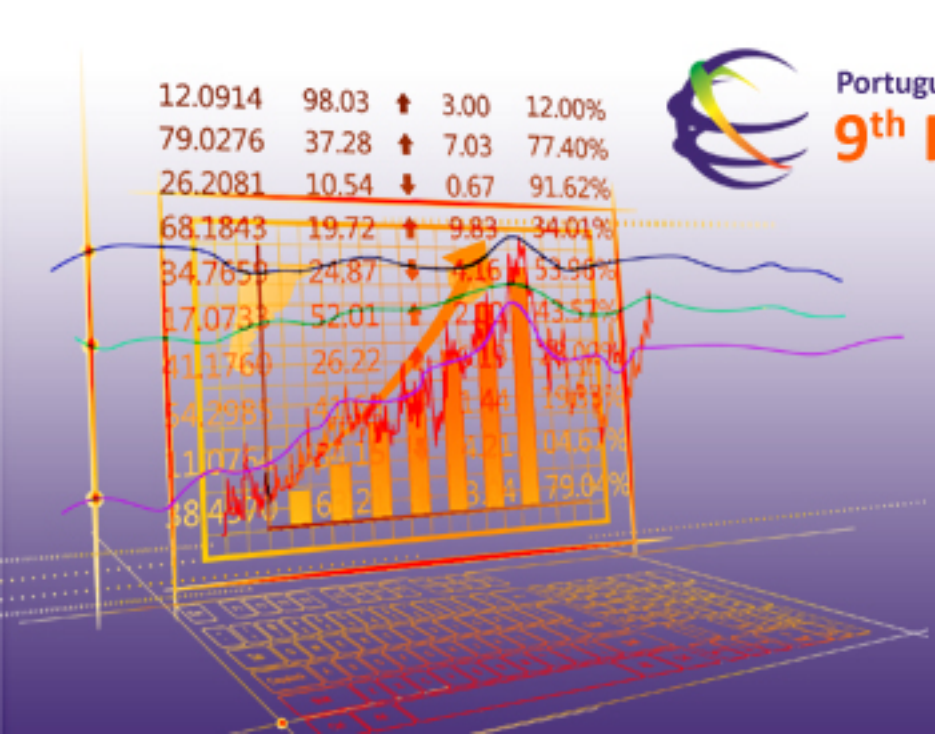

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Agency Theory Approach of the Relationship Between Performance, Compensation and Value Creation in the Companies Listed on Euronext Lisbon

Abstract

The aim of the present study was to understand, in Portugal, relationships between the behaviour of the Chief Executive Officer (CEO) and the organizational performance, on the one hand, and relationships between the shareholder value creation and the CEO total compensation, on the other hand. This research is divided into two parts. The first part was examined whether organizational performance based on accounting measures influences organizational performance supported by market measures and whether organizational performance based on accounting measures and market measures influences the CEO total compensation. The second part of the study analyses whether organizational performance, based on accounting measures and market measures, and the CEO total compensation influence the shareholder value creation. This research was based in agency theory assumptions in order to build the analysis model. The sample was composed by companies listed on Euronext Lisbon. The data analysis was performed using the structural equation modelling method. The results showed that organizational performance based on accounting measures influences organizational performance based on market measures, the CEO total compensation and the shareholder value creation.

Keywords: Agency theory, organizational performance, CEO compensation and shareholder value creation.

JEL Classification: G10; G35

1 Introduction

Doubleday and Wagner (2009) mentioned that the paradigm of the corporate governance has drastically changed the CEO compensation. In the past, investors did not have a say on how CEO were paid. If the shareholders were unhappy, they had few options other than selling their own stocks. According to these authors, the recommendations of the executive board regarding the CEO compensation were approved by the respective remuneration committees with little independence, using the rival companies to assess the compensation competitiveness or to establish performance goals, if they even exist.

Currently, literature has shown that the assessment of the CEO compensation has drastically changed (e.g., Lilling 2006; Ozkan 2007; Shaw and Zhang 2010). Investors started to have an active role and a say on compensation. According to Doubleday and Wagner (2009), the executive board faces an increasing scrutiny by shareholders, press, legislators and regulators and at the same time tries to balance the interest of the shareholders and CEO. The CEO started to have a secondary role in a process that used to be led by them. A strong performance evaluation system assesses whether the interest of the shareholder is being safeguarded or not, thus providing support for decision making. These developments are changing the CEO compensation, as companies optimize the connection between remuneration and performance through short and long term incentives.

