

**ESSAYS ON CEO COMPENSATION: BEYOND THE
ANGLO-SAXON PUBLIC CORPORATION**

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Abstract

These four papers address some unsolved issues on CEO compensation: beyond the Anglo-Saxon public corporation, furthering the existing literature to the understudied fields of less developed capital markets, of which Portugal is a typical member; family firms, whose link between generation and agency avoidance is exploited here; the international comparison based on a selected sample of the world's largest firms and the effect of gender on the remuneration of Portuguese managers and other professionals.

The first paper analyses the determinants of compensation for CEO of Portuguese firms, focusing on the preference of variable versus fixed pay.

The results confirmed that listed companies, more vulnerable to agency problems, also made a more intensive use of variable pay. Older firms are also more prone to using this type of compensation. Location in Lisbon, the center of economic activity and higher education also increase the propensity to receive a higher share of salary in the form of variable compensation.

The second paper, also based on the same data, has the main goal to find whether the use of variable pay within family firms also reflects the intensity of their specific agency problems. The result on the use of variable pay shows that their performance impact tends to be less favorable for foundational, younger firms, where agency problems are still lower, than with family firms that are already on the second or more family generation.

The paper three has a broader scope as it covers CEO compensation practices for a large number of countries and industries. The cross-section analysis covers 1002 firms from 21 different countries.

Beyond the traditional explanations of CEO compensation, in a broader setting, such as executive age, tenure and gender or firm size the study provides a larger country analysis, while covering variables that are not common in the compensation literature, such as the impact of CEO expatriation.

Finally, paper four studies gender income disparity in Portuguese firms. The sample includes 3953 employees for 75 Portuguese firms with one hundred or more employees, classified by gender and function level – top executives, middle-level managers, technicians and staff.

The results confirmed that gender pay gap is larger in Portuguese firms, and it increases with employee’s accumulated tenure and decreases with advanced education for women and on labor market entry.

Despite the progress in the labor market made by women in recent years, only a small percentage has actually managed to reach top positions, so there can be no doubt that the “glass ceiling” still exists.

JEL Classification: G39; J33; J79; M12

Key words: Corporate governance, Agency theory; CEO remuneration, Family firms, Gender pay gap.

Resumo

Os quatro artigos procuram abordar algumas questões sobre a remuneração dos gestores: além das empresas publicas Anglo-Saxónicas, promovendo a literatura existente para os mercados de capitais menos desenvolvidos do qual Portugal é um membro típico; empresas familiares, cuja ligação entre geração e agência; e na ligação entre uma amostra selecionada das maiores empresas do mundo.

O primeiro artigo procura saber os determinantes da remuneração dos gestores em empresas Portuguesas, focando na preferência entre remuneração variável vs remuneração fixa. Os resultados mais significativos verificam-se que as empresas de capitais dispersos utilizam mais remuneração variável, consistente com a teoria da agência. As empresas mais velhas também utilizam mais este tipo de remuneração e empresas localizadas em Lisboa que ocupa o centro da atividade económica em Portugal e quanto maior a educação dos gestores, maior a propensão de receber o salário em remuneração variável

O segundo artigo também baseado na mesma base de dados tem como objetivo principal descobrir se o uso de remuneração variável nas empresas familiares também reflete a intensidade de seus problemas de agência específica. O resultado no uso da remuneração variável mostra que o impacto na performance tende a ser menos favorável, em empresas mais jovens, onde os problemas de agência são ainda mais baixos do que com empresas familiares que já estão sobre a segunda geração ou mais.

O terceiro artigo tem maior abrangência uma vez que tem informação sobre a remuneração dos gestores para um número grande de países e sectores e cobre dados de 1002 empresas com capitalização bolsista superior a mil milhões de euros de 21 países diferentes.

Além das explicações tradicionais da remuneração dos gestores em um espaço mais alargado, como a idade do gestor, tempo na empresa e sexo ou tamanho da empresa, o artigo fornece uma análise maior do país, enquanto cobre variáveis que não são comuns na literatura de compensação, como o impacto da expatriação do gestor.

Finalmente, o quarto artigo analisa o efeito do género na remuneração dos gestores e outros profissionais portugueses. A amostra inclui 3953 trabalhadores de 75 empresas com cem ou mais empregados, classificados por sexo e o nível da função- executivos de topo, gestores de nível médio, técnicos e empregados.

Os resultados confirmaram que a diferença salarial entre homens e mulheres é maior em empresas nacionais e aumenta com o tempo no cargo e diminui com o nível da educação das mulheres e a entrada no mercado de trabalho.

Apesar do progresso no mercado de trabalho feito pelas mulheres nos últimos anos, apenas uma pequena percentagem realmente conseguiu chegar a posições de topo, por isso não há dúvidas de que o “glass ceiling” ainda existe.

JEL Classification: G39; J33; J79; M12

Keywords: Governação empresarial, Teoria da agência, Remuneração dos CEO, Empresas familiares, Diferenças salariais entre homens e mulheres.

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Introduction

Although recent studies have attempted at broadening the focus beyond the conventional large public American corporation, most research on CEO compensation is still focused on the firm with a clear separation between ownership and control that Berle and Means (1932) brought to the core of research by economists and managers alike. The fascination with this type of organization went unabated even though many broader studies such as La Porta et al (1999) found the public corporation a relatively rare institution around the world and far from pervasive even in the US, except among the largest firms. Organizational complexity, linkage to liquid capital markets and easier access to large data bases, such as Compustat, have led to this focus by the majority of studies on CEO compensation.

Recent studies have looked at different regions such as Basu et al (2006) on Japanese compensation or Gomez-Mejia et al. (2003) on compensation in family firms. Indeed this is a much warranted field of research, as family firms, with less dispersed ownership, and different agency problems, provide a fruitful field for the study of rent sharing within the firm and testing of the agency theory (Lubatkin et al, 2007).

CEO compensation has been at the core of intense research for at least the last three decades. The reason is that, since the mid 70's, the structure and level of CEO compensation went through a level of transformation that is yet insufficiently explained.

Long term data, as presented by Frydman and Saks (2010), show that total compensation in the US, in constant dollars, was fairly stable from the mid 30's until the early 70's. Since that period, it went through a sheer expansion, as performance related compensation (including bonuses) stock ownership and options started dwarfing the previously predominant base salary. The 90's were a period of even more dramatic expansion, only bounded by the stock market crash of 2000. In the last decade, pay levels suffered a modest decline, while stock options were partially replaced by equity ownership.

The debate about this transformation became even more intense due to the financial crises triggered by the bankruptcy of Leman Brothers - was the new structure of CEO

compensation, namely the high level of performance related pay, responsible for excessive risk taking?

While the many contributions to this debate come from different fields, namely labor markets and financial economics, two main competing views can be identified: the rent extraction hypothesis, suggesting that powerful managers determine their own compensation; and the optimal contracting positing that managerial compensation has reacted to changes in the competitive market for managerial talent (Frydman and Jenter, 2010).

Alignment incentives

Jensen and Meckling (1976) provide a seminal contribution to the study of the agency problems in the framework of separation between ownership and control - the eventual pursuit of self-interest by opportunistic managers may raise monitoring costs and be detrimental to shareholder and firm value. Performance based pay can be justified upon the interest alignment goal with shareholders. Managers whose pay is linked to value creation should be less prone to pursue self-centered goals such as perquisite consumption, risk avoidance or growth (Williamson, 1985) that may be harmful to shareholder value.

The structure of compensation has shifted dramatically as different types of interest alignment incentives were introduced. Fixed pay was significantly completed by other components often becoming residual, in contrast to the predominance enjoyed until the 70's. Stock options, indexed to share prices, became a key component although in the last decade they have been partially replaced by restricted stock. The high pay rise that took place in the US, during the 90's was mainly due to the change in the structure, caused by the attempt to reach a higher level of interest alignment. Frydman and Jenter (2010) analyzed data for the S&P 500, using Murphy (1999) model showed that while the base salary went through modest changes, other incentives were responsible for the immediate pay rise from \$2.3 million in 1992 to over \$6 million in the last decade:

	1992	2000	2008
Total compensation (\$ million)	2.3	6.4	6.1
Main components			
Base salary	1(42%)	1.1(17%)	1(17%)
Bonus and LTIP	0.6(28%)	1.3(21%)	1.3(21%)
Options	0.5(20%)	3.1(49%)	1.5(25%)
Stock and others	0.2(10%)	0.8(13%)	2.3(37%)

Note: this table is based on Frydman and Jenter (2010), Panel B, p. 39. The four items include base salary, bonus and long term incentives plans, grant date value of stock options, estimated according to Black-Scholes, grant date values of restricted stock grants and other, including perquisites, contributions to benefit plans, discounts on stock purchases, etc. All values are in dollars inflation adjusted 2000.

