EXECUTIVE COMPENSATION AND SHAREHOLDING
IN SPANISH FIRMS: ANALYSIS AND VALUATION OF INCENTIVES

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ABSTRACT

Executive compensation has dramatically increased in recent years, generating large public debate about executive compensation levels, especially in light of economic crises and poor firm performance (Bebchuk & Fried, 2004; Frydman & Saks, 2010; Edmans & Gabaix, 2016).

Executive compensation schemes were initially deemed as a critical instrument to align the interests of executives with those of shareholders and, hence, to reduce the agency problem that arises from the separation of management and ownership (Jensen & Meckling, 1976). This view is known as the optimal contracting approach.

Contrary to this view, many authors (Jensen & Murphy, 1990; Yermack, 1995; Bebchuk et al., 2002; Bebchuk & Fried, 2003; Geiler & Renneboog, 2011) argue that executive compensation and incentives are higher than optimal because executives use their power over the Board in order to approve non-optimal compensation plans, which allows the executive to extract rents from the company. This view is known as the managerial power approach.

The literature so far has found controversial evidence in support of each one of the previous theoretical approaches. This literature has been widely limited by the lack of information about executive compensation and it has been mainly based on data taken from US companies.

The present research extends the literature on executive compensation in other international contexts besides the US. The results of this research support the existence of a significant relationship between executive incentives and firm performance, hence it supports the optimal contracting approach. This relationship is mainly due to long-term bonus and the portfolio of common shares (the private investment of the executive).

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1   INTRODUCTION

Executive compensation has dramatically increased in recent years, generating large public debate about executive compensation levels, especially in light of economic crises and poor firm performance (Bebchuk & Fried, 2004; Frydman & Saks, 2010; Edmans & Gabaix, 2016).

Executive compensation schemes were initially deemed as a critical instrument to align the interests of executives with those of shareholders and, hence, to reduce the agency problem that arises from the separation of management and ownership (Jensen & Meckling, 1976).

On this basis, many authors (Hall & Liebman, 1998; Core & Guay, 1999; Acharya et al., 2000; Dorff, 2005; Frydman & Saks, 2010) argue that executive compensation serves to reduce the agency costs and, hence, executive pay levels and incentives are optimal from an economic perspective. This view is known as the optimal contracting approach.

Contrary to this view, many authors (Jensen & Murphy, 1990; Yermack, 1995; Bebchuk et al., 2002; Bebchuk & Fried, 2003; Geiler & Renneboog, 2011) argue that executive compensation and incentives are higher than optimal because executives use their power over the Board in order to approve non-optimal compensation plans, which allows the executive to extract rents from the company. This view is known as the managerial power approach.

The research so far has found controversial evidence in support of each one of the previous theoretical approaches. This research has been widely limited by the lack of information about executive compensation, since companies are not willing to disclose this information unless they are required to do so under regulations, as in the US. For this reason, the vast majority of the research on executive compensation is based on data taken from US companies.

This paper extends the research on executive compensation in other international contexts besides the US. In this regard, this paper uses the highly detailed executive compensation data (including executive private investments) included in the Annual Directors' Remuneration Reports that the National Securities Market Commission of Spain required of Spanish listed companies between 2013 and 2017.

The remainder of this paper is organized as follows: Section 2 presents the literature review; Section 3 describes the data used; and Section 4 includes the results and discussion.

2   LITERATURE REVIEW

When executives become the managers of other's people money, *"it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own"* (Adam Smith, 1796, p. 574-575). This is probably the first acknowledgement of the problem generated by the separation between property and management.

In modern corporations, management and property are usually separated. While in office, executives can act at their discretion regarding the management of the company (Berle & Means, 1931). The separation between management and property leads to an agency relationship between executives and shareholders (Ross, 1973; Jensen and Meckling, 1976; Fama, 1980; Fama and Jensen, 1983; Eisenhardt, 1989; Panda and Leepsa, 2017; Payne & Petrenko, 2019).

An agency relationship consists on *"a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent"* (Jensen & Meckling, 1976, pp. 308). In this way, executive contracts can be viewed as contracts where:

 i.   Shareholders engage with executive to perform the management of the company; and

 ii. Shareholder delegate the control of the corporations (i.e., managerial decisions) to executives.