The relationship between the CEO compensation and the shareholder value creation has drawn the attention of the investors over time. In accordance with Gong (2011), academics, legislators and the press have discussed the CEO high salaries, questioning if these are consistent with the shareholders' interests. As claimed by this author, the existing studies do not show consistent results about the outcome of the performance of the CEO compensation, and instead of that, these studies have raised concerns about how of the compensation is able to align the interests of both the CEO and the shareholders. Several examples of the lack of alignment of these interests showed up during the so-called "subprime" crisis, highlighting the case of the Wall Street CEO compensation, which led to a strong discussion in the US.

Considering the gaps of the current researches, the goal of this research was divided into two parts. The first part examines whether organizational performance based on accounting measures influences organizational performance based on market measures and whether organizational performance based on accounting measures and market measures influences the CEO total compensation. The second part of the study analyses whether organizational performance, based on accounting measures and market measures, and the CEO total compensation influences the shareholder value creation.

This research intends to provide, theoretically, a greater understanding about the CEO compensation level in the listed companies in Portugal and how it is affected by the different types of organizational performance measures (accounting and market) and also pretends to contribute for the assessment on how the CEO compensation and organizational performance behaviour affect the shareholder value creation. In practical terms, it is intended to clarify the shareholders and the remaining stakeholders about the influence of organizational performance on the CEO compensation and the impact of latest on the shareholder value creation.

To answer to the objective of the study and related research hypotheses, this research is divided into three sections. In the first one, the theoretical concepts related to the agency theory are analysed and the theoretical foundations related to the variables in which this study is based on are presented to support the key issues that need to be answered. In the second section will be described the objectives of the study, the analysis model, the descriptive analysis, the data collection process and the selected statistical techniques for the treatment of the data. In the third section the results of the applied tests to the model are shown and, finally, the theoretical discussion of these results.

2 The Agency Theory, Variables and Formulation of Research Hypotheses

2.1 Agency Theory

The split that emerged after the industrial revolution between owners and managers, with the first holding the property but not a significant control over it, and the last controlling but not having a significant

ownership, originated a new relationship in companies (Berle and Means 1932), the so-called "agency relation" (Ross 1973). Ross (1973) defined this relation as one of the most ancient and common types of relations of social interaction. As claimed by this author, an agency relation arises between two or more parts, when one of them, the agent, acts on behalf or in representation of the other part, called the principal in the particular field of decision-making.

As reported by Eisenhardt (1989) and Bloom and Milkovich (1998), the agency relation presumes that both parts (principal and agent) are subject to three behavioural assumptions: rationality and effort and risk aversion. Rationality exists because it enables agents and principals to assess the probability of future contingencies in order to protect their own interests (Baiman 1990). The effort aversion exists because the agents want to dedicate the least possible work in the execution of their tasks without reducing their compensation (Bloom and Milkovich 1998). The risk aversion exists because job security and the compensation of the agents relies on a unique entity (Balkin et al 2000).

Jensen and Meckling (1976) claimed that, if principal and agent maximize the utility, there is a good reason to believe that the agent will not always act not in the best interest of the principal, thus creating the so-called "agency problem". The agency problem arises when cooperative parties have different goals and perspectives about the work (Eisenhardt 1989), which means that the cooperative behaviour that maximizes the general interests doesn't match the individual interest of each intervenient (Baiman 1990). According to Chua et al (2003), the agency problem is related to the divergence of interests, information asymmetry and limited rationality.

The principal may insure in loss, the so-called "agency costs", whenever the agent pursues different goals from the principal (Jensen and Meckling 1976). As Tosi et al (2000) mentioned, this is the outcome of the agency problem previously discussed, i.e., the agents don't like to take risks and have personal interests that may diverge from the principal's interests. These assumptions point that the agents may undertake actions based on their own agenda, which seeks to accomplish their individual goals (Tosi et al, 2000). Jensen and Meckling (1976) referred that the agency costs emerge in any relationship that involves

cooperative endeavour between two or more parties. These authors defined the agency costs as the sum of the expenses spent with a monitoring system, bonding costs and residual loss. The monitoring system is intended to limit the abnormal activities of the agent. The bonding costs assure that the agent won't undertake certain actions that could harm the principal or, at least, guarantee that the principal will be reimbursed if those actions take place. The residual loss is the reduction of the benefits by the principal, as a result from the contrast of interests between the agent and the principal, even after the application of a monitoring system bonding costs.