While the base salary remained remarkably stable, its relative size declined sharply from 42 to 17%. By contrast, options and stock grants expanded significantly with the first somehow falling out of favor and being partially replaced by stock grants. Stock options were found to be prone to stock price manipulation and, more recently, have led to ex-post granting, after a significant stock price increase has taken place - a process called backdating. Yermack (1997) find evidence of stock price rise right after option granting. Heron and Lie (2009) found that about 30% of firms may have been involved in this practice in the 1996 to 2005 period.

Incentive efficiency

Authors more tuned to the rent extraction hypothesis, have expressed concern over the mismatch between compensation and performance (Bebchuk and Fried, 2004). A more general problem with performance related pay is that managers may influence its measurement. Aboody and Kaznik (2000) found evidence that CEOs may manipulate the information around their option granting's, postponing the release of good news and accelerating the spreading of bad news. A positive relation between equity incentives

and earnings manipulation has been reported by a number of studies (Cheng and Warfield, 2005 and Johnson et al, 2009).

The rise and structure variation of CEO compensation has been justified by the optimal contracting explanation. Baker and Hall (2004) build upon the explanation that the significant rise and structure modification of CEO compensation matches the changes in firm's characteristics, technologies and product markets occurred in the same period. The rising environmental complexity, including business environmental volatility (Dow and Raposo, 2005) has also been highlighted by this interpretation. Another author, Kaplan (2008), is also a firm opponent of the rent extraction explanation of CEO compensation. By comparing with other groups such as athletes, lawyers and hedge fund managers, he rejects the popular notion that CEOs are over-paid; by analyzing firm performance and board structures, he further contests the views that CEOs are not paid for performance and that boards do a poor job of monitoring managers.

Empirical emphasis

Although the bulk of research on executive compensation has been focused on US and other Anglo-Saxon large listed corporations, a stream of recent research has looked elsewhere. Continental European countries have attracted some research and so have economies from other regions such as Japan (Basu et al, 2006). However, these studies tend to be country bounded or use the US as a focus point. Fernandes et al (2009) carry out a comparative study of a selected number of countries with the US, observing that US top executives are not paid significantly more if other variables such as firm size are considered.

Other studies have ventured into the clearly understudied field of family firms. Schulze et al (2002) triggered the interest in family-firms executives' compensation by stating that altruism, the bias exerted by their top executives towards family members might challenge the traditional agency view that ownership concentration is an efficient tool to reach interest alignment.

This thesis is organized as follows: Chapter 1 describes the determinants of variable compensation for Portuguese Executives. Chapter 2 draws on theory formulation that compares governance problems, namely the case of compensation as an interest alignment tool, in family and non-family firms. Chapter 3 focuses on country and industry effect and the related type of ownership, contrasted with the usual performance and size variables. Chapter 4 studies gender income disparity in Portuguese firms.

CHAPTER I

1. CEO Compensation in Less Developed Capital Markets

Abstract

This paper studies the determinants of variable compensation for Portuguese CEO. It is based on data from 101 firms, collected through an email questionnaire sent to the 500 Largest and Best Firms of Exame, a business newspaper. The conclusions are consistent with findings obtained in more developed capital markets. Among the most significant results, it was found that public corporations are more intensive users of variable pay, consistently with the agency theory prediction. Older firms are also more prone to using this type of compensation and firms located in the center of economic activity and higher education increases the propensity to receive higher levels of salary in form of variable compensation. The relation between compensation and performance was more elusive.

JEL Classification: G39; J33

Key words: Agency theory; variable compensation; CEO remuneration; capital markets

1.1. Introduction

The rapid rise in CEO pay over the past 30 years has sparked an intense debate about the nature of the pay-setting process (Frydman and Jenter, 2010).

The recent expansion of CEO compensation modes has led to a rising concern about their adequacy, shared by stakeholders, academics and practitioners (Bruce et al, 2007). A vast empirical literature has followed the earlier agency theory explanations about the potential and draw-backs of performance related pay mechanisms (Balkin and Gómez-Mejia, 1987; Barkema and Gómez-Mejia, 1998; Mishra et al, 2000; Hermalin and Wallace, 2001; Bebchuk and Fried, 2003).

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, 2007; Bruce et al, 2007). However, firms that implement CEO compensation plans based on performance generally adopt more ambitious and difficult strategies than firms that rely on fixed pay (Dow and Raposo, 2005). Stock-based compensation plans may help in improving managerial efforts to increase shareholder wealth (Morgan and Poulsen, 2001).

The results above mentioned were mostly obtained in the context of well-developed capital markets, with a higher separation of ownership and control. Although some recent studies have moved away from the Anglo-Saxon world (Duffhues and Kabir, 2007 – Netherlands, Basu et al, 2006-Japan, Elston and Goldberg, 2003-Germany, Brunello et al, 2001-Italy, Alcouffe and Alcouffe, 2000-France, Ortín-Ángel and Salas-Fumás, 1998-Spain and Conyon and He, 2011-China) the state of the art in CEO compensation research still largely ignores the situation in 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 we also contribute 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 1.2 we present the main hypotheses relating to the choice of compensation mechanisms employed by firms. In section 1.3 we present the data and the methodology used to test the hypotheses. In section 1.4 we present the descriptive statistics. In section 1.5 the empirical findings and in section 1.6 we summarize the main conclusions of the study.

1.2. Theory and Hypotheses

Characteristics of principals

The concept of agency has been widely used to analyze relations between owners (principals) and managers (agents) within organizations. Agency theory in particular addresses issues of opportunism between principals and agents. Berle and Means (1932) explored the concepts of agency and their applications toward the development of large corporations and used the concepts of agency and principal to explain the origins of the conflicts.

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 mechanism that limit the agent's self-serving behavior. Jensen and Meckling (1976) analyzed the ownership structure of the firm and how equity ownership by managers can align the interests of principals and agents. Fama (1980) analyzed the role of capital markets to discipline agent's self-serving behavior. Fama and Jensen (1983) analyzed the role of board of directors as an information gathering mechanism that the stockholders of large firms could use to monitor the agent's self-serving behavior. Jensen (1984) and Jensen and Roebuck (1983) extended this latter idea to analyze 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 relations 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 CEO's sometimes have hidden information that can be omitted when the company makes compensation contract 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 CEO 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 since 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. But 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 being able to convince the owners about the profitability of the project as claimed. Since 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.

- Hypothesis 1: CEO in listed public firms will receive a higher proportion of their salaries in the form of variable pay.

Characteristics of agents

Agency theory posits that the fundamental goal of firms is to maximize 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 behavior 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 behavior 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 labor markets are also more likely to be exposed to non-routine tasks and hence enter into outcome based contracts. Productivity of CEO should be higher and also influence the productivity of subordinates leading these agents to enter into outcome based contracts.

- Hypothesis 2: CEO with higher educational levels will receive a higher proportion of their salaries in the form of variable pay.
- Hypothesis 3: CEO with longer experience in labor markets will receive a higher proportion of their salaries in the form of variable pay.

Relationship between principal and 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 behavior and therefore more easily agree to compensation schemes based on a fixed pay rather than variable pay. Firms that do not expect a long-term relationship to develop, and hence do not expend resources in socializing their

managers, put less emphasis on behavior 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 manager's 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 behavior 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.

- Hypothesis 4: CEO engaged in long term relationships with principal will receive a lower proportion of their salaries in the form of variable pay.

Another implication of agency theory for organizational behavior stems from risk sharing that arises when cooperating parties have different attitudes toward 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, behavior versus outcome, between the two. The very simple model assumes 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 behavior, then a behavior based contract is more efficient. Under incomplete information – when the principal cannot observe the agent's behavior, 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.

- Hypothesis 5: CEO in more mature firms will receive a lower proportion of their salaries in the form of variable pay.

Characteristics of firms

Agency theory has two important implications for organizational behavior. 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. From an agency perspective, boards can be used as a monitoring device for shareholder interests (Fama and Jensen, 1983). When boards provide richer information, CEO's are more likely to engage in behavior that is consistent with stockholders' interests. When boards provide rich information, compensation is more likely to be behavior based. Because the behavior of CEO is better known, compensation based on knowledge of CEO behavior is more likely. CEO's, in this context, are rewarded for taking well-conceived actions whose outcomes may be unsuccessful. Behavior 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. Large firms will tend to display these characteristics more often than small firms and rely more on behavior based compensation.