Hence, there is an agency relationship between executives and shareholders derived from the separation between property and management. This separation facilitates that investors diversify their investments among different companies in line with optimal portfolio theory (Fama, 1980). In this way, the separation between property and control represents *"an efficient form of economic organization"* (Fama, 1980, p. 289).

In the described agency relationship, executives act as agents of shareholders, who are the principals. *"If both parties to the relationship are utility maximizers there is good reason to believe that the agent will not always act in the best interests of the principal"* (Jensen & Meckling, 1976, p. 308). This divergence of interests represents the *"cornerstone of agency theory"* (Hill & Jones, 1992, p. 132).

This divergence of interests lead to the two main problems that are addressed by the agency theory (Eisenhardt, 1989):

    i.   The first problem arises when:

        a.   the goals and objectives of the principal conflict with the goals and objectives of the agent, and

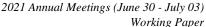   b.   the monitoring of managerial activity is difficult or expensive.

    ii.   The second problem arises when the principal and the agent have different risk appetite.

The divergence of interests cause suboptimal outcomes due to (Eisenhardt, 1989):

    i.   **Moral hazard**, which refers to lack of effort from executives (i.e., time and resources dedicated to pursue personal goals).

ii. **Adverse selection**, which refers to managers misrepresenting their skills and capabilities (i.e., managers may misrepresent their skills and capabilities both during their selection process and during the development of their work while the principal may not be able to verify those skills and capabilities).

The divergence of the interests of executives with the interests of shareholders generates the following agency costs:

i. *"Monitoring expenditures by the principal"* (Jensen & Meckling, 1976, p. 308). These costs include not only measuring and observing costs, but also *"efforts on the part of the principal [shareholders] to 'control' the behavior of the agent through budget restrictions, **compensation policies**, operating rules, etc."* (Jensen & Meckling, 1976, p. 308).

ii. *"Bonding expenditures by the agent"* (Jensen & Meckling, 1976, p. 308). These costs correspond to resources that are expend *"to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions"* (Jensen & Meckling, 1976, p. 308). These costs are expend by the agent, such as contractual guarantees or limitations to managerial power.

iii. *"Residual loss"* (Jensen & Meckling, 1976, p. 308). The residual loss is the *"dollar equivalent of the reduction in welfare experienced by the principal due to [...] the divergence between the agent's decisions and those decisions which would maximize the welfare of the principal"* (Jensen & Meckling, 1976, p. 308).

The literature have identified several sources of agency costs, for example: *"the costs of recruitment, adverse selection, specifying and discerning preferences, providing incentives, moral hazard, shirking, stealing, self-dealing, corruption, monitoring and policing, self-regulation, bonding and insurance, agents who oversee agents who oversee agents, as well as failures in these costly corrective devices"* (Shapiro, 2005, p. 281).

Agency costs are also increased by measures taken by principals, agents, or both, such as *"procedures, decision rules, protocols, or formularies to limit agent discretion"* (Shapiro, 2005, p. 281).

The reduction of agency costs constitutes a key element of the agency theory (Payne and Petrenko, 2019). Agency costs may be reduced by aligning the interests of executives with the interests of shareholders (Shapiro, 2015).

If the interests of executives were perfectly aligned with the interests of shareholders, executive would always make the best decisions from the shareholders viewpoint (Jensen & Meckling, 1976). However, reaching this perfect alignment is almost impossible, as it has been recognized in the literature (Jensen & Meckling, 1976; Bebchuk et al., 2002).

The main mechanisms to align the interests of shareholders and executives are (Hill and Jones, 1992):

i. Providing compensation incentives to executives.

ii. Monitoring the performance of executives.

Therefore, **executive compensation incentives represents a mechanism to align the interests of executives with the interests of shareholders** (Jensen & Meckling, 1976; Hill and Jones, 1992). In this regard, the empirical evidence shows that compensation incentives have actually contributed to align the interests of executives with the interests of shareholders (Frydman & Saks, 2010).

At the same time, executive compensation incentives also represent a mechanism that can be used to skim profits by executives (Geiler & Renneboog, 2011). This approach has also receive support in the literature (Yermack, 1995; Bebchuk et al., 2002; Bebchuk & Fried, 2003).

