

# Endogeneity of the Relationship Between Managerial Compensation and Firm Value: Evidence from French Listed Firms

**SARRA AMDOUNI**

High School of Economic and Commercial Sciences (ESSEC)

University of Tunis

E-mail: [sarraamdouni@yahoo.fr](mailto:sarraamdouni@yahoo.fr)

Tel : 21695539051

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## *Abstract*

*The objective of this study was to examine the existence of an endogenous relationship between executive compensation approximated by the total and variable remuneration and the value of the firm. Empirically, we used a sample of 467 French listed firms during the 2004-2007 periods. We used a simultaneous-equation model where we included the governance variables and ownership structure as determinants of the relationship. The endogenous relationship was only detected between the variable remuneration and the value of the firm. It was a two-way relationship accounted for by opportunism. Any increase in compensation was negatively perceived by investors, and any increase in the value urges the shareholders to reduce the variable part of the remuneration.*

**Key Words:** *Executive Compensation, Firm Value, Endogeneity, Simultaneous-Equation Model, France.*

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## **Introduction**

The relationship between the managerial compensation and the value of the firm has been heavily debated in the literature (Firth and *al.*, 1996 ; Elston and Goldberg, 2003 and Cao and *al.*, 2010). Indeed, the executive compensation plays a key role in aligning the interests of the managers with those of the shareholders (Hall and Liebman, 1998). This accounts for the great impact of wages on performance during the 1980-1994 periods which is primarily due to the increasing use of stock options. Thus, the relationship between the ownership structure including managerial ownership and compensation through stock options was emphasized (Merhan, 1995). This relationship has been confirmed in several contexts mainly in Australia (Evans and Evans, 2002), China (Cao and *al.*, 2010 ; Conyon and He, 2011), the United States (Core and *al.*, 1999 ; Boyd, 1994 et Baek and Pagan, 2006), Finland, (Vittaniemi, 1997), Portugal (Fernandes, 2008) and researchers concluded that the link between option allocation and corporate performance is statistically negative and positive.

It is worth stating that the relationship between managerial compensation and the value of the firm cannot be explicitly accounted for unless we include the governance or control mechanisms encompassing the managerial ownership and the Board of Directors (Lei and Song 2008 and Lee and Cheng, 2011). Therefore, the binding of opportunistic managerial compensation is possible only in the presence of a board of directors who depends on the manager. More accurately, independent directors, aware of the power of the CEO, seek to curb his opportunism by preventing him from earning a large salary that does not reflect his effort and which negatively affects the value of the firm. This expropriation of the shareholders' wealth can have a negative impact on the firm. First, a high salary reduces the results heralded by the firm. Such a

reduction is adversely remunerated by the market and brings about a downward trend of the firm's value. Then, a high salary may be perceived by the investors in the market as an evidence of the existence of an interests' conflict. This fact can negatively influence the value of the firm (Vittaniemi, 1997; Core and *al.*, 1999 and Baek and Pagan, 2006). Furthermore, the market investors do not only control the executive compensation regardless of his ownership and the governance implemented. Indeed, good governance allows to monitor the agency conflicts, insures a transparency climate and leads to the congruence of interests. This good governance takes into account the 'weight' of the manager in the firm and attempts to provide him with an equitable remuneration granted according to his effort. The rise or the fall of this remuneration occurs according to the managerial performance. Because this pay level is controlled by independent directors, investors will adjust the value on the market.

Henceforth, we can deduce that the property of the manager affects the level of his remuneration through the power with which it entrusts him. Nevertheless, this level is monitored by the established governing characteristics. Executive compensation properly reflects his competence and fairly reflects his performance within the corporation. This is likely only in the presence of an effective governance. Indeed, a lax governance system is unable to curb the manager's opportunism and limit its discretionary power (Cohen and Lauterbach, 2008). Such a system becomes thoroughly dependent on the manager and is prone to hide acts that might increase his wealth and shrink that of the shareholders. However, such relationships cannot escape the market that controls the competence of the manager through the performance achieved by the firm. In other words, if the announced performance is good and if it is fulfilled under an independent control that precisely sets the executive compensation regardless of the power entrusted to him by his property, it will be well assessed by the market. Thus, the relationship between the managerial ownership, the compensation, the governance characteristics and the firm value are taken for granted but complex.

Through this research we seek to examine the existence of an endogenous relationship between managerial compensation and the value of the firm in the French context. To identify this endogeneity, we set up a simultaneous equation-system which aims to capture the endogenous nature of the remuneration and which is determined through the intrinsic characteristics of the firm in this case the mechanisms of governance and ownership structure and the firm value in the French context.