- Hypothesis 6: CEO's in large firms will receive a lower proportion of their salaries in the form of variable pay.

Information on the agent's behavior 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: one is the inability to plan for the future;

and 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 behavior 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.

- Hypothesis 7: CEO's in firms experiencing high growth levels will receive a higher proportion of their salaries in the form of variable pay.
- Hypothesis 8: CEO's in firms experiencing high return on equity will receive a higher proportion of their salaries in the form of variable pay.
- Hypothesis 9: CEO's in firms experiencing high productivity levels will receive a higher proportion of their salaries in the form of variable pay.

In Lisbon there are firms with more administrative complexity, so it is to believe that firms in Lisbon tend to use more variable pay.

- Hypothesis 10: CEO's in firms located in the center of economic activity will receive a higher proportion of their salaries in the form of variable pay.

Characteristics of industry

Industry characteristics may also influence the nature of the principal-agent contract. For example, manufacturing is more capital-intensive than services. Manufacturing is also well structured into standardized 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 mechanized production process. Incentives will be more effective in increasing output in services than manufacturing.

- Hypothesis 11: CEO's in service firms will receive a higher proportion of their salaries in the form of variable pay.

Innovation and R&D are being positive related to variable pay (Balkin and Gómez—Mejia, 1987; Henderson and Fredrickson, 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 non-high tech firms generally associated with more structured processes.

- Hypothesis 12: CEO's in high-tech firms will receive a higher proportion of their salaries in the form of variable pay.

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 headquarters and subsidiary, or even one subsidiary and another subsidiary of a multinational, such problems may however be less acute because each of the subsidiaries belongs to the same ownership unit (Arrow, 1975). 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 employed to measure centralization or delegation of control. Where he is native, it is associated with the centralization 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 behavior but may suffer from lower information on the foreign market as agency

costs may rise exponentially with the number of autonomous subsidiaries and the number of managerial functions.

- Hypothesis 13: CEO's in multinational firms will receive a lower proportion of their salaries in the form of variable pay.

1.3. Data and Methodology

In this study, the data was 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 was extracted from 500 Largest and Best 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 was obtained through a survey e-mailed to the human resource director of each 500 firm, in order to obtain information about how executives in Portugal are being paid: the repartition of total remuneration in fix and variable remuneration and fringe benefits. The questionnaire was simple in order to maximize the response rate and consistency. In fact we tried that human resource directors took no longer than five minutes to answer the survey. In the survey, was asked collected CEO specific data, including age, experience in the firm and education.

We first called the 500 firms to ask for the email address of the Human Resource Director. Then the questionnaire was administered by e-mail with no attachments. We made a phone follow up to enhance the number of answers. Of the 500 firms approached, by email, 104 provided answers. However, 3 firms were discarded for providing incomplete questionnaires. The sample consists of 101 firms. It represents about 20% 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: a dummy (X2) that takes a value of 1 if the CEO has a university degree and 0 otherwise; and variable (X3) that measures the age of the CEO. 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: a variable that measures the size of the firm in number of employees (X6); a variable that measures the growth in sales in relation to the previous year (X7); a variable that measures the return on equity ratio (X8); a variable 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 center 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.

1.4 - Descriptive Statistics

The descriptive data relating to these variables are summarized in table 1.4.1

Table 1.4.1 - Descriptive statistics of variables in the data set

Type	Variable	Measurement	Source	Std			
				Average	Deviation	Minimum	Maximum
	Dependent						
Y1	Variable compensation	Continuous	Questionnaire	13,5			
	Independent						
X1	Listed/Public	Dummy	Questionnaire	0.54	0.50	0	1
X2	Education CEO	Dummy	Questionnaire	0.87	0.34	0	1
X3	Age CEO	Number	Questionnaire	51	8	33	74
X4	Contract CEO	Number	Questionnaire	14	9	1	35
X5	Age firm	Number	Exame	36	27	2	122
X6	Size	Number	Exame	1279	2701	7	17335
X7	Sales growth	Percentage	Exame	21	49	-33	430
X8	Return on equity	Percentage	Exame	-15	147	-1429	123
X9	Productivity	Number	Exame	67	376	0	2894
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

The table shows that firms in Portugal compensate their CEO's on average with 13.5% 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, Murphy and Wruck (2004) show that since the mid-nineties variable compensation of the S&P 500 CEOs has largely exceeded fixed compensation.

1.5 Analysis and Results

The main empirical findings of the study are displayed in Table 1.5.1.

Table 1.5.1 - Tobit estimation for the size of variable compensation

		Y			
Dependent		Size of variable compensation			
		Coefficient	Std Error	t-ratio	Significance
Independent					
X0	Intercept	-7.448	8.826	-0.844	
X1	Listed/Public	8.436	2.517	3.351	***
X2	Education CEO	5.622	3.140	1.791	*
X3	Age CEO	0.100	0.142	0.701	
X4	Contract CEO	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			

*** Significant at the 1% level; * Significant at the 10% level

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 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) that finds a significant association between separation of ownership and control and agency costs in a sample of 1708 small American corporations. Our 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.

We also find that the higher the CEO 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 in Stroh et al (1996). Firm size, sales growth and return on equity also showed no significant impact on level of variable pay unlike observed in Jensen and Murphy (1990) and Leonard (1990). A possible explanation could be that the effect of these variables in the study in hand could have been swamped by the proxy used to measure productivity.

Surprisingly, factors relating to the characteristics of the industry show mixed signs: a negative relationship between the level pay of variable and the service industry and positive relationship between the level of variable pay¹² and the high-tech industry. Whilst the relationship with the service sector is not significant at a statistically meaningful level, the relationship with the high-tech sector is found to be significant at the 22% level. The findings suggest that it is certainly desirable to pursue the analysis of the influence of industry on the design of compensation mechanisms. Our findings also reveal the level of variable pay to be positively related to domestic firms suggesting that agency costs may be acute in these rather than multinational firms. Unfortunately our results are not conclusive due to the lack of statistical meaningfulness of the relationship. Overall, the findings of our study confirm that although the average weight of the variable pay for the largest Portuguese firms is relatively low compared to US fir

Table 1.5.2 displays the bivariate correlations between the variables in the data set.

Table 1.5.2 - Bivariate correlations of variables in the data set

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
X1 Listed/Public	1.00												
X2 Education CEO	0.01	1.00											
X3 Age CEO	0.00	-0.20	1.00										
X4 Contract CEO	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	1.00	
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

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 analyze the responses to the questionnaire is of the linear form

$$Y_i = \alpha + \sum_{j=1}^J \beta_j X_{ij} + \varepsilon_i \quad (i)$$

where i is the i th firm ($i=1 \dots 101$), X_{ij} is the j th characteristic ($j=1 \dots 13$) 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 the X_{ij} , that are fixed. Since the dependent variable is bounded to the left we used a Tobit procedure to estimate the basic equation.

ms, ownership is a strong determinant in the design and level of compensation.

1.6 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 emphasizing 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 particularly more 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 US. Lack of off the shelf data has been the main deterrent to research in the context of less developed capital markets.

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

We 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). We also found that the higher the CEO 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 CEO education in the design of compensation mechanism. Firms located in Lisbon, pay also higher levels of salary 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 also limitations as to the extrapolation of our results as we cannot measure the level of potential idiosyncrasy. 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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CHAPTER II

2. CEO Compensation in Portuguese Family Firms

Abstract

Performance based compensation is considered a decisive tool in the co-alignment of interest between owners and managers. The solution to agency problems in public corporations hinges critically on the use of variable compensation mechanisms. Empirical analysis of this phenomenon is exiguous and the background theory has been suffering developments, like the introduction of family firm agency problems. This study confirms the larger use of variable compensation by public firms but shows that the potential for using variable compensation in second or third generation family firms is particularly high due to higher potential form of conflict emergence between the different stakeholders. The framework used in this paper has the potential to encompass a wide range of phenomena where conflict can emerge and incentives can be used to co-align interests between the different transacting parties.

JEL Classification: G39; J33

Key-words: Corporate governance; compensation model, CEO compensation, family firms

2.1 Introduction

Family firms represent the majority of all business worldwide (Segaro, 2011). Family firms are predominant, not only in less developed capital markets like Continental Europe or Japan, but also in the Anglo-Saxon countries. However, in this region, easier access to capital markets led the largest firms to build up an effective separation between ownership and management. By contrast, in Continental Europe many of the larger firms remain under family control (La Porta et al., 1999, Faccio and Lang, 2002), often with an active management role by the founding family.