Therefore, executive compensation incentives can be viewed from:

i.   An optimal contracting perspective, where compensation incentives are considered a solution to the agency problems.

ii. A managerial power perspective, where compensation incentives are considered an agency problem.

The previous theoretical wings will be described in detail in the next Section.

2.1 Main theoretical wings: optimal contracting approach and managerial power approach

In the literature on executive compensation, there are two main theoretical wings (Bebchuk et al., 2002; Murphy, 2002; Frydman & Jenter, 2010; Melis and Rombi, 2018).

i.   The optimal contracting approach.

ii. The managerial power approach.

The **optimal contracting approach** argues that executive compensation contracts minimize agency costs and, hence, maximize shareholder value (Bebchuk et al., 2002). Under the optimal contracting approach, the Board of Directors act on the best interests of shareholders and negotiate compensation contracts with executive on an arms-length transaction basis (Dorff, 2005). As a result, compensation incentives constitutes a mechanism to optimally align the interests of executives with the interests of shareholders (Dorff, 2005). In this view, compensation incentives represents a solution to the agency problem caused by the separation of ownership and control.

Compensation incentives play a key role under the optimal contracting approach since it constitutes the mechanism to minimize agency costs (Dorff, 2005). In line with this, the Board of Directors also contributes to minimize agency costs by arranging a set of cost-effective compensation incentives for executives (Bebchuk & Fried, 2003). Ultimately, the provision of these efficient incentives contributes to maximizing shareholder value (Bebchuk and Fried, 2003).

The optimal design of executive compensation incentives depend on the characteristics of the company (Jensen and Meckling, 1976; Demsetz & Lehn, 1985), but also on the characteristics of the executive (Frydman & Jenter, 2010). In this way, there is not a common set of incentives that should be applied by every company. Instead, the optimal set of incentives depends on both the company and the executive at consideration.

Oppositely to the optimal contracting approach, the **managerial power approach** argues that executives use their power over the Board of Directors in order to increase their compensation and, hence, to extract rents from the company (Bebchuk et al., 2002). *"Under [...] the managerial power approach, executive compensation is viewed not only*

as a potential instrument for addressing the agency problem but also as part of the agency problem itself" (Bebchuk & Fried, 2003, p. 72).

Consequently, the Board of Directors does no longer act in the sole benefit of shareholders. Instead, the Board of Directors is influenced by executives in order to approve compensation schemes that provide payments levels higher than optimal levels (Chen, 2004). In this way, the Board of Directors become part of the agency problem, too.

Figure 1. Optimal contracting approach and managerial power approach

Optimal Contracting Approach	Managerial Power Approach
• Compensation incentives minimize agency costs and mazimize shareholder value. • Compensation incentives are part of the solution to the agency problem. • Board of Directors contribute to minimize agency costs by setting a set of cost-effective compensation incentives.	• Executives use their power over the Board of Directors in order to increase their compensation and, hence, to extract rents from the company. • Compensation incentives are part of the agency problem. • Board of Directors are influenced by executives in order to approve compensation schemes that provide payment levels higher than optimal levels.

Source: literature review

The literature have carried out a wide range of different studies in order to find evidence in support or against the optimal contracting approach and the managerial power approach. All in all, these two approaches have received considerable support and have been criticized from different angles.

Core & Guay (1999) concluded that companies grant equity incentives in a manner consistent with economic theory, hence, supporting the optimal contracting approach. Acharya et al. (2000) studied the resetting of the strike price in executive stock options, concluding that this resetting was frequently optimal and, also, finding support for the optimal contracting approach.

Murphy (2002) found that the increase in executive pay during the 1990s happened with increasingly independent Board of Directors, which constitutes evidence against the managerial power approach. Murphy & Zabojnik (2004) highlighted that Boards of Directors are becoming increasingly independent, which also constitutes evidence against the managerial power approach.

One of the limitations of the optimal contracting approach consists on assuming that Boards of Directors act in the best interest of shareholders. In this regard, same as executives, Boards of Directors may act in their own best interest and not in the best interest of shareholders (Bebchuk & Fried, 2003).