The agency theory's unit of analysis it's the contract that establishes the work relationship between the principal and the agent (Eisenhardt 1989), containing the rights and responsibilities of each part (Baiman 1990). This contract includes remuneration agreements, information systems, functions assigned to the agent and rights of the principal (Baiman 1990). It's also through the contract that the principal tries to link his or her own interests to the agent's interests (Tosi et al, 1997). Eisenhardt (1989) claimed that the theory focus on assessing the most efficient contract, given the existing assumptions about the individuals, the organizations and the information. The developed theory about the efficiency of the agency contract points two solutions that can be chosen by the principal to solve the agent-principal problem (Tosi et al, 2000). First, when the principal has full access to the complete information about the agent's efforts, the most efficient contract is based on the observation of the agent's behaviour (monitoring). This choice avoids that a contract based on results transfers, unnecessarily, the risks to the agent, who is reluctant to take risks. In the second choice, when the principal is unable to monitor the agent's efforts and the information asymmetry is high, the principal has to transfer the risks to the agent, through an incentive contract.

Tosi et al (1997) declared that the solution to the agency problem doesn't depend on a direct selection of monitoring systems and incentives. According to these authors, since the performance can be measured both by the actions and the results of these actions, the first choice of the principal should focus on creating a balance between base compensation (based on behaviour) and the additional incentives (based

on results). This balance is known as "optimal contract", which maximizes the return of investment to the principal through modifications to the monitoring structure and compensation of the agent so that the desired changes in organizational success are achieved (Bloom and Milkovich 1998).

Several management accounting tools can be used as monitoring, evaluation and incentives systems to mitigate the agency problem. Among the several internal monitoring strategies of the companies that mitigate the agency problem Wickramasinghe and Alawattage (2007) highlight the performance evaluation systems. Luft (2009) added that performance evaluation may be used to give rewards like bonuses, capital instruments and promotions. The performance evaluation applies to both individuals and organizations (Burke and Litwin 1992) and is, generally, operated by objective performance measures (Indjejikian and Nanda 2002).

2.2 Variables

The variables used in this study are:

- **CEO total compensation:** The CEO compensation is measured according to Miller et al (2002) definition of "CEO total compensation", which includes all the forms of compensation, like the base compensation, bonus, stock options, restricted stocks and other remuneration types.
- **Organizational Performance Based on Accounting Measures**: In agreement with Richard et al (2009), accounting measures are the most common and simplest way to assess organizational performance and many authors have employed this kind of measures to determine it (e.g., Murphy 2001). The accounting measures used in the present study were selected based on the measures identified by Richard et al (2009). The chosen measures were the ones that achieved significant results with CEO compensation in previous researches (e.g., Perry and Zenner 2001). The two selected measures were: net income and Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA). Richard et al (2009) mentioned

that, despite the credibility of accounting measures has been proved, these measures are subjected to distortions originated by the adopted accounting politics, human error and fraud. These authors highlighted that, due to its dependence on auditable information, accounting measures reflect what happened and are very limited predicting about future performance. In order to mitigate the gaps of these measures on organizational performance evaluation, the variable organizational performance based on market measures has been added.

- **Organizational Performance Based on Market Measures**: According to Richard et al (2009), the advantages of market measures are to predict the future and incorporate the value of the intangible assets (e.g., brand image) in a more efficient way than the accounting information. Many authors (e.g., Core et al 2003) used these measures to assess organizational performance. The market measures used in the present study were selected based on the measures identified by Richard et al (2009) and combined considering the study of Murphy et al (1996). The chosen measures were the ones that achieved significant results with CEO compensation in previous studies (e.g., Johnson et al 2008). Consequently, the selected measures were: basic Earnings Per Share (EPS) and stock price. Basic EPS correspond to International Accounting Standard 33 definition and stock price correspond to quotation price of the common stocks on a regulated market in year end. These measures make part of the "profit" dimension identified by Murphy et al (1996). Like accounting measures, market measures also have some disadvantages. To Merchant (2007), the market not always reflects the effective performance. That means that some of these evaluations are very influenced by future expectations that will never become reality. The author added that paying bonuses based on market measures is risky, as these payments can be made based on results that will never come true.
- **Shareholder Value Creation**: Shareholder value creation is measured using the Market Value Added (MVA) method. MVA is calculated by subtracting the amount invested by the

shareholders to the market value of capital (Brigham and Ehrhardt 2008). According to Hillman and Keim (2001), the market value of capital is equal to the market capitalization of a company and the value applied is the capital invested by shareholders.