Many companies are born as family business. Even today, many families still exercise control over several companies, the effects of which reflect in their corporate governance (Brenes et al., 2011).

This paper draws on theory formulation that compares governance problems, namely the case of compensation as an interest alignment tool, in family and non-family firms. We give special emphasis to the recent argument that the agency problems is not exclusive to public firms, and may be complicated by factors like altruism and emergency of motivations that are not strictly economic. We present literature based hypotheses and the conclusions of a non-parametric analysis of the practice of variable compensation in 102 Portuguese firms in which we compare CEO compensation policies of family owned and non-family owned firms. Finally, we summarize the main conclusions and give a set of recommendations for governance and CEO compensation in family firms

The main objective of this study is to identify the specificity of family firms, use of variable compensation, a relatively neglected topic in empirical studies on performance related pay.

Another relevant issue in this study is the dynamic nature of agency problems faced by family firms. As they become older, family firms deal with succession problems. We find that benefits of variable pay are related to the age of family firms.

This study confirms the larger use of variable compensation by public firms but shows its benefits for second or third generation family firms, due to higher potential conflicts among different stakeholders.

2.2 Interest Alignment between Managers and Owners

Are public firms more efficient and prone to survival than family firms? Do these firms have better conditions to generate efficient corporate models, value creating strategies, overcoming succession crisis and attracting better managers? Many experts, academics and government officials offer a positive reply to these questions. This leads to the continuous effort to develop capital markets, use privatizations to promote larger levels of free float and foment initial public offerings (IPOs). The resulting separation between ownership and management is believed to bring about a more dynamic, competitive and prosperous economic environment.

Financial theory suggests that public firms have some limitations and may be managed in sub-optimal ways due to the propensity of managers (agents) to pursue specific objectives that defraud the stockholders' (principals) expectations. The agency costs include the drawing effort, control (monitoring) and implementation of contracts between managers and stockholders that guarantee that the agents manage the firms according to the stockholders' interest (Jensen and Meckling, 1976, Eisenhardt, 1989).

In later years Jensen (1989) expressed his concern with the decline and eclipse of public firms, which seems unable of competing with family and private firms in general. Public firms' poor financial performance revealed their low attention to costs and excessive focus on growth sacrificing profit, maximizing managers' utility rather than the stockholders'. As a corollary of this pessimistic view of public firms, he defends that a conjugation of property and management is an efficient instrument for minimizing agency costs.

Performance based compensation, including variable pay, has been regarded as an efficient mode of co-aligning interest between managers and stock holders. Naturally, this problem is smaller in family firms because management activities are often carried out by owners, reducing the need to enforce compensation mechanisms that turn out expensive. Variable compensation has led to a significant rise of the total amount paid to CEO's.

CEO compensation includes a large number of different tools: fixed compensation, bonuses, fringe benefits (car, house, etc.), stock options, company stock, golden parachutes or non-reimbursable loans. The level and mix of remuneration are important means to incentivize executives and to align their interests with those of shareholders (Goergen and Renneboog, 2011). A positive relation between equity incentives and earnings manipulation has been reported by a number of studies (Cheng and Warfield, 2005 and Johnson et al, 2009).

The level of total compensation has expanded significantly, in absolute and relative weight. The Economist (October, 2003) shows that the relation between CEO and the workers' average compensation in the US went up from 40 in 1980 to 400 in 2003. A similar trend has been found in other countries, although the growth rate has been smaller. Brennan (1996) observes that between 1980 and 1990 the difference between CEO compensation and average workers' compensation in the UK grew from 10.6 to 22.2. This growth of CEO compensation was systematically above the expansion of their firms' profits.

The expansion of total compensation was caused mainly by the spread of different types of performance based pay as an attempt to align interests between managers and shareholders

Recent contributions (Schulze et al., 2002) show the existence of agency problems in the context of family firms which may cause the misalignment of incentives and the creation of distributive injustice. This suggests the need of corporate models that ensure bigger transparency. The problem of compensation in family firms is more complex and relevant than may be inferred from a straight application of agency theory.

Chrisman et al., 2007 find that family business owners tend both monitor and provide incentives to family managers and that performance is improved by doing so. That is, owners in privately held family firms, appropriately, treat family managers as agents in terms of the compensation packages and monitoring mechanisms used. In this study, they link governance efficiency mechanisms of monitoring and incentives to perceived firm performance.

Within public corporations, the separation between ownership and management generates a delegation of the responsibility of management for managers, creating a threat of opportunism or after-contractual moral hazard (Alchian and Woodward 1988). The main problem consists on the possibility of not making decisions as if proprietors. The agency problems (Jensen and Meckling, 1976; Jensen et al., 2004) become particularly acute when they include decisions of high personal cost for the agents such as the firing of workers or the alienation of part of the company; or of straight benefit for the agent, such as the refurbishing of the headquarters or the acquisition of an expensive service vehicle.

Agency problems can be minimized by the adoption of appropriate control mechanisms, either external or internal (Jensen and Meckling, 1976, Schulze et al., 2002). External control can be achieved through the intervention of different markets. Capital markets achieve an efficient allocation of risk among shareholders. There is relevant price information conveyed by share quotation and market discipline is brought in through the hostile take-over threat if management decisions are judged sub-optimal. One example would be the undertaking of expansion or other investment decisions with negative expected positive net present value, for the sake of maximizing the managers' utility function. Product markets convey additional information on customers' evaluation of products or services delivered by the firm. The market for production factors, especially human and management resources must be competitive to enable efficient hiring; and curbing the threat of adverse selection or pre-contractual opportunism by candidates who hide information about their (lack of) relevant skills for the future exercise of the new position (Fama, 1980, Schulze et al., 2002).

These external mechanisms can be complemented by the existence of internal control mechanisms such as a board of directors or performance related pay for the managers.

Therefore, Jensen and Meckling's model assumes that a lower efficiency of external control mechanisms, in a context of relatively low competitiveness coupled with the absence of internal control structures tend to exacerbate the agency problems. One example is the hiring of CEO's, assisted by head-hunting specialists, which lowers the effective competitiveness of the job market for executives raising the bargaining power of the few candidates under scrutiny. Further, the board of directors usually displays lack of independence towards the CEO as well as lack of skills or time for the effective monitoring of the strategic decisions made by the CEO.

A natural corollary of Jensen and Meckling's model is that private corporations, in which ownership and management converge, are an efficient alternative to public corporations, at least in the context of high agency problems. Jensen's (1989) popular HBR article on "the eclipse of the public corporation" regarded the takeover wave of the 80's as a corporate governance improvement due to the capital concentration it entailed.

Family firms, as a particular case of privately held corporations, should permit agency cost reduction due to lower level of conflict that is so common in the public corporation. Indeed Jensen et al., 2004, observe that if a manager held one hundred percent of shares, ignoring risk aversion issues, the decisions made by this manager would maximize firm value without requiring an incentive package. Family control lowers the agency problem between owners and managers, but gives rise to conflicts between the family and minority shareholders when shareholders protection is low and control is high (Maury, 2006)

However, a different view has been expressed in a number of studies. The concentration of ownership and control may generate agency problems due to the inefficiency of external control mechanisms that affect these firms (Schulze et al., 2002). As an example, the close control exerted by the owning family seriously bounds the firm's capacity to compete in the factor market where managers and other employees can be hired. For external candidates' equity ownership and career development are limited by the eventual preference that family members may enjoy (Lew and Kolodziej, 1993; Schulze et al., 2002). Kellemanns and Eddleton's (2007) investigate how dispersion of ownership among generations of family and extent to which family managers exchange information with one another moderate the relationship between conflict and

performance and they show that when conflict and family members exchanges are high, performance improves.

Moreover, being precluded from accessing the capital markets, the family firm faces two additional problems: a “holdup” risk as the owner of a core competence or asset may exert some kind of threat over his co-owners (Rajan and Zingales, 1998); by not being listed shares of family firms do not benefit from the capital markets’ disciplinary effect, as the ownership concentration prevents hostile take-over, deferring or preventing the needed replacement of inefficient management practices (Jensen, 1993).

