Corporate Governance

Top executive compensation in less developed capital markets

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Abstract

Purpose – *This paper aims to study the determinants of variable compensation for top Portuguese executives (chief executive officers, chief financial officers and commercial directors).*

Design/methodology/approach – *Data from 101 firms were collected through an email questionnaire sent to the human resource directors of 500 largest and best Portuguese firms of Exame, a business newspaper. A Tobit regression analysis was used to estimate the basic equation of the study.*

Findings – *The conclusions are generally consistent with findings obtained in more developed capital markets. It was found that public and older corporations are more intensive users of variable pay, consistent with the agency theory prediction. A location in the centre of economic activity and a higher executive education increase the propensity to receive higher levels of salary in the form of variable compensation. The relation between compensation and performance was more elusive.*

Research limitations/implications – *There are limitations as to the extrapolation of the obtained results, as the level of potential idiosyncrasy cannot be measured. Ideally, the study should be replicated in different contexts to control for country-specific influences. Nevertheless, the main finding that performance-related pay mechanisms are less used in countries where public corporations and potential agency problems are less pervasive should hold.*

Originality/value – *As the focus is on a small economy with a developing capital market, this paper contributes to executive compensation literature that has mostly analysed firms based in well-developed capital markets, with a higher separation of ownership and control (Anglo-Saxon countries).*

Keywords *Corporate governance, Agency theory, CEO remuneration, Executive compensation*

Paper type *Research paper*

Corrigendum

It has been brought to our attention that José Paulo Esperança was not named as an author of "Top executive compensation in less developed capital markets" that was published in Corporate Governance, *Vol. 15 No. 1. This occurred through an author error. The authors sincerely apologise for this. The additional author attribution for this article has now been added to the electronic version of the article.*

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1. Introduction

Executive compensation has attracted significance in both the popular press and the scholarly literature (Boyd *et al.*, 2012). Executive compensation is of considerable interest to the business and academic communities, as well as policymakers (Graham *et al.*, 2012). The compensation paid to the chief executive officers (CEOs) of large publicly traded corporations rose dramatically during the 1980s and 1990s, stimulating much debate on the determinants of managerial pay (Murphy, 1999).

The expansion of executive compensation modes has led to a rising concern about their adequacy, shared by stakeholders, academics and practitioners (Bruce *et al.*, 2007). Vast empirical literature has followed the earlier agency theory explanations about the potential and drawbacks of performance-related pay mechanisms (Barkema and Gómez-Mejia, 1998; Mishra *et al.*, 2000; Bebchuk and Fried, 2003).

The practice of a single individual serving as both CEO and board chair (CEO duality) has been the subject of academic interest for more than 20 years (Krause *et al.*, 2014). Chief executive officers' compensation has always been in the media spotlight, and particularly so since the financial crisis of 2008 (Datta, 2014). Moreover, the 2008 economic downturn has triggered much discussion about the total amount and the nature of executive compensation, regarded as a possible contribution to excessive risk-taking.

The high level of pay in recent years has been attributed to the need to compensate executives for the risk generated by a greater use of incentive pay (Frydman and Saks, 2010). Academic research on executive compensation mirrors the prominence of this topic within the business community (Boyd *et al.*, 2012).

Although a clear link between pay mechanisms and performance has been hard to find, there is evidence that performance-based pay is more often used in the context of higher potential for goal divergence between owners and managers (Bebchuk and Fried, 2004; Duffhues and Kabir, 2008; Bruce *et al.*, 2007). However, firms that implement executive compensation plans based on performance generally adopt more ambitious and difficult strategies than firms that rely on fixed pay (Dow and Raposo, 2005). The evidence thus calls for public attention for re-examining the effectiveness of the current pay system (Lin *et al.*, 2013).

It is argued that the dominance of principal–agent theory as an approach to investigating executive pay has led to an overly narrow focus which may be unhelpful when considering cross-country differences and probably also hinders within-country analysis (Bruce *et al.*, 2005).

This result was mostly obtained in the context of well-developed capital markets, with a higher separation of ownership and control. Conyon *et al.* (2011) find that higher levels of pay for US CEOs relative to their UK and European Union counterparts can be explained (at least in part) by their higher stock and option incentives. A related finding was that top executives are significantly more highly paid and hold more equity incentives in countries with stronger insider trading restrictions Denis and Xu (2013).