2.2 CEO compensation and firm performance

As previously exposed, the agency problems created by the separation of ownership and control are based on (Eisenhardt, 1989):

i. Executives and shareholders having different goals.

ii. Executives and shareholders having different risk appetite.

In this Section we are going to study the literature related to the first problem: executives and shareholders having different goals.

According to agency theory, executives will receive compensation incentives in order to align their goals with those of shareholders (Jensen & Murphy, 1990). Jensen & Murphy (1990) have evaluated this alignment by measuring how much CEO compensation changes for each euro change in shareholder wealth, finding that CEOs earned $3.25 for each $1,000 increase in shareholder wealth. Based on this finding, Jensen & Murphy

(1990) argued that there was a weak link between CEO compensation and shareholder wealth against the prediction of the optimal contracting approach.

Hall & Liebman (1998) pointed out that the study of Jensen & Murphy (1990) took place before the widespread of stock options and restricted shares. Using a new set of data for the period 1980-1994, Hall & Liebman (1998) found a strong relationship between executive compensation and shareholder wealth creation.

The literature has developed three sensitivity measures of executive compensation to shareholder value creation:

i. The first measure (M1) was used by Jensen and Murphy (1990) and it determines the euro amount increase in executive compensation for each one thousand euro increase in shareholder value. The calculation formula of this measure is:

$$M1 = \frac{\partial C}{\partial V \times 1,000} \qquad (1)$$

ii. The second measure (M2) was used by Hall and Liebman (1998) and it determines the euro amount increase in executive compensation for each percentage point increase in shareholder value. The calculation formula of this measure is:

$$M2 = \frac{\partial C}{\partial V / V} \qquad (2)$$

iii. The third measure (M3) represents an elasticity calculation of executive compensation to shareholder value creation. This measure has been used by several authors (i.e., Hall and Liebman, 1998; Gomez, 2019) and it determines the percentage increase in executive compensation for each percentage point increase in shareholder value. The calculation formula of this measure is:

$$M3 = \frac{\partial C / C}{\partial V / V} \tag{3}$$

Most of the literature regarding the alignment of executive compensation and firm performance has been focused on US data (Gomez, 2019), mainly due to the availability of information. As far as I know, Gomez (2019) was the first study performed using the Spanish data that is available since 2013. Gomez (2019) concluded that CEOs' compensation of Spanish companies have very little exposure to shareholder value creation.

3   DATA

The analysis is based on the executive compensation data included in Annual Corporate Governance Reports (IAGCs) and Annual Public Report Regarding the Remuneration of the Directors (IARCs).

The initial step in the collection and tabulation of data consisted on the rigorous identification of the CEOs of each one of the companies in the dataset. In this identification, I carried out a research on public sources of information such as IARCs, IAGCs, companies' annual reports and official communications to the CNMV (*"hechos relevantes"*).

After identifying the CEO, I carefully read and tabulated the information included in the IARCs regarding the compensation of the CEO and, in particular, of the CEO's compensation plans. In this regard, I highlight the muddy language and complex descriptions of CEO compensation plans, which are probably associated to the hesitance of companies to disclose executive compensation data.

The IARCs contain information regarding the following items of executive compensation:

   i.   Salary.

  ii.   Fixed remuneration.

 iii.   Attendance fees.

 iv.   Short term bonus.

v.   Long term bonus.

vi.   Membership of Committees.

vii.   Severance payments.

viii.   Other concepts.

ix.   Share based compensation.

x.   Contribution to saving schemes.

xi.   Other benefits.

In addition, the IAGCs include information regarding the executive private portfolio of company's shares at the end of the period. Based on this information and on information about share price and dividends obtained from Bloomberg, I determined CEO's wealth increase derived from his/her private portfolio of company's shares.

