

JOURNAL OF
BEHAVIOR STUDIES IN ORGANIZATION

**Executive Compensation and Relative
Performance Evaluation Relationship Analysis**

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Received: 9 July 2020

Revised: 16 September 2020

Accepted: 13 October 2020

ABSTRACT

The research objective is to verify if the variable compensation of executives is established based on the relative performance evaluation, based on their abilities, or if there is the so-called "lucky payment", in which they are benefited or harmed by oscillations that affect the entire market. The literature shows that variable remuneration is characterized as one of the main mechanisms to align interests between investors and executives. In Brazil, there is evidence of a relationship between variable remuneration and managers' performance, but a gap to be filled consists of identifying whether or not such remuneration disregards the systematic component of performance, linked to movements and shocks that affect the entire sector. The sample comprises the listed companies listed in B3, except those operating in regulated segments, such as financial institutions and public utilities. The period of analysis comprises the years 2010 to 2015, where the information on remuneration is now disclosed through the Reference Form. After self-selection control, because of companies that filed injunctions to avoid disclosure of executive compensation, evidence indicates that executives are usually paid "by luck." Only when the market performs negatively and the executive performs above it is that relative performance employed. The research assists in a better understanding of the remuneration policy of Brazilian organizations, complementing other research on the temporal aspect and the comparison of the peers' performances in the sectors.

Keywords:

Executives, Compensation, Relative Performance.

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Introduction

One of the mechanisms for aligning concern between shareholders and managers is the establishment of performance-based compensation contracts (Albuquerque, 2014). Thus, work focused on the Brazilian context also showed the positive relationship between the magnitude of executive compensation and the performance of public companies listed in B3 (Camargos & Helal, 2007; Krauter, 2013).

A compensation contract form that has been identified in developed markets, such as the US, is the Relative Performance Evaluation (RPE). This type of contract identifies the performance component that is systematic linked to exogenous shocks that affect similar companies in the sector and that are not under the control of the manager. The withdrawal of the systematic component of the performance would lead to the identification of the component that would be directly related to the manager's abilities, which would be the basis for the establishment of the remuneration (Albuquerque, 2009).

As demonstrated theoretically by Holmström (1982), efficient contracts should be based on RPE. Albuquerque (2009) argues that defining and comparing peer companies has two objectives. The first is to "avoid paying by luck", in the sense that the improvement in performance would be related to the sector itself, and not due to the adequate choices of the managers. The second objective would be related to the fact that executives would accept the proposed contract, since they would not be penalized when the whole market is in a downward cycle.

In other way there is empirical evidence that executive compensation in some contexts especially Chief Executive Officers (CEOs), is not RPE-based. For example, Albuquerque (2011) shows that firms with growth opportunities are subject to risks different from those of other companies, which makes it difficult to identify those exposed to the same types of risk. Jiménez-Angueira and Stuart (2015) present evidence that the CEOs, after verifying their performance and comparing with other similar companies in the sector, have influence over the compensation committees. Such an influence may lead the company to disregard the RPE payment and to establish the ex-post remuneration based on the return without taking peer companies into account, which is commonly called pay-for-Luck, (PFL) (Jiménez - Angueira & Stuart, 2015).

Thus the main objective of this work is to evaluate whether companies make payments based on relative performance or whether, on the contrary, payments are based on the behavior of companies in the sector ("payment by luck"). This research aims to answer the following main question: Do Brazilian public companies remunerate their CEOs based on relative performance or "by luck"?

This paper aims to study the Brazilian context since this country sample is marked by significant differences with the North American. For example, the number of companies per sector is significantly lower, which can lead to the difficulty of establishing the set of peer companies. Other differences are the relatively lower investor protection when compared to developed markets and the high concentration of shareholder power (La Porta *et al.*, 1998). In addition, some companies use an injunction to avoid disclosing the maximum remuneration (potentially the CEO's) to the market (Costa *et al.*, 2016).

According to Funchal and Terra (2006), studies in area carried out in the determination of executive compensation are in developed countries. Meanwhile, few studies have been conducted in Brazil on the variable remuneration of executives. Following the publication of Normative Instruction 480/09, which led to the disclosure of more information through the "Formulario de Referencia", it became possible to verify the remuneration policies and the amounts effectively paid to executives were observed, with the exception of of a part of the companies, which filed an injunction against the requirement to disclose the compensation of the CEO.