Although some recent studies have moved away from the Anglo-Saxon world (Minhat and Abdullah, 2014 – Malaysia; Duffhues and Kabir, 2008 – Netherlands; Elston and Goldberg, 2003 – Germany; Brunello *et al.*, 2001 – Italy; Alcouffe and Alcouffe, 2000 – France; Ortín-Ángel and Salas-Fumás, 1998 – Spain), the state of the art in executive compensation research still largely ignores the situation of less-developed capital markets, where the owner-managed firm is predominant.

It is, therefore, important to find out if these countries tend just to "follow the lead" of the Anglo-Saxon practices, regardless of the levels of separation of ownership and control, or if the predictions of the agency theory also apply within this context. By shedding light on this reality, this paper also contributes to generating a more dynamic analysis of executive compensation practices and trends. Countries with less-developed capital markets, which are typical in continental Europe, may be regarded as being at an early stage of separation of ownership and control which may be enhanced as the widespread development of local capital markets contributes to the rising role of public corporations.

In Section 2, the main hypotheses relating to the choice of compensation mechanisms used by firms are presented. In Section 3, the data and the methodology used to test the hypotheses are presented. In Section 4, the empirical findings are presented, and in Section 5, the main conclusions of the study are summarised.

2. Hypotheses and the model

2.1 Characteristics of principals

The concept of agency has been widely used to analyse relations between owners (principals) and managers (agents) within organisations. Even CEO compensation is a negotiation between a CEO and a principal (Yao and Applebaum, 2009). Agency theory in particular addresses issues of opportunism between principals and agents.

Agency theory has been developed along two closely related routes (Jensen, 1983). One route focuses on identifying situations in which the principal and the agent have conflicting goals and then describing the governance mechanisms that limit the agent's self-serving behaviour. Jensen and Meckling (1976) analysed the ownership structure of the firm and how equity ownership by managers can align the interests of principals and agents. Fama (1980) analysed the role of capital markets to discipline agent's self-serving behaviour. Fama and Jensen (1983) analysed the role of the board of directors as an information-gathering mechanism that the stockholders of large firms could use to monitor the agent's self-serving behaviour. Jensen (1984) and Jensen and Roeback (1983) extended this latter idea to analyse controversial practices such as golden parachutes and corporate raiding. This strand of literature has been mainly concerned with describing governance mechanisms that solve the agency problem.

In many firms, managers are closely involved with key aspects of daily operations and so benefit from an information asymmetry in relation with more disengaged owners. This enables the agents (managers) to act opportunistically against the owners (principals) in the form of hidden information (adverse selection) associated with the fact that executives sometimes have hidden information that can be omitted when the company makes compensation contracts to get personal advantages in the future. Another problem is hidden action (moral hazard), which is described by Katz and Rosen (1998): the principal cannot observe the agent's actions and also the principal and agent agree as to what action the executive must develop.

In agency theory, financial contracts and institutions can be usefully explained as efficient mechanisms for dealing with, and possibly overcome, moral hazard. Moral hazard and the necessary expenditures to overcome it constitute a form of agency cost, arising from the separation of principal and agent. A principal–agent problem exists within any firm, as its activities are a collection of contracts between principals and agents. This problem arises if the principal delegates some authority to the agent to act on its behalf. However, if the agent has more information than the principal, the latter may not get what they want because the task has been delegated to the former. Principals delegate some control over their affairs to agents who may lack incentives to act in the customer's best interests and can plead adverse selection when the outcome is poor. This situation clearly creates incentive problems because the principal cannot observe the agent's actions, or because the principal has inferior information compared to the agent.

A related problem of informational asymmetry arises from a situation in which managers seeking finance might not be able to convince the owners about the profitability of the project as claimed. Because managers with low-quality investments can gain by asserting that their intended project is of good quality, the initial claim that the investment will be profitable cannot be taken at face value. This creates the classic adverse selection problem. The principal–agent literature concentrates on the relationship between two parties (stockholders and managers) who possess different levels of information and skills with regard to the firm's operations. In the literature, agency costs are often associated with the control that a principal can exert over the agent. Control, in this case, is related to the right to monitor and impose a given set of results (Grossman and Hart, 1986). In firms where there is a clear separation between ownership and control, such as state-owned or publicly traded, principals will have lower levels of control and hence be more prone to adopt variable-pay schemes:

H1. Executives in listed public firms will receive a higher proportion of their salaries in the form of variable pay.