Schulze et al (2002, p. 252) refute the statement that family businesses may do without internal control mechanisms due to the “special relations among deciding agents” as postulated by the standard formulation of agency theory. By contrast, they consider that family relations may generate even more complex agency problems. One such factor is “altruism”, or moral values that lead influential family members to benefit their relatives without expecting any kind of retribution. While altruism can be very positive in the context of the family as it strengthens family bonds (Simon, 1993), its repercussions within the family firm may lead to “spoiling” of children or grandchildren”. This problem is more significant the more asymmetric the altruism level (Schulze et al., 2002). This originates two types of agency problems: horizontal (among brothers) and vertical (between parents and sons). Lubtkin et al. (2007) identify this paternalistic altruism as form of altruism that flows from attempts to provide merit goods (that parents judge to be essential for their children’s future success and happiness).

These problems are not the exclusive outcome of selfish behavior: information problems make adequate decisions difficult even when there is a common goal of a positive outcome. Schulze et al quote a son’s statement: “I loved your gift”, which may distort information creating an obstacle for a generous and fair resource distribution by a caring parent. Envy risks, holdup and moral hazard are all higher due to these problems.

Schulze et al. (2002) regards altruism as an efficient governance model during the uncertain start-up period, compensating the imperfect capital and labor markets that

affect younger firms. At a later stage, the internal constraints of capital and management may lead to strategic inertia” and incentives’ misalignment, in which the founder’s altruism may generate lack of effort by younger family members and a perception of injustice by managers external to the family. One consequence of altruism may be the uniform compensation of family members working at the firm penalizing the most active and entrepreneurial. These problems affect the governance model suggesting the need to hire independent managers, external to the family, precisely as is generally recommended with regard to public corporations. In fact one study discuss the agency effect of altruism on firm governance and present a contingency influence, based on how the effects of altruism change as firm ownership passes over generations (Lubatkin et al., 2005)

Altruism thus renders the succession problem more difficult within family firms, as confirmed by numerous studies. Two-thirds of family firms fail to transfer to a second generation of family ownership (Handler, 1990).

This failure of family firms to transition to second and third generations has prompted researchers to examine the succession process, including demographic and behavioral variables (Marshall et al., 2006)

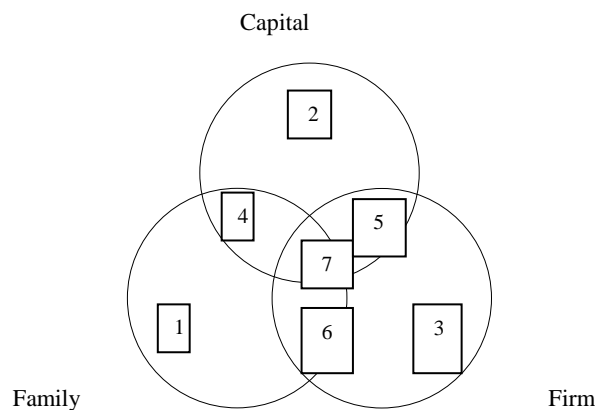
2.3 Compensation within Family Firms

Compensation is a key element of the typical conflict of interests between shareholders and other stakeholders. Although these interests can be made compatible and contribute to the long term efficiency of the firm (Carrillo, 2007), efficient management and control mechanisms are required to achieve that goal.

In addition to the general challenges that an efficient compensation policy raises, family firms must deal with the constraints emerging from family bonds. Although many managers posit that their pay policies reflect the standard procedures typical of their industries, regardless of family considerations, this factor may influence both the pay and career policies.

In order to analyze the complexity and extension of determinants for family firms' compensation, it is useful to take in consideration the "three circle framework" (Figure 2.31) based on capital, family and firm proposed by Gersick et al. (1997).

Figure 2.3.1 - Family Firms' Three Circle Framework



Source: Gersick et al (1997)

The upper circle contains the group of shareholders, while the left circle includes the family members and the right circle represents the firm's employees. It is easy to infer

that the interaction levels may vary wildly. Subset 7 represents the family members who are simultaneously shareholders and work for the firm. Group 4 includes family members who own shares but who do not work in the firm. Subset 5 represents non family members who are shareholders and work for the firm. Group 6 represents family members who work for the firm but do not own shares in the firm.

These seven groups have different interests and objectives: a member of group 4 gives higher value to the dividend policy while members of group 6 are more concerned with their professional career and profits plow in for the firm's development. One may add that this group also favors higher salaries and fringe benefits, like public corporations' executives. Information disclosure and transparency goals may also differ significantly across the above groups. Shareholders, especially members of group 2, support a high level of disclosure for the company accounts, while groups who include family members or employees may favor higher levels of opacity. Compensation policy defined by family firms reflects power relations, objectives and level of integration for the above mentioned seven groups. Internal conflicts tend to be smaller at an early stage of the family firm in which group 7 is still highly predominant.

When the three circles overlap, agency problems tend to be small reducing the need for the use of variable compensation as an interest alignment tool. Compensation levels also tend to be modest because the owners / family members / employees are also residual claimants to the wealth to be generated in the future. Current personal savings by the firm's founders can facilitate the financing of the firm, in exchange for the appropriation of future revenues. However, as time goes by and the company expands, the firm needs to recruit new employees and to raise capital from new sources. Moreover, the family also expands enlarging the pool of residual claimants. Successive successions may become critical events, as the centrifugal forces tend to place the circles further apart, aggravating the potential for conflict.

Family firms in which there is some level of separation between management and ownership are prone to agency problems, similar to public corporations, due to interest misalignment between owners and managers. Performance based compensation may also be required to generate an incentive for value creation by managers who do not share ownership. However, one additional problem arises because family firms'

performance is harder to measure, especially if they are not listed. Neves (2001) propose a set of three tools for an appropriate measurement of family business performance. Stock-options are a possible interest co-alignment instrument, but only for listed firms. However a number of problems associated with top executives' buy back efforts to preserve declining quotations have highlight a number of shortcomings for this instrument (Esperança, 2000). A second solution can be provided by companion stock redemption - the process of buy back of preferential shares. Finally, for listed firms, phantom stocks, whose price can be based on accounting or some other estimate of firm value?

Some enthusiasts of performance related pay assume that these mechanisms are efficient even in the absence of agency problems. Other authors, however, are more skeptical. Pfeffer (1998) fears that poorly designed compensation schemes may induce forms of opportunism that render this instrument a source of value destruction rather than enhancement. He provides substantial anecdotal evidence of the dangers associated to performance based pay. Sears discontinued this practice after widespread cheating was found among involved employees. In the software industry he contrasts the high turnover and employee dissatisfaction related to individual performance measurement with the high profitability and employee retention of SAS, a firm that chose a policy of prizes based just on the overall performance of the firm.

Jensen et al. (2004) are particularly concerned with the “non-linear pay performance relations once the targets are set”. The complex and time consuming budgeting process teaches managers that “those who tell the truth about what they can do get punished by getting more demanding targets”. Jensen et al are not as skeptical about the performance related pay at the sub-unit level as Pfeffer, because they believe that a purely linear compensation formula provides no incentive to lie, or to distort information.

One may conclude that variable pay is not a costless solution and that it must be implemented only if its benefits outweigh its costs. Schulze et al (2002) observe that most American family firms practice some type of performance based pay, with a shorter or longer range. They reason that this finding is a proof that these firms face some level of agency problems.

2..4 Data and Methodology

Given the predominance of family firms, even among those listed on the stock market, Portugal provides an interesting setting for the study of the determinants of CEO compensation in family firms. The link between family firm conflicts and CEO compensation that may be found within this context helps in shedding light on compensation policies on a wide range of firms from countries where capital markets and ownership separation are not predominant.

Researchers' bias for public corporations can be essentially explained by the availability of large data bases. Some studies also present theoretical predictions that this kind of firms may favor meritocracy better than family, therefore becoming a more efficient type of institution.

Family control is common in publicly traded firms around the world (Burkart et al., 2003). Family firms have now started to receive attention even in mainstream financial economics. A recent study on family firms (Anderson and Reeb, 2003, p. 1301) that looked at the S&P 500 finds that about one-third of those firms are still family owned and that, contrary to the authors' conjecture, these perform better than non-family firms. They also find that better performance can be found when family members serve as CEOs and draw a major conclusion that "our results are inconsistent with the hypothesis that minority shareholders are adversely affected by family ownership, suggesting that family ownership is an effective organizational structure". Another study (Maury, 2006) finds that active family control firms have higher profitability than non-family firms. In fact, active family control continues to outperform non-family control, in terms of profitability, in different legal regimes.