2.3 Formulation of Research Hypotheses

It is expected that the variables organizational performance based on accounting measures and organizational performance based on market measures influence positively and significantly the CEO total compensation. This presumption is based on the assumption that companies use optimal contract (e.g., Bloom and Milkovich 1998) to align the interests of the CEO with organizational performance and with the interests of shareholders (e.g., Tosi et al 1997), thus mitigating the agency problem (e.g., Jensen and Meckling 1976). Since the interests of shareholders depend directly on organizational performance (e.g., a high net income represents, theoretically, a dividend or investment also higher), it is expected that organizational performance has a major impact on the CEO total compensation. This expectation is supported by the Portuguese corporate governance report model, which refers in §70, point III, Section D, Part I, that the remuneration should be structured "(...) in order to align the interests of members of the administration with the long-term interests of society (...)" and based on "performance evaluation" (Regulation No. 4/2013). Murphy (2001), Perry and Zenner (2001) and Kateratorn (2013) used accounting measures to prove the existence of a relationship between organizational performance and CEO compensation. Murphy (1998), Core et al (2003) and Johnson et al (2008) demonstrated the same by using market measures.

Based on the mentioned literature, the following research hypotheses were formulated:

H_1: Organizational performance based on accounting measures influences organizational performance based on market measures.

H_2: Organizational performance based on accounting measures influences CEO total compensation.

H_3: Organizational performance based on market measures influences CEO total compensation.

Besides the influence of organizational performance in the CEO total compensation is the influence of organizational performance in shareholder value creation. Since it is predictable that organizational performance based on accounting and market measures influences the CEO total compensation and the CEO total compensation influences shareholder value creation, then it is correct to predict that organizational performance based on accounting and market measures influences the shareholder value creation. Thus, it is expectable that the organizational performance based on accounting measures and the organizational performance based on market measures influence, in a positive and significantly way, the shareholder value creation. This correlation is based on the assumption of Merchant (2007) that the market assimilates all available information on a given company and reflects it in its assessment of the same, which varies the shareholder value creation. The relationship between the accounting and market measures and the shareholder value creation has been proven previously, for example, by Milunovich and Tsuei (1996), Uyemura et al (1996) and Vijayakumar (2008). Finally, as introduced, it is expected that the CEO total compensation influences the shareholder value creation in a positive and significantly way. This influence is based on the assumption of optimal contract of the use of the CEO compensation schemes to mitigate the agency problem and associate their interests with the interests of shareholders (e.g., Tosi et al 1997). This relationship has been proved earlier by Sheikholeslami (2001), Fatemi et al (2003) and Baum et al (2004).

Based on the contributions of the mentioned literature, the following research hypotheses have been added:

H_4: Organizational performance based on accounting measures influences the shareholder value creation.

H_5: Organizational performance based on market measures influences the shareholder value creation.

H_6: CEO total compensation influences the shareholder value creation.

3 Method and Data

3.1 Objective and Analysis Model

The objective of the present research it was divided into two parts. The first part intends to verify whether organizational performance based on accounting measures influences organizational performance based on market measures (H_1) and whether organizational performance based on accounting measures and market measures influences the CEO total compensation (H_2 e H_3). The second part of the study analyses whether organizational performance, based on accounting measures and market measures, and the CEO total compensation influence the shareholder value creation (H_4, H_5 e H_6). This study is also based on the assumptions of the agency theory on the principal/agent (Shareholder/CEO) relation, predicted by Eisenhardt (1989), the agency problem and agency costs (with monitoring, bonding costs and residual loss), predicted by Jensen and Meckling (1976), and the agency contract (that establishes the work relationship between the principal and the agent), predicted by Tosi et al (1997), to build the analysis model.

The hypothetical analysis model can be divided into two parts, as it has been mentioned concerning the objective of the research. The first part was formulated based on the contributions from studies that successfully linked the selected measures of organizational performance and the CEO compensation. These measures are the net income (e.g., Murphy 2001), EBITDA (e.g., Kateratorn 2013), basic EPS (e.g., Johnson et al, 2008) and the stock price (e.g., Core et al 2013). Based on the classification from the study of Richard et al (2009) and the dimensions of the study of Murphy et al (1996), the different organizational performance measures were grouped in order to assess two variables not directly observable: organizational performance based on accounting measures and organizational performance based on market measures. Through the definition of compensation by Miller et al (2002) the variable CEO total compensation was assessed. These contributions support the hypotheses H_1, H_2 and H_3 of this study.

The second part of the model was built based on the contributions of the studies that positively and significantly linked the selected measures of organizational performance and the CEO compensation to the shareholder value creation, which as measured by the MVA (e.g., Baum et al 2004; Vijayakumar 2008). These contributions support the hypothesis H_4, H_5 and H_6 of this study.