We contribute to the available literature through several headings. First, almost all the previous studies conducted on managerial remuneration were focused on the US and British context (Conyon and Murphy, 2000 and Conyon and *He*, 2011). Then, the ownership structure in the Anglo-Saxon context including the US and the UK differs from that of the continental context. Indeed, the French companies have a concentrated ownership structure and a weak legal system characterized by a low protection of the minority shareholders, which makes the French context more liable to expropriation (La Porta and *al.*, 1999; Faccio and Lang, 2002). Henceforth, our research provides the boon of studying the French context given its peculiarity. Eventually, despite checking both directions of the relationship between managerial compensation and the value of the firm (Kaplan, 1994; Evans and Evans 2002; Fahlenbrach, 2009 and Cao and *al.*, 2010), to our knowledge, as well as to the exclusion of the study carried out by Buck and *al.* (2008), there are no empirical attempts detecting the potential existence of a particular endogenous relationship in the French context. Buck and *al.*, (2008) showed that the executive compensation and the company performance affect each other through reward and motivation. Besides, only Palia (2001) is the scholar who discussed this relationship in the American context. Nevertheless, his empirical study failed to demonstrate a causal relationship between the wages and the value of the firm. This relationship seems to be more complicated. Its complexity stems from the underlying relationships and the interpretations to emerge. Thus, the compensation and its feedback on the market seem to be a stimulus / inhibitory to the business or stock market performance.

This study is outlined as follows. The first section is devoted to a review of the literature, while the second presents the assumptions made. As for the third, it displays the details used in our methodology. In the

fourth section, we shall present the empirical results and interpretations. Ultimately, in the last section, we shall discuss the findings released.

## Theoretical Background

The relationship between the executive compensation and the firm performance has been the subject of several works mainly in the United States (Murphy, 1999). Nonetheless, outside the United States, this relationship was limited to some Asian countries due to data unavailability. For example, the most surveyed Asian countries are Japan (Kato and Rockel, 1992; Kaplan, 1994; Kato, 1997; Abe and *al.*, 2005; Kato and Kubo, 2006 and Basu and *al.*, 2007), Korea (Kato and *al.*, 2006) and China (Kato and Long, 2004 and Firth and *al.*, 2006). It should be noted that the relationship between the compensation and the value of the enterprise, documented in Korea by Kato and *al.* (2006) and China by Kato and Long (2004), has been affected by governance mechanisms which depend on the state ownership and the presence of a set of enterprises (Japanese keiretsu and Korean chaebol). As a matter of fact, in many countries the capital is held by groups of companies with a significant share in the capital. In Japan, they are called Keirtsu and in Korea they bear the name Chaebol. The relationship between the remuneration and performance is considered more significant for the companies that are not affiliated to such groups of corporations (Unite and *al.*, 2008). As far as we know, the relationship between the executive pay, the corporate performance and the governance mechanisms, such as the characteristics of the Board, are not addressed in the literature. We note in this context that the impact of the quality of the Compensation Committee on the relationship of the managers' wages, company performance was the subject matter of several investigations. We can mention the study of Newman and Mozes (1999) which shows that the relationship between the pay and the stock returns is much higher when the compensation committees within these companies are independent. The same conclusion was drawn by Vafeas (2003) suggesting that the sensitivity of the salaries to performance for the firms with independent compensation committees has risen. Beside the independence of the remuneration committee, Sun and *al.* (2009) have added other features of the remuneration committee to test their effect on the link between performance and pay. These authors concluded that the future performance is positively associated with the grant of the stock options when the quality of the Compensation Committee improves. Other governance mechanisms can play a key role in determining the link between the pay and the performance of the companies operating in South Korea and the Philippines particularly the ownership structure. It should be noted that the majority of companies in both countries are under family control, especially in the Philippines. These companies are more likely to link the executive pay to performance in order to align the interests of the executives with those of the shareholders (Saldaña, 2001).

According to Jensen and Meckling (1976), the ownership structure, the executive compensation as well as the board composition are mutually determined according to the nature of the firm's activity. They also demonstrated that these variables also influence the company's performance. The existence of potential complex and concurrent links, between these variables is not much considered by some researchers. Chung and Pruitt (1996) showed that the value of the firm measured by Tobin's Q, as well as the ownership structure and the managerial remuneration are jointly determined. This is because the managerial ownership and remuneration are two incentive mechanisms that encourage the congruence of executives' interests and those of the shareholders and have a positive impact on the value of the firm. From these empirical works, we can affirm the existence of links between executive compensation, governance mechanisms and the value of the firm.

## Hypotheses

Two assumptions were made. The first reveals the existence of links between executive compensation, managerial ownership, governance and the firm value. The second seeks to examine the effect of endogeneity between the compensation and the value of the firm.