The existence of companies that do not disclose executive compensation is relevant to the methodological procedures implemented. Costa, Galdi, Motoki, and Sanchez (2016) demonstrate that specific costs for CEOs, in addition to their own characteristics and other company's are relevant to explain the decision by the injunction. In the present study, the first step consisted in estimating the

probability of the company entering an injunction and the Inverse-Mills-ratio was used, in a second stage, to control by such endogenous characteristics. This procedure was initially developed and implemented by Heckman (1979) and applied in other studies, such as Liu *et al.* (2014).

Data collection of remuneration was performed based on the Formulário de Referência of each company and the other information was obtained from the Economática database. The analyzed period, due to the availability of the information of the reference form, consisted of the years 2010 to 2015. The evidence found indicates that Brazilian companies tend to make the payment by luck, and not via RPE. The exception is when the company performs better than companies in the same sector, when the sector itself has negative performance (negative average profitability). The results are in line with the arguments of Jiménez -Angueira and Stuart (2015) that CEOs can exert influence over compensation committees.

The evidence of the work, therefore, contributes to the discussion on the implementation of remuneration contracts in emerging markets, indicating that differentiated mechanisms are potentially used in such contracts.

Literature review

Previous research has shown that executive compensation plans have an influence on the performance of organizations, especially when the relationship between payment and goal attainment is perceived (Krauter, 2013). As the effort of the executives is not observable, companies establish variable remuneration contracts focused on the output of the effort, usually linked to the accounting results or stock performance (common in the case of stock options) (Funchal & Terra, 2006). Usually, variable remuneration tends to comprise bonuses, participations in company results, remuneration for meetings and commissions (Krauter, 2009).

Aggaral and Samwick (1999) said that there may be a lack of incentives more attractive to executives in remuneration contracts when companies focus on maximizing share values. This aspect is raised because organizations are in the midst of competition, especially in industry, causing managers to be rewarded on the basis of competitors' performances.

In the competitive market scenario exogenous shocks among peer organizations can be highlighted by changes in the political and economic landscape. According to Albuquerque (2014) exogenous shocks are characterized by the economic and financial risks that organizations face in the face of a scenario that may influence their results. According to Fraletti and Famá (2003) these exogenous shocks can cause results conditioned to uncontrollable factors, mainly highlighting the market risks. Thus, changes in a country's economic situation may inevitably interfere with organizational performance due to these external shocks that are not the same for all companies.

Motoki and Gutierrez (2015) sought to identify the relationship between sectoral performance and the business cycle in the Brazilian economy, obtaining results that indicate that most of the sectors studied are related to the business cycle in a procyclical way. In this context, the expectations of CEOs in the face of a declining market economy would be to exclude exogenous shocks when using relative performance in executive compensation contracts, or prefer to pay-for-luck (PFL) when the market is bullish.

Holmström (1982) theoretically demonstrates that relative performance evaluation (RPE) would be the ideal contract type for executive compensation. Thus, the entity would avoid "pay by luck" when the whole market performs positively. According to Gong *et al.* (2011), the benefit of employing RPE is to isolate a common risk agent, providing the principal with a more informative measure to evaluate their actions (or efforts). On the other hand, in the implementation of remuneration via RPE, there is the challenge of identifying the set of companies that are exposed to common shocks (Albuquerque, 2009). In some contexts, therefore, the RPE may not be used (Albuquerque, 2014; Jiménez-Angueira & Stuart,

2015).

According to Pukthuanthong *et al.* (2004) stock price may pose an additional risk to executives because they do not control stock price swings. In this way, it can be seen that the market scenarios of companies in the same sector may change, and that organizations that present growth will find it difficult to find even companies in order to analyze the best criterion to remunerate executives, whether by RPE or PFL

Albuquerque (2014) shows that firms with growth opportunities above market average level have an intrinsic difficulty in identifying a comparison group. Therefore, not using this form of payment will be more feasible for the featured company. Jiménez-Angueira and Stuart (2015) argue that certain governance structures allow executives themselves to influence, ex-post, the establishment of their own levels of remuneration. In such contexts, executives could seek compensation based on industry performance (payment for luck).