3.2 Data Collection and Sample

Data were collected from the Annual Reports and Accounts, including the Consolidated Financial Statements (in accordance with the International Financial Reporting Standard 10), Reports on Corporate Governance (when this an annex to the Annual Report and Accounts, published separately), both of them with mandatory disclosure to the public in accordance with Article 245 of the *Código dos Valores Mobiliários* (CVM), and the Euronext Lisbon webpage. The sample comprises 211 companies (in all sample period) admitted to trading on the regulated market (Article 199 of the CVM) Eurolist by Euronext Lisbon (hereinafter Euronext Lisbon), managed by Euronext Lisbon - *Sociedade Gestora de Mercados Regulamentados*, SA (Portaria No. 556/2005 of 27 June), which is the main spot market in Portugal (CMVM 2015). These companies are listed on the Portuguese Stock Index (PSI) *Geral* that "includes all of the companies listed on Euronext Lisbon" (Euronext Lisbon, SA 2013, 5).

The reporting period covers five years, in accordance with the deadline for making public the annual reports and accounts (No. 1 , Article 245 of the CVM). This selected period begins in 2010 and finishes in 2014, the last year having the annual report and accounts published at the time of collecting the data used in this study. Excluded from the sample were the entities that were not listed on the Euronext Lisbon during the periods of 2013 and 2014 and the Sports Companies, given its specificity about the goals to be achieved (e.g., sporting success) or the motivation of investors in stocks acquisition (e.g., affectivity).

3.3 Statistical Methods and Treatment of Data

The Structural Equation Modeling (SEM) is the method selected for processing the data in this study. According to Schreiber et al (2006), the SEM are statistical techniques that can be used to reduce the number of variables observed in a smaller number of latent variables through the analysis of covariance between the observed variables. In order to process the data, model's position and its variables was analysed given the assumptions of the SEM, the quality of adjustment was tested and, finally, the estimates of the model parameters were calculated, i.e., the weight of the regressions of the direct and indirect relationships between the variables and the correspondent level of significance. In all analysis for decision-making about whether or not to validate the research hypotheses being studied, a 5% significance level was assumed. The model design and statistical tests are made using the AMOS (v. 19, SPSS Inc, Chicago, IL) and SPSS (v. 19) software.

4 Analysis, Results and Discussion

4.1 Diagnostic of the Assumptions of Structural Equation Modeling

Like most statistical techniques, SEM is based on assumptions that must be respected so that the results are reliable (Finney and DiStefano 2006). Schreiber et al (2006) recommend that are analysed the assumptions about the absence of outliers, the sample size, the multivariate normality of the data and also the absence of multicollinearity among manifest variables.

The assumption about the absence of outliers was assessed by the Mahanalobis square distance. It has been detected 27 multivariate outliers, i.e. 27 observations with p_1 and p_2 values lower than 0.05 (Marôco 2014). These observations were removed to make the subsequent analysis (Schreiber et al 2006).

Regarding the assumption for the sample size, the model under study consists of 10 regressions, one covariance and 7 variances, totalling 18 parameters, and the number of observations is 184, from the initial 211 after removal of multivariate outliers. Considering the general criteria (participants/parameter ratio ≥

10) mentioned by the authors Schreiber et al (2006), the sample size meets the condition for applying the SEM technique, since the ratio of participants per parameter is 10.22 (184/18) to 1.

The assumption of multivariate normality of the variables was evaluated by the asymmetry coefficients and univariate and multivariate kurtosis. The manifest variables have higher values than the reference values ($|Sk|<2$ and $|Ku|<7$) indicated by Finney and DiStefano (2006), which points to severe violation of the normal distribution. Multivariate kurtosis confirms this violation ($Ku_M > 10$).

Since the data do not meet the assumption of the normal distribution, the function Maximum Likelihood (ML) cannot be used to estimate the model. Alternatively, it will be used the estimation method by Bootstrap. This method requires the absence of missing values (Jose 2013) and, to meet this requirement, its imputation was proceeded. From the analysis, it was found that the missing values of the sample are concentrated in variable EBITDA. This variable was not calculated for the entities classified by Euronext Lisbon as Financial Services, since the specificities of this activity make EBITDA an irrelevant ratio (e.g., financing expenditures are part of the operating activities). For this reason, the number of missing values is equal to the number of entities classified as Financial Services that are part of the sample in each of the five periods being analysed, which totals 22 missing values, corresponding to 12% of the total sample for EBITDA variable. These values were imputed by the Expectation Maximization algorithm which, according to Olinsky et al (2003), is the most widely used method for dealing with missing values.

