD	266	0	0.2952	0.0432	0.0179	0.0577
ETR	266	0	0.9018	0.1741	0.1666	0.1536
CEO_PAY	266	2.1262	6.4713	5.2126	5.1760	0.4379
SIZE	266	6.3061	9.9927	8.2291	8.0535	0.8080
LEV	266	0.0002	0.9928	0.4594	0.4105	0.3450
ROA	266	-0.0789	1.3440	0.0691	0.0363	0.1056

Variables	Modality	Frequency (%)
Big4	1 if the firm is audited by BIG4	101 (37.69)
	0 otherwise	167 (62.31)
FIN	1 if the firm is financial	76 (28.57)
	0 otherwise	190 (71.43)

Obs.: Observations, Min.: Minimum, Max.: Maximum, SD: Standard deviation

**Table 3: Correlation matrix**

	CEO_PAY	Big4	SIZE	LEV	ROA	FIN
CEO_PAY	1					
Big4	0.3200	1				
SIZE	0.3606	0.3342	1			
LEV	0.2573	0.2223	0.5141	1		
ROA	-0.0433	-0.0330	-0.2224	-0.3112	1	
FIN	0.2769	0.1225	0.7270	0.5406	-0.3051	1

This table reports descriptive statistics for a sample of 266 firm-year observations. CEO\_PAY is the amount of fixed and variable payments and is given by the natural logarithm of annual salary payments of the CEO. BIG4 refers to audit quality and measured by a dummy variable taking the value 1 if the firm is audited by BIG4 and 0 otherwise. SIZE is firm size measured by the natural logarithm of total assets. LEV is the ratio of total long-term debts scaled by total assets. ROA is the ratio of return on assets calculated as the ratio of pre-tax income scaled by total assets. FIN is a dummy variable that equals 1 if the firm is financial and 0 otherwise

### 4.3. Findings

Table 4 shows the results of the incidence of CEO compensation on corporate tax avoidance using two proxies of this last: ETR and BTD. We find that the association between CEO-Compensation and BTD is positive and statistically significant at level of 5%, suggesting that the more the compensation increases, the more the tax avoidance practices increases. These results support our first hypothesis suggesting that the managers are willing to engage in risky activities that provide them additional compensation. Our empirical findings are consistent with those of Armstrong et al. (2015), Ohnuma (2014) and Rego et al. (2012) who studied the relationship between managerial incentives and corporate tax avoidance. They found a significant and positive association between CEO compensation and tax avoidance suggesting that risk taking equity incentives motivate managers to engage in risky activities.

These results confirm the theory which advances that executive compensation enables managers to adopt a behavior that is in line with shareholders' expectations which facilitate managerial rent extraction. However, we find a negative association between CEO-Compensation and ETR, suggesting that the more the compensation increases, the more the tax avoidance practices increases, yet the coefficient is negative because ETR is an inverse function of tax avoidance. But this relationship is not statistically significant, this result can be explain that a major part of executive compensation is fixed, especially in Tunisia information on the variable and fixed payment is not available.

Regarding the control variables, table 4 shows that there is a negative and statistically significant association at level of 1% between firm size and ETR (thus the association between tax avoidance and CEO compensation is positive knowing that the ETR is an inverse function of tax avoidance so if the coefficient is negative, the relationship between the two variables remains positive). This relationship remains positive when we use the BTD measure. Thus large firms are more likely to engage in tax avoidance practices than small ones. These results are consistent with those of Lin et al. (2014) and Richardson et al. (2013) who argued that large firm engage in tax avoidance because they are able to withstand the adverse effects of this practice. While, our empirical results do not support those of Gaaya et al. (2017) in Tunisian context. They advanced that larger firms are less tax aggressive because they care about loss of reputation and their market value. We also find a negative and statistically significant relationship between leverage and BTD at level of 5%. Contrary to Richardson et al. (2015), Badertscher et al. (2013) and Jalan et al. (2016), we confirm that the most indebted firms are less tax aggressive in order to be legitimate and to improve their reputation towards the market. We find that profitability is positively and significantly associated with tax avoidance at level of 1% when we use BTD measure and at level of 5% when we use the ETR one. Firms with a higher return on assets have more incentive to engage in higher corporate tax avoidance because profitable firms seek to reduce their tax burden. This result does not support those found by Richardson et al. (2013) and Gaaya et al. (2017). Finally, we find a negative and statistically significant association at level of 1% between financial firms and corporate tax avoidance. Therefore

financial firms are less likely to engage in aggressive tax positions. This result suggests that financial sector is more regulated, which proves the monitoring role of the central bank of Tunisia.

Table 5 reports the regression results of moderating effect of audit quality on the association between CEO-compensation and corporate tax avoidance. In the second empirical model which introduce the interaction variable of audit quality, the result shows that the association between tax avoidance and CEO compensation becomes negative and statistically significant at level of 5% when we use BTD measure. This result can give us an idea of the moderating effect of the audit quality on the association between executive compensation and corporate tax avoidance. From the table 5, the coefficient of CEO\_PAY\*BIG4 is positive

**Table 4: Regression results of the impact of CEO compensation on corporate tax avoidance**

Variables	Model 1 (BTD)		Model 2 (ETR)	
	Coef	P> z	Coef	P> z
CEO_PAY	0.0051**	0.014	-0.0049	0.644
SIZE	0.0011	0.465	-0.0468***	0.000
LEV	-0.0110*	0.015	0.0246	0.124
ROA	0.4303***	0.000	-0.1578**	0.019
FIN	-0.0136***	0.000	0.1082***	0.000
Constant	-0.0154	0.248	0.5625	0.000
Wald chi2 (5)	638.47		112.45	
Number of obs	266		266	
Number of groups	67		67	