The Brazilian context presents peculiar characteristics to justify the accomplishment of a research to evaluate if there is the payment via RPE or not. First, because there is a high concentration of shareholding and lower investor protection (La Porta *et al.*, 1998) of publicly traded companies in the country, which could lead managers to ex-post influence their levels of remuneration. In addition, the number of companies per sector is significantly lower than in other countries, given the relative size of the Brazilian capital market. This fact, by itself, would already have difficulties in establishing and peer companies in certain sectors. Thus, it becomes an empirical question to evaluate whether there is payment via RPE and in which contexts the same does not occur, helping in the understanding of executive remuneration policies in the country.

Shareholders information increase since in 2009 the “Formulário de Referencia” replaced the Annual Information Form (IAN) in which the quality of the disclosure is that it will in fact contribute even more to the understanding of company policies. Beuren, Mazzioni and Silva (2014) investigated the relationship of executive compensation and company size, using data from 2009 to 2011 of the Formaulario de Referencia. The authors concluded that there is a negative relationship between the size of the company and the remuneration of executives and that such remuneration is exclusively associated with the market performance of the companies in brazilian market.

Funchal and Terra (2006) investigated the factors that determine the remuneration of executives in Latin American public companies, reaching the conclusion that the main determinants identified are company size, industry sector and its country of operation. Therefore, the research was used to use the company size indicators, the sector highlighting the peer companies and the current data disclosed by the companies in the CVM for a contribution complementary to the other surveys conducted in which Brazil was inserted.

Although there are researches in Brazil with Krauter (2013), Silva and Chien (2013), Beuren, Mazzioni e Silva (2014) and in Latin America with Funchal and Terra (2006), one can perceive in its results the gap for data and the use of other variables in the face of market dynamics. This research differs from the previous works by the temporal aspect of the data, the use of more information evidenced in the Reference Form, and the search for identification on the type of remuneration (via RPE or PFL) and in which contexts each type is applied.

Research in America motivates research in the Brazilian context to evaluate the use of RPE to identify peer companies that would be subject to the same external shocks and risks (Albuquerque, 2009, 2014; Jiménez-Angueira & Stuart, 2015) . Thus, in order to answer the main question of the work, it is necessary to identify whether companies use RPE or PFL to remunerate their executives, in addition to considering the possibility that, in different scenarios, each type of remuneration is employed.

Methodology

We made a descriptive survey in a quantitative nature since it brings together a sample of Brazilian

companies listed in B3, with data from 2010 to 2015. The period was chosen for the viability of access to information on executive compensation, which began to be disclosed to starting from 2010 through the Reference Forms (according to CVM Instruction 480/2009). In addition, 2010 marks the beginning of full adoption of the International Financial Reporting Standards (IFRS) in Brazil, allowing accounting information to be based on the same accounting model.

The models used in the research are based on the studies of Albuquerque (2009; 2014) by Jiménez-Angueira and Stuart (2015). The dependent variable consists of the maximum remuneration paid to managers of Brazilian publicly-traded companies (Rem), which consists of a proxy for the remuneration of the Chairman of the Executive Board. The data were obtained through individual consultation of the reference forms available on the B3 website.

In the Brazilian market, part of the companies ended up with an injunction to avoid disclosure of their remunerations. Costa *et al.* (2016) present evidence that certain characteristics of companies and the level of violence are relevant to identify the incentives that would lead to the use of the injunction to avoid disclosure. Therefore, it is relevant to control the characteristics that influence the choice of a company in avoiding disclosure of executive compensation. In this sense, and based on Costa *et al.* (2016), a Probit was estimated, according to Equation 1, presented below¹:

$$LIM_{it} = SIZE_{it} + LEV_{it} + MTB_{it} + SRET_{it} + CGOV_{it} + CONTROLES + \zeta_{it} \quad (1)$$

In that LIM is a dichotomous variable that identifies companies that entered with an injunction (LIM = 1) and those that disclosed the compensation (LIM = 0). The explanatory variables are the size of the company (TAM), measured by the logarithm of total assets, leverage (ALAV), corresponding to the ratio of debt to equity, market-to-book (MTB), buy-and-return (SROV) and corporate governance (CGOV), represented by a dummy variable that assumes 1 if the company is listed in the "Novo Mercado" of B3; 0, otherwise. The additional controls corresponded to dummies for each of the sectors and year.