### **Executive compensation, governance mechanisms and firm value**

An efficient governance system can align the managers' interests with those of the shareholders and to mitigate the effect of manager expropriation (Andres and Vallelado, 2008). Indeed, a lax governance system is unable to curb the opportunistic practices. Therefore, leaders cannot use their property to expropriate the wealth of the minority shareholders, through the wage rise, when the control mechanisms are effective. So the links between the managerial remuneration, the governance mechanisms and the company value are obvious. Some researchers also go as far as to confirm that the value of the company, the ownership structure and the managerial remuneration are determined jointly (Chung and Pruitt, 1996) and that the ownership structure and the managerial remuneration influence the value of the firm (Jensen and Meckling, 1976). This view corroborates the study conducted by Lei and Song (2008) who pointed out that the value of the firm is positively influenced by corporate governance. The latter is approximated by several variables related to the characteristics of the Board of Directors, the executive compensation and the ownership structure. On the one hand, the yielded results reveal, the existence of a positive relationship between the firm value and governance, and on the other hand, a negative relationship between the governance in family businesses and the managerial remuneration. Moreover, these scholars showed that the Hong Kong investors are willing to pay an extra bonus for the best-run companies. So it is plain, as ascertained by, Lee and Cheng (2011) that executive compensation, his ownership as well as the business value are interdependent variables. The previous development leads us to test the following hypothesis:

Hypothesis 1: The effect of executive compensation on the firm's value depends on the governance mechanisms.

### **Endogeneity of the relationship between managerial compensation and the firm value**

Endogeneity or the causal relationship between managerial compensation and the value of the firm has not been the subject matter in several empirical studies. Thus, we detected some attempts so as to reveal the possibility of the existence of such a relationship. By developing a simultaneous equation-system, between managerial incentives (the managerial ownership and the managerial remuneration) and the value of the firm, in the American context, Palia (2001) could not check the endogeneity. In this context the survey carried out by the Buck and al. (2008) is worth mentioning. These authors examined the relationship between the performance and the remuneration of Chinese managers. Two arguments have been put forward to check whether the executive pay and the company performance influence each other through reward and motivation. First and foremost, motivation is an explanatory factor. Indeed, the shareholders set an optimal compensation package to encourage the maximization of the firm value. This may corroborate the Core and al. (2003) findings stressing that incentive pays increase the share price and that an incentive compensation boosts future performance. This finding is also confirmed by Hambrick and Finkelstein (1995) highlighting the importance of compensation in terms of management motivation. Secondly, the reward is introduced as an explanatory factor. Indeed, a high pay is a reward for the effort done by the executives. This reward means that the salary is based on the achieved performance and the current performance. Indeed, an effective remuneration system based on performance should increase the likelihood that the result revealed by the firm must be profit-showing. It is clear therefore that a positive relationship between current performance and the remuneration system reflects that it is based on performance, whereby the postulation of the following hypothesis:

Hypothesis 2: The relationship between the executive compensation and the value of the firm is endogenous.

### **Methodology**

In this section, we shall lay down our research methodology. We shall start with the presentation of the selected sample and the selected study period. Next, we shall define our model and the variables used. Lastly, we shall explain our econometric approach.

**Sample and Period of Study**

Our original sample encompasses all the companies included in the Worldscope data base which consisted of 2372 observations undertaken during the 2004-2007 period. From this base, we proceeded with the elimination of some observations as shown in the following chart:

Table 1-Sample selection

<b>Firms</b>	<b>Nombre of observations</b>
Total sample (2004-2007)	2372
Financial institutions	(732)
Firms which reveal a global or net pay or entreprises which do not reveal their remuneration	(38)
Firms that do not disclose information on their ownership structures or for which financial data are not available	(33)
Firms with manager departure	(72)
Final sample	1497 whether 467 firms.

From the initial base, we deleted all the comments on the financial institutions (SIC 6000-6999 or 732 observations) because of their specific accounting regulations. Moreover, this sample excludes the companies that do not have information on executive compensation (38 observations), and whose financial data or those whose financial data related to the ownership structure are not available (33 observations). In addition, the sample excludes the companies where there was a leader's resignation or firing (72 observations). It is noteworthy that we have undertaken this elimination in accordance with the previous studies conducted by Cohen and Lauterbach (2008). Thus, the final sample consists of 1,497 observations representing 467 non-financial French companies floated on the stock market over the 2004-2007 periods. The data on managerial compensation, manager's ownership and manager characteristics were extracted from the company annual Financial Statements available on the AMF website (The Financial Markets Authority). The financial data have been extracted from the Worldscope database.