2.2 Characteristics of agents

Agency theory posits that the fundamental goal of firms is to maximise efficiency. The theory suggests that firms will choose pay strategies that reduce monitoring costs. This is efficient because the principal is buying the agent's work, which is best observed on the outcome achieved. In agency theory, a routine task is one in which the action can be defined more or less precisely. The theory posits that routine tasks will be positively related

to behaviour-based pay contracts (fixed or equity pay) and negatively related to the use of outcome-based contracts (variable or stock pay). This is because routine tasks allow principals to specify the behaviour of agents in the contract. Agents with a higher educational background are more likely to undertake non-routine tasks and hence enter into outcome-based contracts. Agents with more experience in labour markets are also more likely to be exposed to non-routine tasks and hence enter into outcome-based contracts. Productivity of managers at top-executive levels should be higher and also influence the productivity of subordinates, leading these agents to enter into outcome-based contracts:

H2. Executives with higher educational levels will receive a higher proportion of their salaries in the form of variable pay.

H3. Top executives with longer experience in labour markets will receive a higher proportion of their salaries in the form of variable pay.

2.3 Relationship between a principal and an agent

In agency theory, principals monitor agents (though agents may also monitor principals). In this context, principals can reduce monitoring costs by engineering trust between themselves and their agents. One way in which trust can be engineered between transacting parties is by increasing the number of transactions. Principals and agents involved in long-term transactions should generally be better-informed in relation to each other's behaviour and, therefore, more easily agree to compensation schemes based on a fixed rather than variable pay. Firms that do not expect a long-term relationship to develop, and hence do not expend resources in socialising their managers, put less emphasis on behaviour and more on actual outcomes and would be more prone to adopt outcome-based compensation schemes (Stroh *et al.*, 1996). One way to identify a firm's expectation regarding the length of its relationship with its managers is through its human resource policy. Employment security, clear promotion ladders and investments in training and development are all signals to managers that the firm expects to maintain a long-term relationship. Because the principals are better able to observe their agent's behaviour in long-term relationships, managers in firms with human resource policies that encourage such relationships should receive a smaller proportion of their compensation in the form of variable pay than managers in firms that do not have these policies:

H4. Top executives engaged in long-term relationships with the principal will receive a lower proportion of their salaries in the form of variable pay.

Another implication of agency theory for organisational behaviour stems from risk-sharing that arises when cooperating parties have different attitudes towards risk. The key issue here is that the principal and the agent may prefer different actions because of their different risk preferences (Eisenhardt, 1989). The focus of the principal–agent relationship is to determine the optimal contract, behaviour versus outcome, between the two. The very simple model assumes a goal conflict between the principal and the agent, and an agent who is more risk-averse than the principal. The argument is that the agents are unable to diversify their employment and hence are risk-averse, as opposed to the principals who are able to diversify their investments and hence are risk-neutral. Under complete information – when the principal can observe the agent's behaviour, then a behaviour-based contract is more efficient. Under incomplete information – when the principal cannot observe the agent's behaviour, due to moral hazard or adverse selection, an outcome-based contract is more efficient. Mature firms will tend to control moral hazard and adverse selection problems more easily than their emerging counterparts:

H5. Executives in more mature firms will receive a lower proportion of their salaries in the form of variable pay.