Based on the results of the regression, the Inverse-Mills-ratio (IMR) (Heckman, 1979) was calculated and used as control in the main regressions of the work, as already used in previous studies, such as Liu *et al.* (2014).

After treatment for self-selection, to measure the performance of each company, its return on assets (ROA) was calculated. To capture the effect, if the remuneration is based on relative performance, the average performance of the companies in each sector / year, excluding the company under analysis, was calculated for both the return of the stock (IRet) and the return on the assets (IROA). Based on Albuquerque (2009), there was control by the size of the company (TAM) and for the year. There was also control for the corporate governance structure, measured based on a dichotomous variable that identifies listed companies in the Novo Mercado (CGOV). All accounting and market variables were obtained from the Economatica database.

Albuquerque (2009, 2014) use an approach in which, in the same regression, the company and industry specific returns are treated as independent variables. Jiménez-Angueira and Stuart (2015) use a two-stage approach. Initially, it assesses how much of the company's return is explained by the return of the industry. Then, the portion of the company's return that is not explained by the sector (that is, the residual of the regression) is used as a proxy for the company's return, since the effects of the return of the other companies in the sector have been eliminated. Thus, the residual of the first regression is used as an independent variable to explain the relationship with the CEO's remuneration.

In this work, the methodology of Jiménez-Angueira and Stuart (2015) was used, allowing a direct analysis of the two components of the company's return (sector and specific) and the remuneration. Thus, it was initially estimated that Equation 1, which aims to identify how much of the specific return of the company is explained by the return of the sector, both by the accounting return (IROA) and the return of shares (IRET).

$$ROA_{it} = \beta_0 + \beta_1 IROA_{it} + \beta_2 IRET_{it} + \text{CONTROLS} + \varepsilon_{it} \quad (2)$$

The return of the firm (ROA) not explained by market returns is represented by the regression residue (ε_{it}). Thus, based on the estimated coefficients, it is possible to identify the company's performance component that is systematic, that is, related to the sector (SROA) and that which is specific or non-systematic (UROA). In the regressions, there is the use of dummy variables to control by sector and by the years.

In a second stage, it is estimated the model to evaluate how much of the CEO's compensation is explained by each of the components of the company's return (systematic and non-systematic), according to Equation 3, as follows:

$$\text{Rem}_{it} = \beta_0 + \beta_i + \beta_1 \text{UROA}_{it} + \beta_2 \text{SROA}_{it} + \text{CONTROLS} + \varepsilon_{it} \quad (3)$$

The maximum remuneration paid by company i in period t corresponds to the variable Rem_{it} . The idea of using the maximum compensation comes from the fact that it probably corresponds to that of the CEO. In order to take into account other factors that impact executive compensation, in addition to performance, control variables were identified and used in Equation 2. Thus, controls were implemented by SIZE, since Albuquerque (2009) presented evidence of which bigger companies remunerate more their shareholders by performance. Finally, the equation was run in panel, with double fixed effect (firm and sector).

According to Equation 3, the coefficients β_1 and β_2 aim to capture if there is a relation between the specific and systematic components, respectively, with the executive compensation. It is possible, therefore, to evaluate whether there is the relative performance payment ($\beta_1 > 0$ and $\beta_2 = 0$) or by luck ($\beta_1 = 0$ and $\beta_2 > 0$). There is also the possibility that there is no relation between performance and remuneration ($\beta_1 = 0$ and $\beta_2 = 0$) and whether both specific skills and market movements explain the level of remuneration ($\beta_1 > 0$ and $\beta_2 > 0$). Thus, it is possible to directly test the type of remuneration of CEOs in Brazil.

Jiménez-Angueira and Stuart (2015) argue that different CEOs may have preference for pay by luck or relative performance depending on whether they are in one of four possible situations. The argument takes into account the possibility that CEOs can influence, ex-post, the compensation committees. For the authors, the combination of two factors is relevant for the identification of CEO preferences: industry performance (positive or negative) and comparing the performance of the company in question with the sector itself (above or below the sector). Thus, four cases (2 x 2 combination) are identified (Jiménez-Angueira & Stuart, 2015):

a) Case 1 (negative performance of the industry and underperforming company): CEOs would have no preference to receive neither by luck nor by relative performance.

b) Case 2 (positive performance of the sector and underperforming company): CEOs would prefer to receive by luck, not by relative performance.

c) Case 3 (negative performance of the industry and company with performance above the sector): CEOs would have preferred to receive by relative performance, not by luck.

d) Case 4 (positive performance of the sector and company with performance above the sector): CEOs would have preferred to receive by luck, and not by relative performance.