**Sector allocation of the sample**

The distribution of our sample according to the business activity is displayed in the following table:

Table 2. Firms classification by industry

<b>Industry</b>	<b>Abbreviation</b>	<b>SIC Codes</b>	<b>Number of observations</b>	<b>Percentage of firms (%)</b>
Oil industry	Petr	13, 29	17	1,13
Sustainable consumer goods	Bcdv	25, 30, 36, 37, 50, 55, 57	262	17,51
Basic industry	Idba	10,12, 14, 24, 26, 28, 33	161	10,75
Foodstuff and tobacco	Alta	1, 2, 9, 20, 21, 54	76	5,08
Construction	Const	15, 16, 17, 32, 52	73	4,88
Intermediate goods	Bint	34, 35, 38	105	7,01
Freight transportation	Trma	40, 41, 42, 44, 45, 47	57	3,81
Public services	Serup	46, 48, 49	66	4,41
Trade and textile	Ctex	22, 23, 31, 51, 53, 56, 59	39	2,60
Services	Serv	72, 73, 75,76, 80, 82, 87, 89	416	27,79
Leisure	Lois	27, 58, 70, 78, 79	225	15,03
Total			1497	100

Table 2 shows that our sample has a significant sectoral diversity. The surveyed companies are split into 11 sectors namely the oil industry, sustainable consumer goods, basic industry, foodstuff and tobacco, construction, intermediate goods, freight transportation, public services, trade and textile, service and leisure. This sector taxonomy is consistent with that of Campbell (1996), which was substantially used in the subsequent studies (Claessens and al., 2002 as well as Ben Hamida and Mamoghli and Boubaker 2007). It is worth emphasizing that the service sector seems to be the most prevailing sector (27.79%) followed by the sustainable consumer-goods' sector (17.51%), then the leisure sector which accounts for (15.03%). We can ascertain that this distribution is the result of our data- collection process. Indeed, a firm will be retained only if it meets two conditions. The first is the data availability on managerial remuneration, corporate governance and the financial variables. The second is the absence of a leadership take over in a given year. Finally, it should be noted that we used the Campbell classification (1996) as it allows for an easier consolidation of the SIC codes.

### Model specification and variables measurement

In this piece of research, our aim is to check the existence of endogeneity links between executive compensation and the value of the firm. This implies the following simultaneous equation- system:

$$\begin{cases} \text{CeoComp}_{i,t} = \alpha_{i,t} + \beta_1 \text{FirmVal}_{i,t} + \beta_2 \text{PMU}_{i,t} + \beta_3 \text{ExControl}_{i,t} + \beta_4 \text{BdSize}_{i,t} + \beta_5 \text{Dual}_{i,t} + \beta_6 \text{CeoTen}_{i,t} + \beta_7 \text{CeoAge} + \beta_8 \text{FirmSize}_{i,t} + \beta_9 \text{FirmRisk}_{i,t} + \text{Industry dummies} + \text{Year Dummies} + \varepsilon_{i,t} \quad (1) \\ \text{FirmVal}_{i,t} = \alpha_{i,t} + \beta_1 \text{CeoComp}_{i,t} + \beta_2 \text{FirmAge}_{i,t} + \beta_3 \text{FirmSize}_{i,t} + \beta_4 \text{Lever}_{i,t} + \beta_5 \text{SalesGro}_{i,t} + \beta_6 \text{Capex}_{i,t} + \beta_7 \text{ResDev}_{i,t} + \varepsilon_{i,t} \quad (2) \end{cases}$$

- ✓ The first equation deals with the impact of the value of the firm on managerial remuneration. We include as an explanatory variable, the ultimate manager's ownership, its control excess, the Board size, the duality of the manager, his term, his age, the size of the firm and its stock market-risk.
- ✓ The second equation tackles the effect of the managerial compensation on the value of the firm. The variables included in the model are the size of the firm, the age, the debts, its sales-revenue growth, capital expenses and the expenditure on research and development.

### Measurement of the dependent variables

In our study, we consider two measures of executive compensation (CeoComp): the total remuneration (TotCeoComp) and the variable remuneration (VarCeoComp). This is the gross compensation paid to the manager (Core and al., 1999 and Chalmers and al., 2006). The total compensation is gauged by the neperian logarithm of the total fixed remuneration, the variable remuneration, the fringe benefits, attendance premiums, the bonuses, the earnings on free shares and the value of option stocks. The variable compensation is approximated by the components of total remuneration with the exception of its fixed part. It is noteworthy that the manager considered in our study is the CEO if the company is run by a Management Board and a Supervisory Board and a Managing director or CEO if the company is run by a Board of Directors.

The Value of the firm (FirmVal) measured by Tobin's Q is approximated by the sum of the market capitalization and the liabilities' ledger values divided by the ledger value of the assets (Ozkan, 2007; Laeven and Levine, 2008; Chhaochharia and Laeven, 2009 and Dong and al., 2010).