Finally, the assumption about the absence of multicollinearity among manifest variables was assessed through a multiple linear correlation with Variance Inflation Factor (VIF) and Tolerance statistics. Given the criteria recommended by Hair et al (2011), this assumption is not violated since all the variables obtained a VIF value less than 5 and a Tolerance value greater to 0.200.

4.2 Adjustment Quality Diagnosis

According to Schermelleh-Engel et al (2003) and Schreiber et al (2006), the selected tests for quality adjustment assessment of the SEM in this study are the Chi-square test (χ^2), inferential test, the ratio

χ^2/degrees of freedom (df), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR), descriptive indexes of general adjustment, and the Non-Normed Fit Index (NNFI) and the Comparative Fit Index (CFI), which are descriptive indexes based on the comparison of models. Additionally, it's calculated the corrected χ^2 Bollen-Stine test for data that do not follow a normal distribution (Bollen and Stine 1992). The following table summarizes the results of selected tests.

Table 1. Model quality diagnosis tests results.

Diagnostic Test	Result	Observations
χ^2 and corrected χ^2	4.911	p-value = 0.297 and p-value = 0.306
χ^2/df	1.228	
RMSEA	0.035	p-value = 0.510; CL = 90%
SRMR	0.026	
NNFI	0.989	
CFI	0.997	

Notes: χ^2 = Qui-square; df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index; IC = Confidence Level.

According to the results shown in Table 1, quality adjustment tests point that the model has a good fit (Schermelleh-Engel et al 2003; Schreiber et al 2006; Marôco 2014). The statistical test results of χ^2 is 4.911 with a p-value associated 0.297, i.e., the matrix of population covariance does not differ significantly from the covariance matrix estimated by the model (null hypothesis), and the result of the ratio χ^2/df is 1.228. As the χ^2 test is sensitive to the violation of the normal distribution assumption, and the manifest variables in this study violate this assumption, it was calculated the corrected χ^2 Bollen-Stine test (Bollen and Stine 1992) that obtained a p-value of 0.306 in two thousand Bootstrap samples, confirming the adequacy of the model. The descriptive indexes of general adjustment RMSEA and SRMR obtained a result of, respectively, 0.035 (P[rmsea≤0.05]=0.510; confidence level 90%) and 0.026. The descriptive indexes of model comparison NNFI and CFI obtained the results of, respectively, 0.989 and 0.997.

4.3 Standardized Estimates and Significance of Trajectories

This point begins with the presentation of the final structural equations model of this study. The model consists of two latent variables, six manifest variables and seven unique factors or errors (e). It also has a correlation identified between the errors. Measurement errors of the net income and basic EPS variables are correlated by the reason that the last uses the first in the calculation formula. The research hypotheses (H) are also shortly identified and the directional paths that represent them.

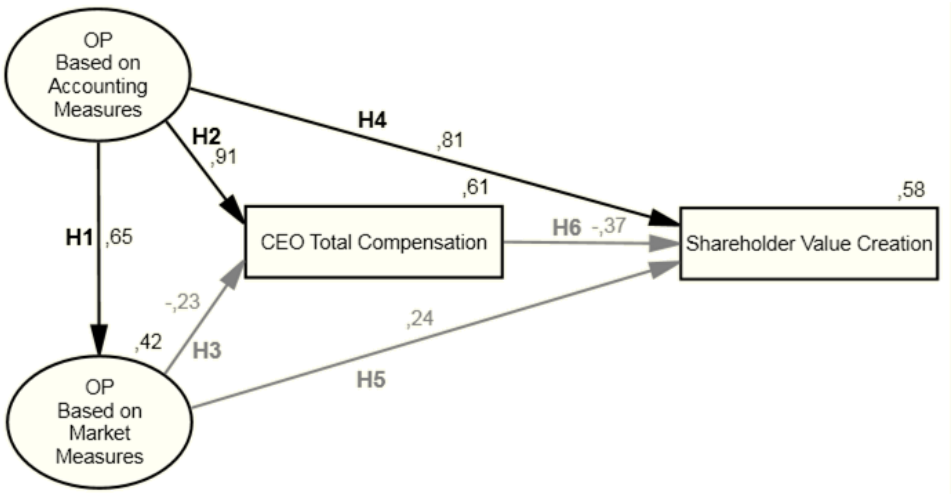

Figure 1. Final structural equation model.

Attending to Figure 1, the values that follow the directional paths point the standardized coefficients (β) of the parameters of the relationship they represent. The values placed in the upper right side of the latent and manifest variables indicate the squared multiple correlation coefficients (R^2). The significance level of the parameters estimated by the model was obtained using the estimation process for Bootstrap, which simulated two thousand samples.