Empirically, for the implementation of the four possible situations, two dummy variables were created: the first identifies whether the performance of the sector was positive or negative and the second, if the specific performance of the company was above or below the sector. The POS-IROA dummy variable assumes 1 for positive IROA values and zero, otherwise. The BEAT-IROA dummy variable assumes 1 when the company has a profitability above the market ($ROA > IROA$) and zero, otherwise.

Equation 4, presented below, seeks to evaluate whether there is the payment by luck or relative performance contemplating the four possible situations, through the interaction of the POS-IROA and /

or BEAT-IROA dummies with the systematic (SROA) and specific components (UROA) of business performance.

$$\text{Rem}_{it} = \beta_0 + \beta_i + \beta_1 \text{POS-IROA}_{it} + \beta_2 \text{BEAT-IROA}_{it} + \beta_3 \text{POS-IROA}_{it} \times \text{BEAT-IROA}_{it} + \beta_4 \text{UROA}_{it} + \beta_5 \text{UROA}_{it} \times \text{POS-IROA}_{it} + \beta_6 \text{UROA}_{it} \times \text{BEAT-IROA}_{it} + \beta_7 \text{UROA}_{it} \times \text{POS-IROA}_{it} \times \text{BEAT-IROA}_{it} + \beta_8 \text{SROA}_{it} + \beta_9 \text{SROA}_{it} \times \text{POS-IROA}_{it} + \beta_{10} \text{SROA}_{it} \times \text{BEAT-IROA}_{it} + \beta_{11} \text{SROA}_{it} \times \text{POS-IROA}_{it} \times \text{BEAT-IROA}_{it} + \text{CONTROLS} + \varepsilon_{it} \quad (4)$$

Equation 4 allows to evaluate if there is the payment by luck or by relative performance based on the identification of the signal and significance of the following coefficients:

- a) Case 1 (negative performance of the sector and underperforming company): β_4 and β_8 .
- b) Case 2 (positive performance of the sector and underperforming company): $(\beta_4 + \beta_5)$ and $(\beta_8 + \beta_9)$.
- c) Case 3 (negative performance of the sector and company with performance above the sector): $(\beta_4 + \beta_6)$ and $(\beta_8 + \beta_{10})$.
- d) Case 4 (positive performance of the sector and company with performance above the sector): $(\beta_4 + \beta_5 + \beta_6 + \beta_7)$ and $(\beta_8 + \beta_9 + \beta_{10} + \beta_{11})$.

For each specific case, there will be a RPE payment if the coefficients for the UROA variable are positive and statistically significant and those for the SROA variable are not positive and statistically significant. In this case, the evidence would indicate that the systematic component of the company's profitability would not be taken into account by the companies. If, on the other hand, the coefficient of the variable SROA is significant, then the evidence would indicate the payment by luck.

Based on the comparison of the results of Equations 3 and 4 it becomes possible to identify whether there is the relative or lucky performance payment in Brazil. It should be noted that the continuous variables were treated for the elimination of extreme values, based on the treatment, based on the winsor technique, for 1% of the data in each tail of the distributions.

Results analysis

Table 1 shows the independent variables used in the model and their respective measurement systems. These data for calculation were extracted in Economática comprising the same period in which it was used in the data collection of executives' compensation.

Table 1

Performance indicators used in survey

<i>Independent variables</i>	<i>Measurement</i>
ROA	ROA = Net Income / Total Assets
IROA	ROA Sector = Net income (average sector) / Total assets (average sector) (obs: the sectoral measure excludes the values of the company under analysis)
Ret	Annual ret = Share price t-1 (average) / Share price t (average)
Iret	Sector Ret = Share price t-1 (average sector) / Share price t (average sector) (obs: the sectoral measure excludes the values of the company under analysis)

Initially, in Table 2, the results of the Probit regression are presented to identify the characteristics that influence the choice of companies to enter with injunction to avoid the disclosure of the remuneration of their executives:

Table 2
Probit regression

		LIM
SIZE	0,455*** (0,000)	
LEV	0,814** (0,013)	
MTB	0,383** (0,022)	
SRET	(-0,157)* (0,079)	
CGOV	(-0,429)*** (0,000)	
<i>Year Dummies</i>	Yes	
<i>Sector Dummies</i>	Yes	
Observations		1008
Pseudo-R ²		29,25%

***, **, * indicate significance at the levels of 0.01, 0.05 and 0.10, respectively

The results corroborate those of Costa *et al.* (2016), that a series of characteristics of the companies ends up influencing their strategy of disclosure (or not) of executive compensation. The level of correctly classified companies was 84.23%.