### Measurement of the independent variables

The ultimate managerial ownership (PMU) is a variable measured with the ultimate managerial ownership. In our study, we used the 10% threshold to identify the ultimate controlling shareholder. The choice of this threshold is firstly accounted for by the fact that the financial authorities require the listed corporations to

disclose their stakes held in other companies which exceed 10% as this threshold is considered sufficient to hold the control of a company according to several research studies (La Porta and *al.*, 1999; Faccio and Lang, 2002 and Claessens and *al.*, 2000 and 2002).

$$UOWS = \sum_{j=1}^m \prod_{i=1}^n OW_{i,j}$$

The CEO's control excess (ExControl) which is approximated by the difference between the manager's ultimate cash flow and ultimate control rights, all divided by the manager's ultimate control rights. It is noteworthy that in adopting the commonly accepted approach in the literature to identify the ultimate controlling shareholder (La Porta and *al.*, 1999; Claessens and *al.*, 2000, 2002; Faccio and Lang, 2002 and Attig and *al.* 2006), we calculated for each concentrated ownership-structure company the cash flow rights and the control rights. The rights to the ultimate cash flows are determined as follows:

$$UOWS = \sum_{j=1}^m \prod_{i=1}^n OW_{i,j} \quad (1)$$

With:

UOWS is the share of the rights to the ultimate cash flows (that is to say the part of ultimate ownership).  $OW_{i,j}$  is the share of property directly at (i) level of the ownership chain (j).

The ultimate control rights are determined as follows:

$$UCOS = \sum_{j=1}^m \min(CO_{i,j}) \quad (2)$$

With:

UCOS is the share of ultimate control rights (i.e. the share of voting rights).  $CO_{i,j}$  is the direct control share (that is to say the percentage of voting rights) at (i) level of the ownership chain (j).

The Board size (BdSize) measured by the neperian logarithm of the number of directors holding responsibilities in the Board (Core and *al.*, 1999; Andjelkovic and *al.*, 2002 and Pan and *al.*, 2010.).

The duality (Duality) taking value 1 if the manager combines the functions of CEO and Chairman of the Board, 0 otherwise (Core and *al.*, 1999 and Pan and *al.*, 2010). The CEO's tenure (CeoTen) measured by the neperian logarithm of the number of years spent in the company as a manager (Anderson and Bizjak, 2003 and Croci and *al.*, 2012.).

The CEO's age (CeoAge) measured by the neperian logarithm of the age of the leader according to the number of years (Attaway, 2000; Cohen and Lauterbach, Fahlenbrach 2008 and 2009). The Company size (FirmSize) measured by the neperian logarithm of the total assets. The Stock market risk of the firm (FirmRis) measured by the standard deviation of the monthly share - returns (Cohen and Lauterbach, Fahlenbrach 2008 and 2009).

The age of the firm (FirmAge) measured by the neperian logarithm of the number of years elapsed (Boubaker, 2007 and Bebchuk and *al.*, 2011). The borrowings (Lever) measured by the total debt divided by the total assets (Brick and *al.*, 2006; Laeven and Levine, 2008; Pan and *al.*, 2010 and Bebchuk and *al.*, 2011). The Sales growth (SalesGro) measured by sales growths (Boubaker, 2007 and Laeven and Levine, 2008).

The Capital expenditure (Capex) measured by the capital expenditures divided by the total assets (Ryan and Wiggins, 2001 and Boubaker 2007). The expenses on research and development (ResDev) approximated by the expenditure on research and development divided by the total assets (Ryan and Wiggins, 2001 and Bebchuk and al., 2011).

### Identification and estimation- method Conditions

A system of simultaneous equations must meet the order conditions as well as the rank- order requirements. The order conditions are necessary conditions and are determined equation by equation (Bourbonnais, 2002). The latter are checked if the excluded number of endogenous and exogenous variables is greater than the number of equations minus 1. In our case, the number of endogenous variables, i.e. the value of the firm and the managerial remuneration, equals the number of equations, therefore the order condition is verified and our model is over-identified. The row conditions are necessary but in practice it is difficult to apply them. Also, it is difficult for a system that fulfills the order conditions does not meet the rank conditions. Overall, the application of rank and order conditions shows that our system is identifiable.

To assess our simultaneous-equation system, we use the least-square-triple method. The choice of this method is accounted for by several considerations. The first is the criticism previously expressed to the least square-methods and the generalized times. The second is the over-identification of our model that justifies the use of this method. The third is the effectiveness of this method that takes into account the dependence of the error terms and enables to test the multicollinearity and to estimate at once all the equations (Bhagat and Bolton, 2008).

### Empirical Results

In this section, we shall start by studying the descriptive statistics of the variables used. We then present the correlation matrix, the results of the estimated model considered shall be explained and interpreted.

#### Descriptive statistics of the sample

The following table details the descriptive statistics of the variables used in our work.