Although international evidence suggests that families may be unhelpful to firm performance, recent analyses of U.S. public companies indicate that family firms outperform. One study (Miller et al., 2007) investigate measures of family business in U.S., making distinction between lone founder business and family business that include multiple family members as managers, and conclude that only business with lone founder outperform.

We tried to go beyond publicly listed firms and built a data set based on a survey. The data set is based on the 500 largest non-financial firms, operating in Portugal, identified by the 'Exame' magazine, which provided some accounting and demographic information about those firms. To obtain compensation specific information, we designed a very short questionnaire that was pre-tested with six firms. It was emailed, in the first quarter of 2002, to the human resources director of each firm. Later, we made a follow-up telephone call to speed up the answering process. We obtained 104 answers, of which 102 were complete and included in the study. The response rate was slightly above 20%. In Table 2.4.1 we present the distribution of firms within different sectors. Overall it can be observed that family firms are significantly represented in the sample. These firms control key sectors, such as building and construction, hotels, industrial machinery and textiles, that contribute significantly to the domestic product.

Table 2.4.1.- Number and percent of family and non family firms by industry

Industry Description	Family Firms	Public firms	%Family Firms
Buildings and construction	9	2	81,8
Chemical	3	7	30,0
Comunications	0	3	0,0
Electric, gas and sanitary services	2	4	33,3
Electronic and electrical equipment	2	5	28,6
Food products	9	5	64,3
Heavy equipment	1	1	50,0
Hotels	2	0	100,0
Industrial machinery	1	0	100,0
Paper products	1	3	25,0
Petroleum and coal products	0	2	0,0
Printing and publishing	2	1	66,7
Retail services	2	3	40,0
Rubber products	0	1	0,0
Services	2	5	28,6
Textile products	2	0	100,0
Transportation by air	1	2	33,3
Transportation equipment	3	9	25,0
Transportation services	3	3	50,0
Wood products	1		100,0
Total	46	56	45,1

We classify our variables in two groups: CEO and corporation. CEO variables include level of education (q) (measures whether the CEO is a college graduate - this variable takes value 1 if she (he) is a graduate and 0 otherwise) and variable compensation (percentage of the variable compensation in total compensation). Corporation variables include firm age, number of employees, volume of sales, service (if the firm is in the services sector or not - this variable takes value 1 if the firm is in a service sector and 0 otherwise) and location (if the firm is located in Lisbon or not - this variable takes value 1 if the firm is located in Lisbon and 0 otherwise).

2.5 Analysis and Results

The main objective of this study is to identify the specificity of family firms in contrast to public firms where ownership and management are separated. Following the reasoning presented in the previous sections, we assume that family firms have less agency problems than public corporations. Therefore, we formulate the first hypothesis as:

- Hypothesis 1: Family firms use less performance related compensation

Table 2.5.1 shows that family firms are not significantly different from public corporations, on variables such as executive education. This finding may seem peculiar for those who expect family firms to favor the hiring of family members for executive positions, in neglect of their skills and training. “Professional” managers from public corporations should, therefore, have better education. Several studies show a different attitude by family firms, at least for the larger ones. Lima (2003, p. 287) analyzed a set of large Portuguese economic groups. One respondent mentioned that “We can no longer keep waiting for family members to fill the firm’s positions ... The promotion criteria has to be competence, rather than being a family member.”

Table 0 - Variables, mean difference between family firms and public firms and significance

Variable	Family firms (n = 46)	Public firms (n = 56)	T test Significance
Firm age	38	33,6	
Employees (number)	785	1683	*
Volume of Sales (€ million)	136.9	392.5	**
Services	0,5	0,64	
Location	0,59	0,64	
College degree (%)	87%	88%	
Variable Compensation (%)	9,2%	17,1%	***

Significance: *** 1%; ** 5%; * 10%

We did find a significant difference in size – publicly-owned firms tend to be larger than family-owned firms, with larger volume of sales and number of employees. A similar observation was made by Anderson and Reeb (2003) for the S&P 500 - the average assets of family controlled firms were about 64% of those present in non-family firms. Although in the framework of much larger firms the differences were larger (average assets of \$9.6 billion for family firms and \$15 billion for non-family firms). These observations are consistent with the literature on family businesses that regard family ownership as raising a financial and administrative barrier to further expansion (Chandler, 1990). This is probably a more serious issue for Portuguese family firms than for S&P 500 family firms, therefore explaining the sharper difference found in our sample – the average turnover for family firms was only 35% of the mean for non-family firms. However, even in publicly-owned firms, resistance to surrendering control by the leading family may limit the firm’s growth potential.

The most significant difference was found for variable compensation, confirming our hypothesis. The separation of ownership and control calls for more intensive use of interest co-alignment through the use of variable pay.

Another relevant issue is the dynamic nature of agency problems faced by family firms. As they become older, family firms must deal with significant succession problems. Schulze et al (2002) considers the role of the altruism effect - the moral value that motivates people to take actions without direct reward. Altruism is positive at the initial

stage, in which entrepreneurs face a high level of uncertainty. However, as the firm grows, altruism may cease acting as a cohesion factor. The owner may give “gifts” to family members to compensate them for his absence (Kets De Vries, 1996). On the other hand, the employees that do not belong to the family (group 3 of Figure 2.3.1) may feel negatively discriminated, with a negative impact on performance.

Agency problems that emerge due to the separation of ownership and management tend to be aggravated by the family expansion, with more people claiming residual rights. This problem only intensifies with the transfer of power to a new generation. Therefore, as they face more serious agency problems, older family firms should require a more intensive use of incentives for interest co-alignment, especially between pure shareholders (group 2 in Figure 2.3.1) and pure managers (group 3 in Figure 2.3.1). This issue is neglected in studies on family firm governance and incentives. One way to address this issue is to relate performance with the utilization of variable compensation, using age as a discriminant factor. The second hypothesis is:

- Hypothesis 2: Variable compensation leads to better performance in the older family firms

For testing this hypothesis we obtained the median age and then, for each group, we measured the variable compensation median. Table 2.5.2 shows the return on equity for each group. One of the problems of this procedure is the reduced number of observations in each quadrant. The second problem is associated to the measurement of profits, as reported to the ‘Exame Magazine’, that we use in this study. Although these data are more reliable for larger firms who are usually audited, there is a risk that some firms may understate their revenues, for tax reasons, while others, more concerned with their credit ratings, may present a rosier picture of their performance.

Table 2.5.2- Average return on equity for different age and variable compensation groups

Firm Age	Variable Compensation	
	Low	High
	< 8.5%	>= 8.5%
Young: < 32 years	11.3	4.8
Old: >= 32 years	9.9	9.5

Even after taking into account these issues, we find some interesting results. The group of younger firms – less than 32 years old – is more likely to be managed by the first family generation, therefore facing less agency problems. The efficiency of variable compensation should be lower for this group as it faces less separation between management and ownership. By contrast, the group of firms older than 32 is more likely to be managed by the second or above generation. For this group, variable compensation was expected to bring in the benefits of interest alignment as the separation caused by the drift apart of the circles represented in Figure 1.

Table 2.5.2 shows that the performance of older family firms is not affected by the use of variable pay, suggesting that its inherent costs are equivalent to the potential benefits. This observation is consistent with several empirical studies who find no significant relation between the use of variable pay and performance. The more interesting reading of this table is that younger firms who make low use of variable pay enjoy the highest return (11.3%). By contrast, the group of younger family firms with high usage of variable compensation enjoys the lowest return (4.8%) of all four groups, suggesting that this is a costly mechanism that needs to generate compensating benefits to become neutral or beneficial. Younger firms, with low agency problems, do not benefit from variable pay.

2.6 Summary and Conclusions

In this study of 102 Portuguese firms we find evidence that non-family firms make a significantly more extensive use of variable pay than the more closely held family firms, in possible response to higher agency problems and the corresponding need to align interests of managers and owners. This result is consistent with similar studies, carried out in Anglo-Saxon settings and elsewhere.

However, we were also concerned with the specific agency problems of family firms as may be inferred from the traditional “three circles framework” and the inherent aggravation of conflict of interests as one generation leaves place for the next managers and the specific altruistic problems become more important. Variable costs were regarded as a costly interest alignment tool that could be compensated by the benefits of circumventing serious agency conflicts. Although based on a small sample, the results were quite important as they showed that relatively agency problems free first generation family firms display a clearly lower performance as they cannot get a return for the significant costs associated with variable pay.