In order to evaluate whether Brazilian public companies remunerate their executives by relative performance or by luck, regressions were estimated based on Equations 3 and 4, the results of which are presented in Table 3, below:

Table 3
Relationship between executive compensation and componentssystematic and non-systematic performance

	Eq (3)	Eq (4)
POS-IROA		0,721* (0,063)
BEAT-IROA		0,402 (0,237)
POS-IROA x BEAT-IROA		(-0.665) (0,131)
UROA	8,165** (0,016)	6,216 (0,559)
UROA x POS-IROA		(-1.344) (0,899)
UROA x BEAT-IROA		2,055 (0,833)
UROA x POS-IROA x BEAT-IROA		(-0.918) (0,936)
SROA	2,143*** (0,000)	(-2.116)** (0,222)
SROA x POS-IROA		5,721*** (0,003)
SROA x BEAT-IROA		5,249*** (0,004)
SROA x POS-IROA x BEAT-IROA		(-6.633)*** (0,003)
SIZE	(-0.205)*** (0,003)	(-0,172)** (0,014)
IMR	(0,592)*** (0,000)	(0,568)*** (0,001)
<i>Year Dummies</i>	Yes	Yes
Firms Fixed Effects	Yes	Yes
Estatistic F	16,23***	9,32***
R ²	5,40%	8,81%
Observations	681	681

***, **, * indicate significance at the levels of 0.01, 0.05 and 0.10

Note: Correction of the regression effects of executive compensation on ROA specific to the company and its industry. The sample includes 681 observations between the years 2010 to 2015. The values are expressed in Reais for each sample period. The remuneration is measured in total remuneration (1) considering UROA and SROA. The remuneration is measured as total compensation (2) considering the detail of UROA and SROA. All models include year dummies.

***, **, * indicate significance at the levels of 0.01, 0.05 and 0.10, respectively. The P-value of each coefficient is highlighted in italics.

In the second column of Table 3 the results for Equation 3 are presented, comparing the specific (UROA) and systematic (SROA) components of the company's profitability with the Remuneration level (Rem) of the CEOs. It is possible to identify that the remuneration has a positive and statistically significant relationship for both UROA (coefficient equal 8,165 and statistically significant at 5%) and SROA (coefficient equal to 2,143 and statistically significant at 1%). Thus, there is evidence that, on average, companies pay by lot, since the systematic component of profitability is also positively related to CEO pay.

In the third column of Table 4, the results of Equation 4 are presented, which allow to identify, for each of the four cases, whether there is payment by luck or by relative performance. To assist in the understanding and interpretation of the results, Table 4, below, presents the four cases and their respective tests.

Table 4
Case studies and CEOs Expectations

Cases	CEO Expectation	Coef.	Sig.
Case 1 (IROA<0; ROA<IROA)	PFL $\beta_4 = 0$ $\beta_8 = 0$	6,21 -2,1	
Case 2 (IROA>0; ROA<IROA)	PFL $\beta_4 + \beta_5 = 0$ $\beta_8 + \beta_9 > 0$	0,71 13,42	***
Case 3 (IROA<0; ROA>IROA)	RPE $\beta_4 + \beta_6 > 0$ $\beta_8 + \beta_{10} = 0$	5,98 26,95	** ***
Case 4 (IROA>0; ROA>IROA)	PFL $\beta_4 + \beta_5 + \beta_6 + \beta_7 > 0$ $\beta_8 + \beta_9 + \beta_{10} + \beta_{11} > 0$	1,04 3,99	**

Nota: ***, **, * indicam significância nos níveis de 0,01, 0,05 e 0,10, respectivamente

The analysis in Table 4 shows that the preference of the CEO tends to prevail in almost all cases. In Case 1, the variable remuneration with the return components (UROA and SROA) is not expected on average, since the performance of the sector is negative and the specific performance of the company is below the sector. The results corroborate this expectation.