Table 3. Descriptive statistics

Variables	Minimum	Median	Mean	Maximum	S.D
TotCeoComp(K€)	1,154	265,667	312,075	595309,2	0,037
VarCeoComp(K€)	0	25,361	204,514	520009,2	0,185
FirmVal	0,003	1,003	1,408	31,254	1,732
PMU	0	0,023	0,189	0,981	0,257
ExControl	-0,988	0,165	0,188	0,967	0,248
BdSize	3	6	6,37	21	1,618
Dual*	-	-	0,69	-	-
CeoTen(years)	2,380	5,999	6,268	59,039	2,176
CeoAge(years)	30,969	53,000	52,500	84,944	1,185
FirmSize	696,062	169 222,551	239 874,224	104 752 397	8,778
FirmRisk	0,019	0,193	0,123	0,921	0,114
FirmAge	7,344	28,731	31,468	125,336	2,440
Lever	0	0,203	0,227	0,795	0,197
SalesGro	-0,884	0,088	0,164	7,428	0,450
Capex	0	0,035	0,053	2,306	0,086
ResDev	0	0,083	0,138	8,495	0,832

\* A dummy variables

It is essential to study the descriptive statistics of our interest variable especially the compensation, the value of the firm and the variables related to governance mechanisms. In our sample, it seems that the average total remuneration of the French business managers is 312.075 K€ and the average of the variable is 204.514 K€. Of such compensation values are lower than those paid to the senior executives notably in the Anglo-Saxon American context. Indeed, the differences are due to the company size. The larger the listed company like in the US, the higher the executive compensation is. The results show that the average of the ultimate executive managerial ownership is 18.9%. The term of the managers within the company is 6 years on average. Their age is 52 years on average. Excess control of the manager is 18.8%. This gap is close to that found by Boubaker (2007) in the French context (23.62%) but higher than that found by Faccio and Lang (2002) in the French context (7%). These ratios are similar to that found in Western Europe (13.20%) and Norway (22.4%) and significantly lower than the one found in East Asia (25.4%). These differences are due to the cross-shareholdings, the pyramidal structures and the right to double-voting shares that characterize the French context (Boubaker, 2007). As for the governance variables, there are on average 6 directors on the board of the listed French companies. It is a small board compared to that in other countries including China, whose board is on average nine members regardless of the study period (Firth and *al.*, 2007; Li and *al.*, 2007 and Conyon and He, 2013). We also note that 69% of the cases where the leader himself chairs the Board. Indeed, a concentration of the power in the hands of the leader contributes to his entrenchment and strengthens his latitude. The company's value is measured by Tobin's Q where we found an average of 1,408 similar to Boubaker (2007) in the French context and which is 1.99. This leads us to ascertain that the firms selected are moderately successful. This value is similar to that found in the US context (1,246 supplied by Chung and Pruitt, 1996), in the Chinese context (1.16 found by Pan and *al.*, 2010), in Great Britain (1.76 displayed by Ozkan, 2007) and Western Europe (1.77 which is confirmed by Laeven and Levine, 2008). Finally, we find that the firms in our sample had a mean age of 31 years, an average debt ratio of 79.5%, an average rate of sales growth of 16.4%, an average investment rate capital of 5.3% and 13.8% in research and development.

**Correlation matrix**

Before our regression, it is essential to test the correlation between the independent variables. So, we present the following correlation matrix of the variables studied.

Table 4. Correlation matrix

	1.PM U	2.ExC ontrol	3.BdS ize	4.Dua l	5.Ceo Ten	6.Ceo Age	7.Fir mSize	8.Firm Risk	9.Firm Age	10.Le ver	11.Sal esGro	12.C apex	13.Re sDev
1	1												
2	0,126	1											
3	0,101	0,069	1										
4	0,007 <sup>a</sup>	0,028	0,091 <sup>a</sup>	1									
5	0,019 <sup>a</sup>	0,095 <sup>b</sup>	0,190		1								
6	0,102 <sup>a</sup>	0,136	0,208	0,055 <sup>c</sup>	0,047	1							
7	0,173	0,015 <sup>a</sup>	0,004	0,071 <sup>c</sup>	0,064	0,065 <sup>b</sup>	1						
8	-0,008	0,079	0,111	0,006	0,099	0,007	0,048	1					
9	0,055	0,182	0,109 <sup>a</sup>	-0,045	0,117 <sup>a</sup>	0,209 <sup>a</sup>	0,017 <sup>a</sup>	0,009 <sup>a</sup>	1				
10	0,079 <sup>c</sup>	0,039	0,007 <sup>a</sup>	0,191	0,013	0,091	0,105	0,119 <sup>b</sup>	0,203	1			
11	0,184	0,077 <sup>a</sup>	0,022	0,036 <sup>a</sup>	0,219 <sup>a</sup>	-0,058 <sup>a</sup>	0,102	0,082	0,035 <sup>a</sup>	0,073	1		
12	0,044 <sup>a</sup>	0,106	0,013 <sup>a</sup>	0,009	0,022	0,107	0,028 <sup>a</sup>	0,077 <sup>b</sup>	0,104	0,066 <sup>a</sup>	-0,176	1	
13	0,027	-0,108	0,104	-0,121	0,128	0,008	-0,177	0,236	-0,048 <sup>a</sup>	0,111 <sup>c</sup>	0,116 <sup>a</sup>	0,016	1

Table 4 provides correlation between the variables used in the analysis. This table shows the lack of correlation.