The results point to a correlation between measurement errors of the manifest variables net income and basic EPS of 0.34 ($R = 0.340$, $p < 0.001$), as expected. Factorial weights of organizational performance based on accounting measures in EBITDA and net income are, respectively, 0.72 and 0.52 ($\lambda = 0.72$ and $\lambda = 0.52$), and the proportion of explained variance is 51% and 27% ($R^2 = 0.51$ and $R^2 = 0.27$). The factor

weights of organizational performance based on market measures in basic EPS and stock price are, respectively, 0.52 and 0.92 ($\lambda = 0.52$ and $\lambda = 0.92$), and the proportion of the explained variance is 27% and 84% ($R^2 = 0.2$ and $R^2 = 0.84$). All factors have high factor weights ($\lambda \geq 0.5$), indicating factorial validity, and appropriate individual reliabilities ($R^2 \geq 0.25$) (Marôco 2014). Standardized path coefficients and multiple correlation coefficients, including its statistical significance, will be analysed individually.

Table 2 contains the standardized coefficients and the respective significance levels, which statistically evaluate the formulated hypotheses in this research.

Table 2. Statistical Results of the Formulated Hypotheses

H	**Path**	**Coefficient**	***P-value***
H_1	Organizational performance based on accounting measures ⟶ organizational performance based on market measures	0.65	<0.001
H_2	Organizational performance based on accounting measures ⟶ CEO total compensation	0.91	<0.001
H_3	Organizational performance based on market measures ⟶ CEO total compensation	-0.23	0.130
H_4	Organizational performance based on accounting measures ⟶ shareholder value creation	0.81	0.034
H_5	Organizational performance based on market measures ⟶ shareholder value creation	0.24	0.483
H_6	CEO total compensation ⟶ shareholder value creation	-0.37	0.107

Notes: H = Hypotheses; CEO = Chief Executive Officer.

According to Table 2 data, the effect of organizational performance based on accounting measures on organizational performance based on market measures ($\beta = 0.650$, $p < 0.001$) and the effect of organizational performance based on accounting measures in the CEO total compensation ($\beta = 0.910$, $p < 0.001$) are positive and statistically significant. The effect of organizational performance based on market measures in CEO total compensation is not positive or statistically significant ($\beta = -0.230$, $p = 0.130$). The effect of organizational performance based on accounting measures in shareholder value creation is positive and statistically significant ($\beta = 0.810$, $p = 0.034$). The effect of organizational performance based

on market measures on the shareholder value creation is positive but not statistically significant ($\beta = 0.240$, $p = 0.483$). Finally, the effect of CEO total compensation in shareholder value creation is negative and not statistically significant ($\beta = -0.370$, $p = 0.107$).

The multiple regression coefficients and the respective levels of significance that assess the variability of a given variable with respect to the predictors used for this variable are shown in Table 3.

Table 3. Variability Analysis.

Variable	Squared Multiple Correlation	*P-value*
Organizational performance based on market measures	42%	<0.001
CEO total compensation	61%	<0.001
Shareholder value creation	58%	0.003

Note: CEO = Chief Executive Officer.

Analysing the data presented in Table 3, it was concluded that the model explains 42% of the variability of organizational performance based on market measures ($R^2 = 0.423$, $p < 0.001$), 61% of the CEO total compensation variability ($R^2 = 0.611$, $p < 0.001$) e 58% of the shareholder value creation variability ($R^2 = 0.576$, $p = 0.003$).

4.4 Discussion

The research hypotheses H_1, H_2 and H_4 were confirmed. Hypothesis 1 confirms that the market absorbs all available information on a given company and reflects it in its assessment of the same (e.g., Merchant 2007). Therefore, the better or worse is the organizational performance based on accounting measures, the better or worse organizational performance based on market measures will be.

Hypothesis 2 corroborates the assumption that optimal contract of the agency theory establishes a link between organizational performance (in this case, based on accounting measures) and the CEO total

compensation (e.g., Tosi et al 1997; Bloom and Milkovich 1998). This result means that the companies listed on Euronext Lisbon recognize the existence of the agency problem (e.g., Jensen and Meckling 1976; Baiman 1990), originated by the CEO/Shareholder relationship (e.g., Ross 1973), and use the agency contract (e.g., Tosi et al 1997) to mitigate the costs associated to this problem (e.g., Jensen and Meckling 1976; Tosi et al 2000). To achieve that, these entities use accounting measures (e.g., Luft 2009). In this situation, the shareholder selects the performance evaluation system that specifies the measures that will be based on the compensation of the CEO and the function linking these measures to compensation. Thus, the better or worse organizational performance based on accounting measures is, the higher or lower the CEO total compensation will be. This hypothesis also confirms that the analysed entities comply with the recommendation of the *Comissão do Mercado de Valores Mobiliários* (CMVM) on the dependence of the CEO's compensation on the CEO's performance (Regulamento No. 4/2013). The result of this research hypothesis is consistent with the conclusions of the studies of Murphy (2001), Perry and Zenner (2001) and Kateratorn (2013).