This table reports regression result using GLS. BTD is the book-tax difference calculated as (pre-tax book income- taxable income)/total assets. ETR is the effective tax rate calculated as the total tax expense scaled by the pre-tax income. CEO\_PAY is the amount of fixed and variable payments and is given by the natural logarithm of annual salary payments of the CEO. BIG4 refers to audit quality and measured by a dummy variable taking the value 1 if the firm is audited by BIG4 and 0 otherwise. SIZE is firm size measured by the natural logarithm of total assets. LEV is the ratio of total long-term debts scaled by total assets. ROA is the ratio of return on assets calculated as the ratio of pre-tax income scaled by total assets. FIN is a dummy variable that equals 1 if the firm is financial and 0 otherwise. \*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level

**Table 5: Regression results of the moderating effect of audit quality**

Variables	Model 1 (BTD)		Model 2 (ETR)	
	Coef	P> z	Coef	P> z
CEO_PAY	0.0086***	0.000	-0.0315**	0.016
CEO_PAY*Big4	-0.0007**	0.050	0.0090***	0.000
SIZE	0.0030*	0.054	-0.0423***	0.000
LEV	-0.0123***	0.003	-0.0023	0.876
ROA	0.4498***	0.000	-0.1090*	0.089
FIN	-0.0157***	0.000	0.1124***	0.000
Constant	-0.0469	0.011	0.6490	0.000
Wald chi2	875.52		487.66	
Number of obs	266		266	
Number of groups	67		67	

This table reports regression result using GLS. BTD is the Book-Tax Difference calculated as (pre-tax book income- taxable income)/total assets. ETR is the effective tax rate calculated as the total tax expense scaled by the pre-tax income. CEO\_PAY is the amount of fixed and variable payments and is given by the natural logarithm of annual salary payments of the CEO. BIG4 refers to audit quality and measured by a dummy variable taking the value 1 if the firm is audited by BIG4 and 0 otherwise. SIZE is firm size measured by the natural logarithm of total assets. LEV is the ratio of total long-term debts scaled by total assets. ROA is the ratio of return on assets calculated as the ratio of pre-tax income scaled by total assets. FIN is a dummy variable that equals 1 if the firm is financial and 0 otherwise. \*\*\*Significant at 1% level; \*\*Significant at 5% level; \*Significant at 10% level

when we use ETR measure, thus, the relationship between CEO compensation and tax avoidance is considered negative and statistically significant at level of 1% when we introduce audit quality given the ETR is an inverse function of tax avoidance. So, if the firm is audited by a BIG4, it is less likely to adopt aggressive tax strategies. This finding is similar with those of Kiesewetter and Manthey (2017), Pilos (2017) and Gaaya et al. (2017) and then we support our second hypothesis. Indeed, audit quality is considered one of the most effective governance mechanisms because it protects users against the opportunistic and fraudulent actions of managers. Audit quality reduces tax avoidance because managers are less motivated to engage in aggressive tax practices if they are well governed, because they would bear damaging consequences if auditor detects aggressive positions. And besides that is why, the effect of executive compensation on tax avoidance becomes negative. Thus, the corporate governance and particularly audit quality has a moderating effect against managers' abusive behavior.

## 5. CONCLUDING REMARKS AND FUTURE RESEARCH

The aim of this paper is to examine the effect of CEO compensation on corporate tax avoidance. To achieve this study, and in accordance to Desai and Dharmapala (2006), we are based on two competing theory. The first theory anticipates a positive relationship between CEO compensation and corporate tax avoidance because managers are willing to engage in risky activities that provide them additional compensation. Indeed, executive compensation enables them to adopt a behavior that is in line with shareholders' expectations. Thus, the objective of any form of managerial incentive is to make more intimate the link between the firm value and the well-being managers so as to thwart their eventual opportunism. The second theory advances that tax avoidance facilitate managerial rent extraction. Thus, weak corporate governance facilitates managerial rent extraction from tax strategy. For this reason, we investigated also in this study the mitigating effect of audit quality on the relationship between two variables.

We use a sample of 67 firms listed on the Tunisian stock exchange from 2013 to 2016. Based on GLS regression models, we find that there is a positive and significant relationship between CEO compensation and corporate tax avoidance. This finding suggests that managers are willing to engage in risky activities that provide them additional compensation. However, this relationship varies depending on the audit quality because we find a negative association between CEO compensation and tax avoidance in well-governed firms. Thus, audit quality is considered one of the most effective governance mechanisms which protect users against the opportunistic and fraudulent actions of managers.

Our contribution is mainly contextual. To our knowledge, this is the first study in Tunisia that examines the impact of CEO compensation on the tax avoidance given the unavailability of data on executive compensation. Until now, the empirical studies are carried out for the most part in the Anglo-Saxon countries following the availability of the data since the information on CEO compensation is obligatory since 1934 in the United States. However, in Tunisia, it was not until the occurrence of the Law

No. 2009-16 of March 16, 2009 to break with the silence on CEO compensation in Tunisia.

The results of this study are interesting for companies and standard setters. This study could help investors to assess the effectiveness of the audit quality and its mitigating effect against the opportunistic actions of managers. Besides, this research could encourage setters to introduce new legislation that strengthen good governance in Tunisia and reducing corruption.

Despite these contributions, our research has some limitations. These limits are mainly methodological and contextual order. Firstly, we use an approximate formula to measure the BTM as taxable income given the unavailability of details in the financial statements. Then; a second limit concerns the external validity of the research. Our findings are specific to the case of Tunisia and have no general explanatory scope. Therefore, our results are not transferable to other contexts. Only an international study lead us to a generalization of our results. Future research on tax avoidance would examine the consequences of this practice on investment decisions on the financial markets.

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