In Case 2, the results corroborate the preference of CEOs to receive by luck, since the performance of the sector is positive and superior to that of the company itself. Coherently, there is remuneration relationship only with the systematic component, not with the specific component (which is below the market).

For Case 3, the analysis indicates that the specific component of the company's profitability is positively related to the remuneration, which would indicate payment by relative performance. On the other hand, there is also a positive and significant relationship with the systematic component, that is, they continue to pay by luck. It is indicative that such companies, which are in a sector with negative performance (IROA <0), also end up punishing the CEOs in their compensation. This result is similar to that presented by Jiménez-Angueira and Stuart (2015, page 723): "the evidence for Case III indicates that managers are paid for performance (RPE is implemented ex post) but not shielded from the effects of the market, even though ex post the manager would prefer no weight to be placed on the systematic

component of performance (ie in PFL). "

Finally, in Case 4 a positive (and statistically significant at 5%) relationship was found with the systematic component (SROA), but not with the specific (UROA). The result is different from that presented by Jiménez-Angueira and Stuart (2015), since they did not find a relation either to luck or to the relative payment for Case 4. In Brazil, the evidence suggests that "double-dipping", because despite receiving by luck, CEOs do not receive by how much they can generate profitability above the sector.

The results show that there is not only one type of relationship between executive compensation and performance. In addition, in Cases 2, 3 and 4, the systematic component always has a positive relationship with the remuneration. In this sense, the payment by luck turns out to be employee and "rewards" CEOs in times of positive performance of the sector, but also "punishes" in periods of negative performance. The results of the tests do not imply the absence of RPE (Case 3), but in a package of total compensation of the CEO more oriented in the pay-for-luck, in which the result of the sector becomes criterion for the contracts of remuneration.

This study shows the link between the shocks that affect the sector's results and the remuneration of its executives in Brazil. Thus, it corroborates the recent international evidence, which determines that, in different contexts, the remuneration model is changed between RPE and PFL (Albuquerque, 2014; Jiménez-Angueira & Stuart, 2015).

Conclusion

Variable remuneration is a mechanism to align interests and motivate the executive (Beuren; Mazzioni, & Silva, 2014). Coherently, the objective of this research was to investigate the relationship between executive compensation and the relative performance of Brazilian companies listed in B3. It differs from previous research carried out in different contexts by adopting other concepts to operationalize the variables because they do not observe access to executive compensation data in periods prior to the mandatory disclosure of the Reference Form.

Pukthuanthong *et al.* (2004) point out that research has found a strong link between executive compensation and corporate performance. Contrary to the findings of Albuquerque (2014), in general, companies in Brazil do not remunerate executives for relative performance. The main results indicate that, in large part, there is the lucky payment in the country, partially in line with the findings of Jiménez-Angueira and Stuart (2015). Thus, shocks that affect the companies in the sector tend to directly influence the payment by luck (or by bad luck).

Research carried out in Brazil highlighted a positive relationship between executive pay and company performance (Camargos & Helal, 2007; Krauter, 2013). However, using the variables based on international literature, as well as a case study evidencing the interaction of company-specific and non-systematic return variables, it can be seen that there is a more intense correlation of executive pay with company performance explained by the return of the sector, also demonstrated by Jiménez-Angueira and Stuart (2015).

Looking at this direct relationship, this research offers interested parties the possibility of better studies on the specific performance of the company and the sector in the most symmetrical way in the elaboration of remuneration contracts in Brazil.

The research is limited to the data that were disclosed by the companies, causing the tests to have occurred indirectly to verify if there is the use of RPE in the remuneration contracts. In the same way that the analysis of possible use of PFL are indirectly verified. In addition, any measurement error of the companies of their indices in relation to their statements may interfere with the results, since the period of mandatory disclosure of remuneration in the reference form since 2009 may characterize a small period for the number of observations required for Brazil that has few companies per sector.

The results presented in this research should be interpreted with caution due to the methodology used for the formation of the research sample using the companies listed in B3, excluding sectors regulated

in a specific period. To examine the persistence of the results found in this work in future research, it is suggested that other studies can be developed using other variables and periods not worked in order to be able to deepen the results found. Therefore, the use of a longer time series and larger number of organizations may better contribute to data analysis after more consistent tests with greater number of observations.

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