2.4 Characteristics of firms

Agency theory has two important implications for organisational behaviour. The first is the treatment of information (the second is the treatment of risk, which is addressed in the subsequent paragraph). In particular, agency theory considers information as a commodity which can be acquired at a cost. A direct implication of this is that firms can invest in information systems to control agent opportunism. One very common information system used by firms to monitor executives is the board of directors, who are able to monitor and control the compensation level offered to the CEO (Petra and Dorata, 2008). From an agency perspective, boards can be used as a monitoring device for shareholder interests (Fama and Jensen, 1983). When boards provide richer information, top executives are more likely to engage in behaviour that is consistent with stockholders' interests. When boards provide rich information, compensation is more likely to be behaviour-based. Because the behaviour of executives is better-known, compensation based on knowledge of executive behaviour is more likely. Executives, in this context, are rewarded for taking well-conceived actions whose outcomes may be unsuccessful. Behaviour such as using greenmail and golden parachutes, which tends to benefit agents more than stockholders, is less likely when boards monitor stockholder's interests. The richness of board information can be observed from the frequency of board meetings, number of board members or board members representing a particular ownership interest. There is a large body of evidence that connects the firm size to compensation: Jensen and Murphy (1990), Gregorič *et al*. (2010) and James (2014), among others. Large firms will tend to display these characteristics more often than small firms and rely less on behaviour-based compensation:

H6. Executives in large firms will receive a lower proportion of their salaries in the form of variable pay.

Information on the agent's behaviour can be acquired at a cost. This issue was addressed earlier.

Firms generally operate in volatile environments. The future can reserve either success or failure, or an intermediate outcome. Firms are said to operate under volatile conditions because the economic environment, government policies, competitors, technological change and so on may cause uncontrollable variations in the firm's profit function. Volatility introduces two problems:

1. one is the inability to plan for the future; and
2. the other is the risk-shifting.

In agency theory, volatility coupled with the willingness to accept risk influences the nature of contracts between the principal and the agent. When volatility is high, the costs of shifting risk to the agent are also high, and hence, behaviour-based contracts will be more prevalent. This is a standard assumption in agency theory. This idea can be extended to growth. When a firm experiences high growth and high return on sales, agents will be more prone to share risks with principals:

H7. Executives in firms experiencing high growth levels will receive a higher proportion of their salaries in the form of variable pay.

H8. Executives in firms experiencing high return on equity will receive a higher proportion of their salaries in the form of variable pay.

H9. Executives in firms experiencing high productivity levels will receive a higher proportion of their salaries in the form of variable pay.

In the Lisbon region, there are more firms with administrative complexity, so it is believed that firms in Lisbon tend to use variable pay more often:

H10. Top executives in firms located in the centre of economic activity will receive a higher proportion of their salaries in the form of variable pay.

2.5 Industry characteristics

Industry characteristics may also influence the nature of the principal–agent contract. For example, manufacturing is usually more capital-intensive than services. Manufacturing is also well-structured into standardised routines and procedures when compared to services. A direct implication of this is that monitoring costs in manufacturing may be less acute when compared to services. The quantity and quality of the service output provided by one firm will depend more on the personal attention and diligence of agents than will the output provided by manufacturing with a mechanised production process. Incentives will be more effective in increasing output in services than manufacturing:

H11. Executives in service firms will receive a higher proportion of their salaries in the form of variable pay.

Innovation and R&D are positively related to variable pay (Balkin and Gómez-Mejia, 1987; Henderson and Fredrickon, 1996). Manufacturing and services are highly heterogeneous. For example, high-tech firms will perform more research and development activities, generally more difficult to supervise, and will more frequently be subject to innovation. The need to closely integrate different functional areas will lead to a broader definition of routine and procedure programmability. In these situations, variations in the effort of managers and workers are likely to induce larger effects on performance than in low-tech firms, generally associated with more structured processes:

H12. Executives in high-tech firms will receive a higher proportion of their salaries in the form of variable pay.

2.6 Other

The principal–agent literature concentrates on the relationship between two parties who possess different levels of information and skills with regard to the firm's operations. In the literature, agency costs are often associated with the control that a principal can exert over the agent. Control, in this case, is related to the right to monitor and impose a given set of results. In the context of the relationship between two offices of the same firm, as is the case of a headquarter and subsidiary, or even one subsidiary and another subsidiary of a multinational, control costs may be aggravated by the complexity of the organisation, which may lead to a loss of shareholder wealth. Black *et al.* (2014) carried out an empirical study, observing that one standard deviation increase in multinational diversification led to a total compensation increase of 14.87 per cent.