Based on the previous information, I classified CEO's compensation and increase in wealth from the private portfolio of company shares as follows:

i.   **Fixed Salary**: which corresponds to executive's fixed salary during the period.

ii.   **Other**: which corresponds to the rest of components that are not included in the rest of the categories. Basically, other compensation includes compensation that is not linked to company performance, in particular:

      a. Fixed remuneration.

      b. Attendance fees.

c. Membership of Committees.

d. Severance payments.

e. Other concepts.

f. Contribution to saving schemes.

g. Other benefits.

iii. **Grant value**: which corresponds to the grant value of share based compensation plans.

iv. **Short term bonus**: which corresponds to the annual short term bonus.

v. **Long term bonus**: which corresponds to the multiannual long term bonus

vi. **Options**: which corresponds to the compensation from the value change in the executive's portfolio of options, excluding its grant value.

vii. **Restricted shares**: which corresponds to the compensation from the value change in the executive's portfolio of restricted shares, including dividends when applicable, and excluding its grant value.

viii. **Private portfolio**: which corresponds to the wealth increase derived from executive's private portfolio of company's shares, including dividends.

The following figure summarizes the information regarding CEOs' compensation and incentives, expressed in euros:

Figure 2. Estimated remuneration and private portfolio incentives between 2013 and 2017 (Euros)

Description	Mean	Std. Dev.	Min.	P10	P25	P50	P75	P90	Max
Salary	1,038,733	665,450	121,000	386,524	550,000	856,500	1,404,050	1,923,100	3,268,000
Fixed remuneration	78,168	113,769	-	-	-	55,000	92,000	194,500	567,000
Membership of Committees	19,847	47,493	-	-	-	-	-	92,500	177,000
Attendance fees	25,000	39,055	-	-	-	-	37,250	87,000	166,000
Saving schemes	419,772	754,785	-	-	-	31,500	400,250	1,481,500	3,850,000
Other items	73,504	215,683	-	-	-	15,500	47,750	140,000	1,676,000
Short-term bonus	1,142,082	1,136,934	-	179,760	299,880	662,034	1,641,250	2,983,500	5,881,663
Long-term bonus	352,053	964,501	-	-	-	-	250,250	945,500	8,250,000
Restricted shares granted	126,886	635,643	-	-	-	-	-	-	5,740,000
Options granted	25,845	188,105	-	-	-	-	-	-	1,715,310
Estimated remuneration	**3,301,890**	**2,627,709**	**165,871**	**703,500**	**1,215,805**	**2,508,500**	**4,921,500**	**6,517,500**	**12,170,000**
Annual change in portf. of rest. shares	67,286	518,163	-730,112	-	-	-	-	108,979	6,520,558
Annual change in portf. of options	102,571	733,311	-1,465,160	-	-	-	-	19,515	5,431,970
Annual change in portf. of private shares	5,129,399	40,697,105	-230,812,100	-188,102	-535	12,803	390,948	3,553,353	343,316,286
Annual change in portfolio	**5,299,255**	**40,676,356**	**-230,812,100**	**-403,370**	**-248**	**17,418**	**715,865**	**4,079,178**	**343,384,356**
Change in estimated wealth	**8,601,145**	**41,142,510**	**-229,294,100**	**696,549**	**1,188,639**	**3,008,056**	**5,771,227**	**10,021,714**	**349,320,356**
Observations	176								

Source: own preparation based on compensation included in firms' IAGCs and IARCs

The following figure summarizes the information regarding CEOs' compensation and incentives expressed as percentage of estimated remuneration:

Figure 3. Estimated remuneration and private portfolio incentives between 2013 and 2017 (% over estimated remuneration)

Description	Mean	Std. Dev.	Min.	P10	P25	P50	P75	P90	Max
Salary	41%	19%	3%	21%	27%	36%	53%	64%	100%
Fixed remuneration	3%	5%	-	-	-	1%	5%	9%	28%
Membership of Committees	1%	1%	-	-	-	-	-	2%	8%
Attendance fees	2%	3%	-	-	-	-	2%	5%	24%
Saving schemes	9%	13%	-	-	-	1%	15%	27%	57%
Other items	2%	4%	-	-	-	1%	2%	6%	22%
Short-term bonus	32%	16%	-	12%	22%	32%	42%	52%	85%
Long-term bonus	8%	15%	-	-	-	-	11%	28%	73%
Restricted shares granted	2%	10%	-	-	-	-	-	-	93%
Options granted	0%	3%	-	-	-	-	-	-	29%
Estimated remuneration	**100%**	**-**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Annual change in portf. of rest. shares	9%	107%	-10%	-	-	-	-	3%	1,421%
Annual change in portf. of options	8%	90%	-27%	-	-	-	-	1%	1,184%
Annual change in portf. of private shares	321%	5,495%	-20,215%	-6%	-0%	1%	12%	77%	67,536%
Annual change in portfolio	**338%**	**5,498%**	**-20,215%**	**-11%**	**-0%**	**1%**	**20%**	**98%**	**67,536%**
Change in estimated wealth	**438%**	**5,498%**	**-20,115%**	**89%**	**100%**	**101%**	**120%**	**198%**	**67,636%**
Observations	176								