This issue is certainly worth studying with a more representative sample, preferably including firms from different national environments. If confirmed, the results obtained here are paramount in defining appropriate governance structures and conflict avoidance mechanisms within family firms.

Although exploratory, this study raises important issues for CEO compensation within service firms. While performance related pay seems to be costly and ineffective for young family firms, it seems to become more beneficial within older family firms, as they are prone to higher agency problems. Indeed, the concentration of ownership and management typical of younger family firms, leads this group to appropriate the residual wealth generated by the firm, permitting a more frugal and simple compensation. Younger firms, especially if they enjoy high growth potential, usually face negative or low free cash flows. High cash payments, performance related or not, may become a significant burden that young firms should avoid.

The core issue of CEO compensation in family firms must be researched within a broader sample, with higher potential for generalization. Although age is a good proxy

for management generalization and agency problems, more detailed information about governance of specific family firms should provide a better link measurement of the benefits of variable pay in family firms. An international comparison is also important to take into consideration the impact of common versus civil law countries (La Porta et al., 1999).

This is an exploratory study on a very important theme of corporate governance. The traditional view that family firms are efficient tools for avoiding agency costs has been partially challenged by the more detailed focus on the ownership and management structure of family firms. Altruism has also been regarded as a potential source of agency costs specific to this type of hierarchy. However, the empirical study of this issue is still at its infancy and our results are quite promising.

The limited size of the sample precludes a confident generalization off the main findings, calling for a larger and more detailed database in ulterior work. Nevertheless, the methodology used in this study can be replicated to shed more light on the efficiency of governance mechanisms, given the specificity of family firms.

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CHAPTER III

3. CEO compensation around the World

Abstract

Although a large attention has been devoted to managerial compensation, most empirical studies were country specific or limited to a small number of countries. This is mainly due to the scarcity of available data on countries with lower shareholder protection mechanisms. By focusing on CEO compensation and using the more comprehensive information of 1002 for firms worth more than €1 billion, we shed new light on the determinants of CEO compensation. This study focus on country and industry effect and the related type of ownership, contrasted with the usual performance and size variables. Findings of the current study demonstrate a negative relationship between firm performance and the CEO compensation, suggesting that executives act in their own self-interest, while pretending to act in the interest of the firm. Furthermore, we found that expatriated CEO and CEO in Anglo-Saxon firms achieve higher level of compensation.

JEL Classification: J33; G39

Keywords: CEO compensation; executive remuneration; corporate governance; countries

3.1 Introduction

The recent financial turmoil that has affected most world economies has reinforced the fear that CEO compensation, concentrated on short term goals may have played a key role in excessive risk taking in both the financial and real economy industries.

This concern is not new. The rise and diversification of CEO compensation structures has raised questions about their appropriateness, shared by stakeholders, academics and experts (Bruce et al., 2007). Kaplan (2008), Bogle (2008) and Walsh (2008) provide an interesting debate on this issue, with Kaplan (2008) standing by the dominant compensation policies and, the other studies questioning their adequacy.

The purpose of this study was to identify the determinants of CEO compensation in large firms around the world. We believe that this is an important area of research for two reasons. First, to date, the majority of international compensation research has focused on single country studies neglecting the legal, cultural and ownership differences among countries. Because cross-country research is rare, or with a narrow scope, especially compared to the large number of studies based on US data, we know very little about the determinants from national conditions on CEO pay.

A vast empirical literature has followed the earlier agency theory explanations about the potential and draw-backs of performance related pay mechanisms (Barkema and Gómez-Mejía, 1998; Bebchuk and Fried, 2003). Based on the assumption of divergence in interests between firm owners and managers, one expects that executive pay would mitigate the agency problems. Unfortunately, so far, contradictory findings didn't allow a clear conclusion on the relation between pay and firm performance and are difficult to understand. On the other hand, and in divergence to the dominant paradigm, it could provide evidence that executives do not perform on shareholders' interests only and take other interests into consideration as well.

A second reason for our study relates to a need to examine the recent shift from home-country compensation practices to the Anglo Saxon pay paradigm. Another important factor of CEO compensation practices is the huge growth in the number and size of firms that operate on a worldwide basis. In other countries, CEO pay levels have been lower, variable pay has been smaller and stock options or other long term incentives

have not been very common. While companies outside the United States pay their CEO's quite differently from American firms, there is some evidence that companies around the world are shifting towards the US pay paradigm.

However, some multinational firms prefer to take into account local compensation norms, national tax considerations and other conditions, instead of using uniform CEO compensation systems.

The debate on CEO compensation has intensified due to the recent financial crisis. In many countries, state aid provided to the finance sector and other industries highlighted the size of compensation packages enjoyed by many senior executives. What initiated this debate is the new scheme of the compensation package, which favors stock grants instead of options grants. Stock options were found to be prone to stock price manipulation and, more recently, have led to ex-post granting, after a significant stock price increase has taken place - a process called backdating. Yermack (1997) find evidence of stock price rise right after option granting. Heron and Lie (2009) found that about 30% of firms may have been involved in this practice in the 1996 to 2005 period.

Aboduy and Kaznik (2000) found evidence that CEOs may manipulate the information around their option granting's

To accomplish these research objectives, we investigate the determinants of base remuneration and other compensation forms (performance-related) of CEO's using data from two sources: Boardex Database to collect information related to compensation and human capital information; and, Datastream to get finance information on the selected corporations. The empirical results highlight significant relationships including firm size, economic performance, executive human capital and other human factors.

The next section summarizes the body of research concerning to the determinants of CEO remuneration with testable hypotheses being also presented. In section 3.3 we present the data and the methodology. Section 3.4 presents the descriptive statistics and in section 3.5 we summarize the main conclusions of the study.

3.2 Theory and Hypotheses

Most of students of CEO pay believe that individuals are mostly motivated by money, and that performance-related pay motivates creativity and productivity. Others posit that not only is performance-related pay actually de-motivating, but it is also difficult to define and implement (Pfeffer, 1998). Higher costs and increasing competition in attracting and retaining top talent have however contributed to a fundamental shift in the way CEO's have been rewarded and motivated (Lazear and Oyer, 2004). Some firms see performance-related pay programs as a way to better dealing with costs while rewarding CEO's for achieving specific performance objectives each year (Jensen et al., 2004). At the same time, studies have shown that performance-related pay is embraced when CEO performance cannot be precisely or accurately measured as it provides executives with a stake in the success of the firm (Jensen et al., 2004).

Characteristics of CEO's

a.1) CEO pay and age

Pioneering studies (Taussing and Baker, 1925) on managerial compensation have considered age as an explanatory variable. It has been usually suggested that older CEO's have accumulated experience and knowledge (both firm and specific activity) that may be complemented by enhanced education (McKnight et al., 2000). Blau et al. (1998) and Core et al. (1999) show that remuneration is related with executive's age, educational level, years of labor experience, and tenure with the firm.

As Murphy (1999) shows, the CEO's bare performance should be associated with age because the likelihood of a promotion will be small near the retirement age and hence, for comparison of performance with others is of smaller importance for the elderly. Additionally, risk adverse CEO's try to avoid situations in which they are faced with income uncertainty. Moreover, as CEO's become older, their preference shifts towards short-term projects whose payoffs would be due before their retirement (Dechow and Sloan, 1991; Gibbons and Murphy, 1992). In this study, we consider age as a proxy for

general human capital and for the level of responsibility of an executive within the firm. Following these arguments, we expect that compensation schemes should explicitly include CEO age in order to mitigate executive horizon problems. Therefore, we propose:

- Hypothesis 1a: The level of CEO base salary is positively associated with the age of CEO's.
- Hypothesis 1b: The level of CEO other compensation is negatively associated with the age of CEO.

a.2) CEO pay and tenure

CEO tenure has also got some attention among compensation researchers. Finkelstein and Hambrick (1995) found no significant correlation between CEO tenure and pay and it became weaker as tenure increased, explaining this as likelihood that after few years with any organization, CEO's prefer to have compensation forms alternative to cash remuneration. They also argued that the total compensation and salaries of CEO's were not affected by their tenure, but variable pay was. According to Carothers (2004) and Bertsch and Mann (2005) CEO remuneration is found to be statistically associated with the number of years CEO remains with the company.

Following Bebchuk and Fried (2003) and Hermalin and Weisbach (2003), the separation of ownership and management in publicly traded companies gives CEO's substantial "power" or managerial discretion to increase their influence over board members to increase the odds of retaining their jobs or to affect their compensation.