The management of foreign subsidiaries is usually ascribed to an agent. This agent is largely responsible for maintaining relationships with the parent while running the business. His origin is thus largely used to measure centralisation or delegation of control. Where he is a native, it is associated with the centralisation of control, and where he is a foreigner, it is associated with the delegation of control. The rationale is that in the case of an expatriate, the multinational benefits from a larger cross-border consistency of foreign office behaviour but may suffer from less information on the foreign market, as agency costs may rise exponentially with the number of autonomous subsidiaries and the number of managerial functions:

H13. Top executives in multinational firms will receive a higher proportion of their salaries in the form of variable pay.

3. Data and methodology

In this study, the data were collected from primary and secondary sources, in contrast with a large number of studies that relied on secondary sources such as those supplied by compensation consultants.

Secondary data were extracted from 500 largest and best Portuguese firms of Exame, a business newspaper. It regularly publishes data on the largest firms operating in Portugal. It is considered to be a highly reliable source of business information, but it does not

disclose in-depth details as to how firms are selected. This was a source for information about the firms, including location, nationality, sector, number of employees, productivity, sales growth, return on equity and firm age.

Primary data were obtained through a survey emailed to the human resource director of each 500 firm, to obtain information about how executives in Portugal are being paid: the repartition of total remuneration in fixed and variable remuneration and fringe benefits. In this survey, the author asked for information on three high managers: CEO, chief financial officer and Commercial Director. The questionnaire was simple, so as to maximise the response rate and consistency. In fact, the human resource directors were requested to take no longer than five minutes to answer the survey. In the survey, executive-specific data, including age, experience in the firm and education, were collected.

The 500 firms were first contacted via phone to ask for the email address of the human resource director. Then the questionnaire was administered by email with no attachments. A follow-up phone call was made to enhance the number of answers. Of the 500 firms approached, by email, 104 provided answers. However, three firms were discarded for providing incomplete replies. The sample consists of 101 firms. It represents about 20 per cent of the overall population.

The data set consists of one dependent variable – the percentage of variable compensation paid by the firm – and 13 explanatory variables (for each of the hypotheses stated in the previous section).

The dependent variable used in the study is the percentage of variable compensation on the total compensation, which is similar to Stroh *et al.* (1996), as it appeared less sensitive to respondents than alternative measures used elsewhere: log wage (Ewing, 1996) or bonus payment (Ortín-Ángel and Salas-Fumás, 1998; Bruce *et al.*, 2007).

The characteristic of the principal was measured through a dummy (X1) variable that takes a value of 1 if the firm is listed or publicly owned and 0 otherwise. The characteristics of the agents were captured through two variables:

1. a dummy (X2) that takes a value of 1 if the manager has a university degree and 0 otherwise; and
2. variable (X3) that measures the age of the executive.

The relationship between the principal and the agent is captured through a variable that measures the number of years of the existing contract between the two (X4) and the maturity of the firm (X5) in number of years since its foundation.

Firm-specific factors were captured through four variables: one that measures the size of the firm in terms of number of employees (X6); one that measures the growth in sales in relation to the previous year (X7); one that measures the return on equity ratio (X8); and one that is measured as the ratio of value added over the number of employees (X9) as a proxy for productivity; and a dummy (X10) that takes a value of 1 if the firm is located in the centre of economic activity, in this case Lisbon, and 0 otherwise. Industry-specific factors were captured through two variables: a dummy (X11) that takes the value of 1 if the firm belongs to the service sector and 0 to the manufacturing sector; and another dummy (X12) that takes a value of 1 if the firm is high-tech and 0 otherwise. Because the data set consists of both domestic and multinational firms, an additional dummy (X13) was created to capture differences between these two groups of firms: it takes a value of 0 if the firm is multinational and 1 if it is domestic.

The descriptive data relating to these variables are summarised in Table I.

The table shows that firms in Portugal compensate their managers, on average, with 13.5 per cent in the form of variable pay. This figure is much lower than the average observed in markets with a larger presence of listed firms. Jensen *et al.* (2004) show that since the mid-nineties, the variable compensation of the S&P 500 CEOs has largely exceeded fixed compensation.