**Estimation Results**

Here underneath are presented the results of the endogeneity of the total manager- compensation and firm-value relationship. Then, we present the results of the endogenous relationship of the variable remuneration of the CEO and the firm value.

**Results of the endogeneity of the total executive compensation and the firm value**

Table 5 displays the results of the effect of the existence of endogenous relationship between the total executive compensation and the value of the firm.

Table 5.Results of the regression

<b>Dependant variable : Total Compensation</b>		
	Coefficient	Probability
FirmVal	0,031	(0,740)
PMU	1,393	(0,055) c
ExControl	1,227	(0,051) c
BdSize	1,580	(0,047) b
Dual	-0,053	(0,524)
CeoTen	0,243	(0,060) c
CeoAge	-0,064	(0,722)
FirmSize	0,714	(0,000) a
FirmRisk	1,667	(0,078) c
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
Intercept	2,200	(0,000) a
Ajusted-R <sup>2</sup> (%)	32,01	
<b>Dependant variable : Firm Value</b>		
	Coefficient	Probability
CeoComp	-0,070	(0,695)
FirmAge	-0,344	(0,262)
FirmSize	-0,168	(0,000)a
Lever	0,556	(0,086)c
SalesGro	0,058	(0,811)
Capex	-0,073	(0,874)
ResDev	0,207	(0,000)a
Intercept	3,489	(0,000)a
Ajusted-R <sup>2</sup> (%)	26,10	

We notice that the R2 values for the simultaneous equations are 32.01% and 26.10%. This shows that our model has a sound explanatory power. From this table, several key points should be clarified and interpreted appropriately. We note, first, the absence of an endogeneity relationship between the total compensation and the value of the firm. Thus, investors in the market are not interested in the total executive compensation. They are aware that this part of the remuneration comprises a fixed part that does not reflect the real effort made by the leaders, which justifies the independence between the total compensation and the value of the firm.

In addition, the released results indicate the existence of a positive and statistically significant relationship between the ultimate managerial ownership of the manager, his over-control and his total compensation. This result accounts for the effect of the managers' entrenchment through their share of ownership in a particular such as the French executives. This is justified by the peculiarity of the French context considered prone to expropriation as it in civil law provides a weak protection of the minority shareholders. Furthermore, a statistically positive and negative relationship was detected between the size of the Board and the variable remuneration of the executive. This result seems to be consistent with most previous works (Lipton and Lorsch, 1992 Core and al., 1999 and Ozkan, 2007). Indeed, it is obvious that when the board size increases, its members face more communication challenges, coordination and information- flow issues. These problems do not help the administrators to carry out their managerial duties properly. Therefore, they will be less able to effectively monitor the practices of the executive.

**Results of the endogeneity of the variable executive compensation and the firm value**

Table 6 displays the results of the effect of the existence of endogenous relationship between the variable executive compensation and the value of the firm.

Table 6. Results of the regression

<b>Dependant variable : Variable Compensation</b>		
	Coefficient	Probability
FirmVal	-0,082	(0,000) <sup>a</sup>
PMU	1,370	(0,061) <sup>c</sup>
ExControl	1,183	(0,060) <sup>c</sup>
BdSize	1,573	(0,051) <sup>c</sup>
Dual	-0,090	(0,512)
CeoTen	0,252	(0,054) <sup>c</sup>
CeoAge	-0,061	(0,734)
FirmSize	0,711	(0,000) <sup>a</sup>
FirmRisk	0,668	(0,053) <sup>c</sup>
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
Intercept	2,213	(0,000) <sup>a</sup>
Ajusted-R <sup>2</sup> (%)	32,14	
<b>Dependant Variable : Firm value</b>		
	Coefficient	Probabilité
VarComp	-1,423	(0,069) <sup>c</sup>
FirmAge	-0,318	(0,145)
FirmSize	-0,166	(0,000) <sup>a</sup>
Lever	0,569	(0,070) <sup>c</sup>
SalesGro	0,039	(0,832)
Capex	-0,085	(0,850)
ResDev	0,203	(0,000) <sup>a</sup>
Intercept	3,479	(0,000) <sup>a</sup>
Ajusted-R <sup>2</sup> (%)	26,17	

The empirical results of this table show that your model has a sound explanatory power. This is accounted for by R2 which are equal to 32,14% and 26,17%. First, an endogeneity relationship between the firm value and the variable remuneration has been observed. Indeed, our results clearly show that the firm value negatively influences the variable remuneration and the latter in turn influences it negatively. We can state that when the share price is high, the shareholders have no interest in raising the executive compensation.