Research hypothesis 4 indicates that a positive or negative variation on the shareholder value creation is explained in part by the organizational performance based on accounting measures. As the effect of organizational performance based on accounting measures on organizational performance based on market measures, the effect predicted by this hypothesis is based on the assumption that the market assimilates all available information on a given company and reflects it in its assessment (e.g., Merchant 2007), which causes variations on the shareholder value creation. This result adds to the results of studies such as Milunovich and Tsuei (1996), Uyemura et al (1996) and Vijayakumar (2008). Overall, the organizational performance based on accounting measures assumes an essential position in the analysed entities. Both the CEO total compensation and the shareholder value creation depend on the behaviour of this variable. This dependence, when excessive or when not shared with other measures, such as market measures, can damage the fixation of the CEO total compensation and the perception of the shareholder

on the intrinsic value of the entities. This injury results from distortions caused by accounting policies adopted, human error and fraud (e.g., Richard et al 2009).

In relation to variability, the results point that more than half of the variability of the CEO total compensation and the shareholder value creation is explained by its predictors in the model. The predictors of the CEO total compensation are organizational performance based on accounting measures and market measures and predictors of shareholder value creation are the organizational performance, based on accounting measures and market measures, and CEO total compensation. The explained variability of the CEO total compensation, slightly above 60%, reflects the balance between monitoring and incentives (e.g., Bloom and Milkovich 1998), i.e. the agency contract (e.g., Tosi et al 1997) uses sufficient incentives to align the agent's interests with the interests of the principal, without transferring too much risk and remuneration variability to the agent, reflecting a balance between monitoring and incentives (e.g., Baiman 1990). With respect to the variability explained by the predictors of organizational performance based on market measures, basic EPS, stock price and organizational performance based on accounting measures, corresponds only to 42%, i.e. less than half. This suggests to replace or to add organizational performance predictors based on market measures.

5 Conclusion

The objective of this study was divided into two parts. The first part examined whether organizational performance based on accounting measures influences organizational performance based on market measures (H_1) and organizational performance, based on accounting measures and market measures, influences CEO total compensation (H_2 and H_3). The second examined whether organizational performance, based on accounting measures and market measures, and CEO total compensation influence the shareholder value creation (H_4, H_5 and H_6).

This study used agency theory assumptions to build the analysis model. The sample was composed by the companies admitted to trading on the regulated market Eurolist by Euronext Lisbon. Data were

collected from the Annual Reports and Accounts, including the Consolidated Financial Statements, Reports on Corporate Governance and the Euronext Lisbon webpage. Data were processed using the SEM method.

The hypotheses H_1, H_2 and H_4 were confirmed. Hypothesis 1 confirmed that the evaluation of a company by the market is conditioned by the accounting measures. Hypothesis 2 confirmed that the organizational performance based on accounting measures determines the CEO total compensation. Hypothesis 4 has confirmed that the organizational performance based on accounting measures conditions the shareholder value creation.

This research contributes, theoretically, to strengthen the explanation of the factors that affect organizational performance based on accounting measures behaviour, the CEO total compensation behaviour and the shareholder value creation behaviour (e.g., Lilling 2006; Merchant 2007; Shaw and Zhang 2010). This research contributes, in practical terms, to help clarifying the stakeholders of the listed companies in Portugal, in particular shareholders, who are its owners. The results of this study point that the listed companies in Portugal comply the CMVM recommendation on the dependence of the compensation of the CEO's performance, at least with regard to organizational performance based on selected accounting measures.

The main limitation of this study is related to the form of disclosure of the CEO compensation. The form of disclosure for the CEO compensation imposed by CMVM does not favour the collection of data. The fact that it is not available a standard table model for companies to publish information related to the compensation of members of the Company's Board of Directors makes it difficult to collect and affect the collected information itself .

For future research, it is suggested to undertake methodologically similar studies with a modification in the number of manifest variables. The manifest variables explained by the organizational performance based on market measures, basic EPS and stock price, could be increased or replaced taking into account the negative results obtained in this study. The number of manifest variables explained by the

organizational performance based on accounting measures and market measures could be increased and eventually lead to more robust results of the model as advocates Marôco (2014).

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