Table I Descriptive statistics of variables in the data set

Type	Variable	Measurement	Source	Average	SD	Minimum	Maximum
Dependent							
Y1	Variable compensation	Continuous	Questionnaire	13.5			
Independent							
X1	Listed/Public	Dummy	Questionnaire	0.54	0.50	0	1
X2	Education	Dummy	Questionnaire	0.87	0.34	0	1
X3	Age CEO	Number	Questionnaire	51	8	33	74
X4	Contract	Number	Questionnaire	14	9	1	35
X5	Age firm	Number	Exame	36	27	2	122
X6	Size	Number	Exame	1,279	2,701	7	17,335
X7	Sales growth	Percentage	Exame	21	49	−33	430
X8	Return on equity	Percentage	Exame	−15	147	−1,429	123
X9	Productivity	Number	Exame	67	376	0	2,894
X10	Lisbon	Dummy	Exame	0.75	0.43	0	1
X11	Service	Dummy	Exame	0.57	0.50	0	1
X12	High-tech	Dummy	Exame	0.04	0.20	0	1
X13	Domestic	Dummy	Exame	0.66	0.48	0	1

Table II displays the bivariate correlations between the explanatory variables.

The table shows that the variables in the data set are not linearly dependent. The highest correlation (−0.54) was observed between nationality (X13) and ownership (X1), showing that multinational firms have a larger propensity than domestic firms to be of the listed type.

The basic model used to analyse the responses to the questionnaire is of the linear form:

$$Y_i = \alpha + \sum_{j=1}^{J} \beta_j X_i + \varepsilon_i$$

where Y_i is the i-th firm (i = 1 [. . .] 101), X_{ji} is the j-th characteristic (j = 1 [. . .] 13) of the i-th firm and α, β_j are fixed coefficients. The stochastic terms ε_i are assumed to be independently and identically normally distributed, in contrast to X_{ji}, which are fixed. Because the dependent variable is bounded to the left, a Tobit procedure was used to estimate the basic equation.

4. Empirical findings

The main empirical findings of the study are displayed in Table III.

The estimation shows that public corporations are more intensive users of variable pay. This was the strongest discriminator for variable versus fixed compensation found in this

Table II Bivariate correlations of explanatory variables

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
X1	Listed/Public	1.00												
X2	Education	0.01	1.00											
X3	Age CEO	0.00	−0.20	1.00										
X4	Contract	0.03	−0.12	**0.37**	1.00									
X5	Age firm	−0.08	0.06	0.07	0.21	1.00								
X6	Size	0.17	0.06	0.08	0.10	−0.04	1.00							
X7	Sales growth	−0.08	0.13	−0.03	0.11	−0.06	−0.04	1.00						
X8	Return on equity	−0.06	0.25	−0.10	−0.18	−0.13	0.02	0.11	1.00					
X9	Productivity	0.01	0.06	0.02	−0.15	−0.15	−0.07	0.05	0.04	1.00				
X10	Lisbon	**0.35**	−0.08	−0.07	0.02	−0.09	0.06	−0.11	−0.04	0.09	1.00			
X11	Service	0.14	−0.03	−0.09	−0.17	−0.23	0.14	−0.14	0.12	−0.03	**0.34**	1.00		
X12	High-tech	−0.02	−0.07	−0.10	0.04	−0.10	0.13	−0.03	0.02	−0.03	0.12	0.17		
X13	Domestic	**−0.54**	0.03	−0.04	−0.06	0.05	0.19	0.09	0.11	−0.20	−0.18	0.00	0.15	1.00

Note: Bold values: Correlation is significant at the 0.01 level (two-tailed)

Table III Tobit estimation for the size of variable compensation

	Independent variables	*Coefficient*	*Y* *Size of variable compensation* *SE*	t-*ratio*	*Significance*
X1	Listed/Public	8.436	2.517	3.351	***
X2	Education	5.622	3.140	1.791	*
X3	Age CEO	0.100	0.142	0.701	
X4	Contract	0.010	0.115	0.087	
X5	Age firm	0.030	0.038	0.807	
X6	Size	0.000	0.000	0.408	
X7	Sales growth	0.000	0.010	0.034	
X8	Return on equity	−0.007	0.007	−1.067	
X9	Productivity	−0.005	0.003	−1.732	*
X10	Lisbon	4.551	2.525	1.802	*
X11	Service	−0.301	2.166	−0.139	
X12	High-tech	6.795	5.572	1.219	
X13	Domestic	1.188	2.587	0.459	
	Sigma	9.245	0.743	1.244	***
	Log-likelihood	−328.558			
	N	101			
	Lower-bound	0			
	Iterations	4			