They will thus be demotivated to further urge the improvement of the firm performance. To interpret this result otherwise, the low variable executive compensation is a sign of the lack of managerial opportunism. The leader in this case has no power to intervene in setting the remuneration since the control mechanisms are efficient. Therefore, the market will overstate the value of the firm. On the other hand, the compensation seems to negatively influence the value of the firm. The hypothesis put forward stands for the managerial entrenchment. Indeed, the market considers that the variable compensation is an index of agency conflicts and managerial opportunism rather than a sign of performance. So, the relationship between the variable compensation and the value of the firm has two directions. It should be noted that compensation is an endogenous variable. It is influenced by the managerial ownership, governance, and likely other variables specific to the firm that were not identified in our study. Hence, its impact on the value of the firm is not direct but through the influence of variables contingent to the firm. At this level, we can deduce that the impact of the compensation on the value of the firm depends on other factors, in this case the governance mechanisms. More specifically, we find that there is a statistically- significant and positive relationship between the ultimate managerial ownership, the excessive control of the officer and his variable remuneration. Such results confirm the theory of leaders 'entrenchment. The latter abuse their power in the company to increase the variable portion of their compensation. In addition, the larger the board, the higher the variable remuneration is. This is accounted for by the difficulty of controlling the practices of the leaders when the number of directors is important.

Regarding the previous three regressions of the control variables, we identify two key facts. First, we find a negative relationship between the size of the firm and its value in the market. This relationship is accounted for by the agency conflict- proliferation in the large business organizations that are overwhelmed by an opaque atmosphere where people are reluctant towards information. Furthermore, a positive relationship between the firm value, research expenditure and development was unveiled. This relationship was also demonstrated in the American context between the stock- option granting and on research and development expenses. Indeed, spending on research and development entails that the company is achieving innovation in order to target more customers and widen its market share. They also indicate that the business is thriving and able to meet the high cost of its investment.

### **Discussion of the Released Results**

The endogeneity of the relationship between executive compensation and the firm value is foreseeable. So the impact of the value of the variable remuneration and the firm value is also potentially negative. Also, a decrease in the value leads to an increase in compensation (i.e. the assumption of motivation) while an increase in the value brings about a salary reduction (i.e. the assumption of selflessness and seeking the maintenance of the current accounting, market and managerial performance).

Certainly, our work has highlighted several important relationships that deserve scrutiny. These are complicated relationships that allow us to discover the reality of the French market, the nature of the French investors and the behavior of the managers as well as the current shareholders. On the one hand, it seems that the French context is characterized by the absence of a regulatory framework that shields the interests of the minority shareholders. The latter can be abused by a fund- diversion for the benefit of the leaders. This diversion occurs in our case by inflated remunerations that are not proportionate to the performance achieved. Worse yet, leaders who take advantage of this fund- misappropriation are shareholders in the company who exercise an excessive control over the others. So, these opportunistic leaders, who are the ultimate controlling shareholders, come into conflict with the minority shareholders. Furthermore, the influent shareholders who are not involved in the management of the firm want to ensure their invested funds by deploying the means so as to curb managerial opportunism. They set up the required means in order to inhibit managerial opportunism. This structure helps impede the leader's leeway, and prevent him from earning an unfair wage that does not reflect his efforts. Moreover, it seems that the investors in the French market assess the firm while by considering the remuneration received by the

executive and the set governance mechanisms. In this respect, we can qualify them as rational investors because they do not consider the announced result to assess the firm.

The issue is that the French market negatively assesses the remuneration. Any increase in compensation causes a reduction in the value of the firm. This rise is due to the accomplishment of a good performance that meets the target. Investors are, in this case, misled. So, are they still rational?

To conclude, we may go as far as to state that the laws including those of the New Economic Regulation (NRE 2001) and The Financial Security (LSF, 2003), contribute to require the companies to disclose their officers' remuneration. The explicit goal is to create a transparency-corporate environment. However, the implicit aim is to encourage these investors to properly assess the firm including the compensation of its leader. We should not abuse the leaders because it is not obvious that any increase in their remuneration is opportunistic and deliberate in nature. Therefore the investors must properly assess the firm.

## Conclusion

The objective of this research paper is to verify the possibility of the existence of an endogeneity-relationship between executive compensation and the value of the firm. At this level, it is to study whether the endogeneity is provided by the property manager and the governance features implemented. In this regard, a simultaneous equation model was developed. After the identification of the model, the empirical outcome reveal two major aspects.

The first is the need to identify the impact of managerial ownership and governance on the compensation before detecting the impact of the latter on the value. Indeed, the impact of compensation on the value acts through the influence of certain factors specific to it. The second point is the existence of an endogeneity relationship between the firm value and the variable executive compensation. In fact, the variable remuneration negatively influences the firm value and the firm value negatively influences the variable remuneration. Thus, the detected endogeneity denotes the existence of a reciprocal control between the market and the managers. The market controls the practices of the managers and remunerates them favorably or unfavorably. The managers themselves control the assessment of their firm on the market and try to improve it by undertaking some actions.

Finally, this work focuses more on the possible links between the compensation, the value of the firm, the managerial ownership as well as the governance characteristics and therefore highlights the various links between the above-stated variables.

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