Source: own preparation based on compensation included in firms' IAGCs and IARCs

The previous two figures shows:

i. The relevance of short-term bonus as the main incentive of CEOs' compensation (i.e., it represents 32% of total estimated remuneration as shown in the previous figure).

ii. The relevance of the annual change in the portfolio of private shares (shares that can be sold by the CEO at any time with no restriction). On average, this incentive represents 321% of CEOs' total estimated remuneration.

The following figure compares the remuneration structure of CEOs in Spain with the remuneration structure of CEOs in other countries. This table shows that bonus have the maximum relevance in Spain, where they represents 40% of total CEO remuneration on average. Apart from Germany and Spain (where bonus represent 40% of total CEO remuneration), bonus represent a percentage below 22% in the other countries.

Figure 4. Estimated remuneration structure in different countries

Country	No. Observations	Mean Salary (Euro)	Median Salary (Euro)	Salary (%)	Bonus (%)	Options & Restr. Shares (%)	Other (%)
Norway	227	1,159,338	327,639	77%	10%	7%	7%
Sweden	659	1,444,972	562,867	65%	13%	2%	20%
Italy	488	2,831,137	1,629,794	57%	14%	9%	20%
Switzerland	210	4,082,886	1,991,037	51%	14%	24%	10%
Ireland	406	2,293,473	966,115	47%	15%	27%	11%
United Kingdom	3.957	1,923,829	1,075,328	48%	17%	26%	9%
France	1.455	2,117,052	739,288	63%	18%	16%	3%
Netherlands	583	1,587,789	982,917	49%	19%	19%	13%
Belgium	218	1,444,972	730,887	60%	20%	10%	11%
Germany	582	2,612,711	1,621,393	42%	40%	10%	8%
European average	**N/A**	**2,149,816**	**1,062,727**	**56%**	**18%**	**15%**	**11%**
United States	**13.361**	**4,116,490**	**2,352,280**	**30%**	**22%**	**42%**	**6%**
Spain	**176**	**1,038,733**	**856,500**	**41%**	**40%**	**2%**	**17%**

Source: own preparation based on compensation included in firms' IAGCs and IARCs and Edmans et al. (2017).

4   RESULTS AND DISCUSSION

Figure 5 shows the ex post sensitivity of CEO incentives to firm performance. This sensitivity is presented in euros received by the CEO per 1,000 euro increase in shareholder value. Regarding the compensation incentives, the short term bonus has the biggest impact on average, despite there are many cases where the short-term bonus is negatively related to firm performance, that is to say, the CEO receive a short-term bonus despite the firm has lost value during the corresponding year.

Besides the compensation incentives, it is also important to consider the incentive created by the private investment of the CEO in company's shares. On average, this incentive generates 15.71 euros per 1,000 euros of shareholder value creation. However, the distribution of this incentive is very skewed because of the large investment hold by some CEOs (i.e., the maximum sensitivity achieve 433.67 euros per 1,000 euro of shareholder value creation).

Figure 5. Euro amount increase in executive compensation for each one thousand euro increase in shareholder value

Description	Mean	Std. Dev.	Min.	P10	P25	P50	P75	P90	Max
Short-term bonus	0.59	4.86	-18.73	-1.59	-0.02	0.27	0.93	2.64	35.03
Long-term bonus	0.39	0.85	-	-	-	-	0.42	1.39	6.95
Annual change in portf. of options	0.12	0.72	-2.60	-	-	-	-	0.07	7.09
Annual change in portf. of rest. shares	0.06	0.41	-	-	-	-	-	0.05	5.23
Total compensation incentives	**1.16**	**5.04**	**-17.59**	**-1.12**	**-**	**0.48**	**1.73**	**4.96**	**35.03**
Annual change in portf. of private shares	15.71	70.14	-	0.00	0.01	0.08	0.58	1.29	433.67
Total change in estimated wealth	**16.87**	**70.14**	**-17.59**	**-0.85**	**0.12**	**0.94**	**2.73**	**9.08**	**433.67**
Observations	176								