Notes: ***Significant at the 1% level; *significant at the 10% level

study, consistent with many theoretical and empirical studies on this topic. Separation of ownership and control enhances agency problems, requiring co-alignment of interest as also observed recently in Ang *et al.* (2000), who found a significant association between separation of ownership and control and agency costs in a sample of 1,708 small American corporations. The present result is also consistent with Bebchuk and Fried's (2003, p. 21) prediction that "managerial power substantially affects the design of executive compensation in companies marked by a separation of ownership and control". Indeed, as variable pay has led to a significant rise of the compensation package, it is in the executives' interest to enforce its implementation.

It was also found that the higher the education level, the higher the propensity to receive a larger amount of salary in the form of variable compensation. Stroh *et al.* (1996) find no significant influence of education in the design of compensation mechanism in 29 of the Fortune 500 firms. Contrary to the theory-based prediction, firms with lower productivity levels were found to pay higher levels of salary in the form of variable compensation, suggesting that firms use the compensation mechanism to boost productivity levels. Whether in practice this is achieved or not is a matter for further empirical inquiry.

As predicted, firms located in Lisbon pay higher levels of salary in the form of variable compensation. By contrast, age of CEO, duration of contract and age of firm show no statistically significant relationship with the level of variable pay, as also observed by Stroh *et al.* (1996). Firm size, sales growth and return on equity also showed no significant impact on level of variable pay, unlike that observed by Jensen and Murphy (1990) and Leonard (1990). On the contrary, Abdullah (2006) found no association between director's remuneration and firm profitability.

Surprisingly, factors relating to the characteristics of the industry show mixed signs; although, a negative relationship between the level of variable and the service industry and a positive relationship between the level of variable and the high-tech industry were seen. This result suggests that it is certainly desirable to pursue the analysis of the influence of industry on the design of compensation mechanisms. The present findings also show that the level of variable pay is slightly higher in domestic firms, suggesting that agency costs may be more acute in these rather than multinational firms, contrary to the study hypothesis.

This may be partially explained by the fact that the majority of multinational enterprises included in the present sample are not originally from Anglo-Saxon countries.

Overall, the findings of this study confirm that although the average weight of the variable pay for the largest Portuguese firms is relatively low compared to US firms, ownership is a strong determinant in the design and level of compensation.

5. Summary and conclusions

This paper shows that agency theory is particularly attuned to the analysis of situations in which contracting problems are difficult. These include situations in which there is a substantial goal conflict between principals and agents such that agent opportunism is likely. By emphasising these issues, the paper uses agency theory to deduct testable hypotheses and generates empirical findings consistent with this theory. Other issues such as compensation in high-tech and service firms, where monitoring is particularly difficult, are also addressed.

The study was carried out in the context of a small economy with a developing capital market, shedding new light on an issue hitherto predominantly studied in the context of Anglo-Saxon economies, namely, the USA. Lack of off-the-shelf data has been the main deterrent to research in the context of less-developed capital markets.

In this study, data were collected through a questionnaire emailed to the 500 largest non-financial Portuguese firms. Despite the limitations inherent to the small size of the sample, the author could confirm that the findings of previous empirical studies are partially confirmed in the Portuguese context.

It was found that listed and publicly owned firms pay higher levels of variable compensation, which is consistent with Ang *et al.* (2000) and Bebchuk and Fried (2003). It was also found that the higher the education level, the higher the propensity to receive a larger amount of salary in the form of variable compensation. This contrasts with Stroh *et al.* (1996), who found no significant influence of education in the design of the compensation mechanism. Firms located in Lisbon also pay higher amounts in the form of variable compensation. Contrary to the prediction, firms with lower productivity levels were found to pay higher levels of salary in the form of variable compensation.

There are limitations as to the extrapolation of the study's results, as the level of potential idiosyncrasy cannot be measured. Ideally, the study should be replicated in different contexts to control for country-specific influences. Nevertheless, the main finding that performance-related pay mechanisms are less used in countries where public corporations and potential agency problems are less pervasive should hold.

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