Source: own preparation based on compensation included in firms' IAGCs and IARCs

In addition to the ex post sensitivity of CEO incentives to firm performance, I have calculated the ex ante sensitivity using the following measures (these measures can only be applied to options, restricted shares and the private portfolio of company's shares):

i. Euro of incentives per 1,000 Euros of shareholder value creation.

ii. Euro of incentives per 1% increase in firm value.

iii. % of incentives over estimated remuneration per 1% increase in firm value.

In the following figure I present the results corresponding to the first measure, which represent the euro amount increase in executive wealth for each 1,000 euro of shareholder value creation. This measure shows the relative high importance of the incentive from CEOs private portfolio of company's shares versus the incentives from stock options and restricted shares.

Figure 6. Euro amount increase in executive wealth for each one thousand euro increase in shareholder value

Description	Mean	Std. Dev.	Min.	P1	P10	P25	P50	P75	P90	P99	Max
Restricted Shares	0.06	0.41	-	-	-	-	-	-	0.05	0.94	5.23
Stock Options	0.14	0.85	-	-	-	-	-	-	0.16	3.11	8.10
Shares in Private Portfolio	15.71	70.14	-	-	0.00	0.01	0.08	0.58	1.29	406.37	433.67
Observations	176										

Source: own preparation based on compensation included in firms' IAGCs and IARCs

The next measure quantifies how much euros CEOs receive per each one percent increase in shareholder value. Again, we observe that the incentive arising from the CEOs' private investment in company's shares is much higher than the incentive provided by compensation plans (stock options and restricted shares).

Figure 7. Euro amount increase in executive wealth for each percentage point increase in shareholder value

Description	Mean	Std. Dev.	Min.	P1	P10	P25	P50	P75	P90	P99	Max
Restricted Shares	81,094	275,204	-	-	-	-	-	-	229,112	1,541,794	1,732,030
Stock Options	104,540	458,573	-	-	-	-	-	-	126,598	2,482,084	3,998,603
Shares in Private Portfolio	9,130,049	34,843,963	-	-	80	11,347	104,906	657,897	5,268,626	176,126,753	192,240,153
Observations	176										

Source: own preparation based on compensation included in firms' IAGCs and IARCs

The final measure quantifies CEOs' wealth increase as percentage over estimated remuneration for each percentage point increase in shareholder value. As shown in the following figure, CEOs' wealth increases in 3% from restricted shares and 5% from options on average per each 1% increase in shareholder value, while CEOs' wealth increases in 10,890% from the private investment in company's shares per each 1% increase in shareholder value. This result shows the relevance of the incentive arising from CEO's private investment in company's shares. In addition, this incentive is much less skewed than the incentive provided by restricted shares and options.

Figure 8. Percentage increase in executive wealth over estimated remuneration for each percentage point increase in shareholder value

Description	Mean	Std. Dev.	Min.	P1	P10	P25	P50	P75	P90	P99	Max
Restricted Shares	0.03	0.28	-	-	-	-	-	-	0.04	0.21	3.65
Stock Options	0.05	0.40	-	-	-	-	-	-	0.03	0.54	5.29
Shares in Private Portfolio	10.89	75.24	-	-	0.00	0.01	0.04	0.18	1.14	309.38	720.99
Observations	176										

Source: own preparation based on compensation included in firms' IAGCs and IARCs

The results of this research support the existence of a significant relationship between executive incentives and firm performance, hence it supports the optimal contracting approach. This relationship is mainly due to long-term bonus and the portfolio of common shares (private investment of the executive).

These results have implications for the general public, regulators, shareholders and corporate governance professionals, since they provide insights into the effectiveness of compensation components in offering incentives to the executive that are aligned with firm performance. In particular, they serve to design the regulation of executive compensation packages and to advise and decide on the approval of these packages.

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