There are several reasons to believe that CEO influence on the board of director's increases with longer tenure (Core et al., 1999). Using a sample of British executives, Johnston (2002) found that CEO compensation was partly explained by job tenure and internal promotion, and, longer tenure was associated with a higher base remuneration. A longer tenure might be associated with more power as the relation with the board of directors becomes stronger. Finkelstein and Hambrick (1995) detected an inverted U-

shaped relationship between total pay and CEO tenure starting to drop after 18 years of tenure. CEO's with the capability to manage earnings have greater discretion over their compensation when variable pay is linked to accounting rather than market measures of performance (Bebchuck and Fried, 2003). Moreover, CEO's are likely to assign lower values for stock-based pay over time because of risk-aversion and wealth constraints that limit their ability to diversify their personal wealth (Hall and Murphy, 2002). In particular, as tenure increases, CEO's are more likely to prefer cash compensation over stock compensation. Then, it is expected that CEO's with longer tenure would have more ability to manage earnings. Even though previous empirical evidence is somewhat diverse, we hypothesize that:

- Hypothesis 2a: The level of CEO base salary is positively associated with the length of the CEO's tenure.
- Hypothesis 2b: The level of CEO other compensation is negatively associated with the length of the CEO's tenure.

a.3) CEO pay and nationality (domestic vs. expatriate CEO)

Foreign CEO are usually also more internationally focused and like to compare their pay packages to those of international peers, which often consist of higher amounts than the pay packages of major host-countries, and which have a clear pay-performance relationship. The rapid growth of international business over the past two decades has led to an increased demand for expatriate CEO. As Briscoe (1995), by CEO expatriates we mean those that move from one country to get employment in another country different from their native home. Expatriates are used as a means of addressing agency problems as a result of the separation of ownership and management and their increase because of distance. Hence, agency problems might be less likely to occur when CEO's are expatriates. In other words, the existence of an expatriate CEO may help as a substitute for variable pay.

From the company perspective, pay costs related with expatriates are typically considered very high and thus there are actions to decrease such costs (Briscoe, 1995; Dowling et al., 1994). Confirming this, Reynolds (1997) and Selmer (2001), estimate that the average of expatriate's pay is between three and five times an executive's home pay. On the other hand, Guzzo et al. (1994) suggests that expatriates are sensitive to any changes in the components of their package of valued earnings.

Thus, for today's management, finding a balance between the demand of expatriates and their high costs has become an important area of challenging decision. Usual elements include base plus performance pay, allowances for housing and dependent education, tax parity, transfer expenses, and rewards for international service. Allowances are additional payments which are typically used to bridge the gap between reasonable expenditure in the home and the host country. Dowling et al. (1994) have perceived two tendencies in expatriate pay: companies tend toward greater flexibility, without fixed plans, and secondly, toward cost restraint.

If the expatriate's base pay is associated to the pay design of the home country, the expatriate may consider it discriminatory that other expatriates in similar position, who are in another country, receive a higher level of pay (Chadwick 1995). Also, the natives may be unhappy with their relatively low level of compensation compared with those of expatriates, but in some cases native CEO's may also enjoy higher compensation, especially in countries where expert and management positions are highly paid. Accordingly to Dowling et al. (1994), the home-country policy is most commonly followed. If conversely, expatriates are considered local nationals and their base pay is associated to the pay design of the host-country, it may happen that the level of pay decreases during the assignment (Dowling et al., 1994; Crandall and Phelps, 1991). Furthermore, there may exist an higher level of trust between CEO's at corporate headquarters and expatriate CEO's. Thus, management may recognize less need for a variable pay. Therefore, we predict:

- Hypothesis 3a: The level of base salary of expatriate CEO's is higher than the level of base salary of local CEO's.
- Hypothesis 3b: The level of other compensation of expatriate CEO is higher than the level of other compensation of local CEO's.

a.4) CEO pay and gender

Although CEO pay has been studied with respect to several theories, the impact of gender on CEO pay level is relatively unsearched. Clear hypotheses concerning sex are hard to derive. One may contend that women are less prepared to take risk or may have a lower predictable tenure due to parental leaves, which may impact compensation.

Prior studies, such as Babcock and Laschever (2003), report that women may not negotiate compensation as toughly as men. Consequently, the components of CEO pay, most subject to negotiation and less transparent, such as incentive pay (options, stock grants) may differ according to gender. CEO pay, as already mentioned, consists of several types: base pay, bonus, options, and long-term incentive pay. If women are less likely to take risk (Barsky et al., 1997), this may origin differences in the pay package mix: less variable pay and more emphasis on base pay. Hence, women may appear to receive less because ex-ante, they bargain more for base pay and less for performance based pay.

Bertrand and Hallock (2001) consider pay differences for the top five earning officers and do not find evidence of gender discrimination. Other studies found that men and women receive comparable compensation at top levels (Bowlin and Renner, 2008; Jordan et al., 2007; Duarte et al., 2010). Adams et al. (2007), studied large US corporations finding that, although they might be less rewarded before becoming executives, the few women who broke the glass ceiling, earned similar pay as men.

Duarte et al. (2010) gathered a matched sample of male and female data of Portuguese private firms finding that female executives tend to be the higher paid executives after controlling for executive experience and company size.

Under similar company characteristics and human capital, we would expect to find gender based compensation differences, due to discriminating policies for male and female executives. Thus, we set forth the following hypotheses:

- Hypothesis 4a: The level of base salary of women CEO's is higher than the level of base salary of men CEO's.

- Hypothesis 4b: The level of other compensation of women CEO is lower than the level of other compensation of men CEO's.

Characteristics of firms

b.1) CEO pay and firm size

What determines CEO incentives? Confusion exists among both academics and practitioners about how to measure the strength of CEO incentives, and how to reconcile the enormous differences in pay sensitivities between executives in large and small firms (Baker and Hall, 2004).

Previous studies have found strong relationship between CEO pay and firm size (Chalmers et al., 2006; Coulton and Taylor, 2002; Fleming and Stellios, 2002; Gerhart and Milkovich, 1990; Kaplan, 2008; Murphy, 1985; Rosen, 1992; Ryan and Wiggins, 2000). In two other studies, Chalmers et al. (2006) and Finkelstein and Hambrick (1995) show that firm size is the strongest determinant of CEO compensation when measured in terms of total assets. Baker et al. (1988), Core et al. (1999) found strong relationship between firm size and CEO pay. Also, Tosi et al. (2000) found that forty per cent of the variance in CEO pay is explained by firm size. This may suggest that CEO's pursue growth objectives in order to maximize their pay. Fernandes et al (2009) carry out a comparative study of a selected number of countries with the US, observing that US top executives are not paid significantly more if other variables such as firm size are considered.

The size of the firm is likely to affect the expertise required from top executives. As firm structures get larger and more complex, CEO work conditions become more difficult, and their pay increases to compensate them for the extra human capital their jobs involve (Gomez-Mejia et al., 1987). Rosen (1992) argues that larger firms have more growth opportunities and deal with more complex operations, requiring skilled managers who should earn higher pay. Within this perspective, executives with higher abilities and qualifications would have higher market demand for larger firms and they would require to be paid accordingly (Chalmers et al., 2006). Bliss and Rosen (2001) show that executives increased their pay after mergers. Core et al. (1999) also find that

larger firms are more likely to have higher pay as a result of their demand for higher-quality managerial talent. However, Lambert et al. (1991) found weaker relationship between size and CEO compensation as suggested by the previous researches and contended that changes in firm size do not mostly interfere with CEO pay. When it comes to the type of CEO pay, several authors (Murphy, 1999; Garen, 1994; Schaefer, 1998; Jensen and Murphy, 1990) found that variable pay is negatively related to firm size. Similarly, a German based study by Schwalbach (2001), shows that variable pay in larger firms had a low weight, meaning that CEO's of large German firms enjoyed little variable compensation. It has been argued (Balkin and Gomez-Mejia, 1987) that large firms have cost advantages over small ones in implementing fixed-pay compensation policies. This suggests that, in general, small firms, with few hierarchical levels, will tend to use a higher share of output-based compensation systems more intensively than large firms with more hierarchical levels. Moreover, the amount paid in variable and fixed pay should be higher in large firms.

We posit the following:

- Hypothesis 5a: The level of CEO base salary is positively associated with the size of the firm.
- Hypothesis 5b: The level of CEO other compensation is positively associated with the size of the firm.

b.2) CEO pay and firm performance

CEO's enjoy positions of power concerning the scheme of pay packages, and the CEO's pay arrangements may have less relation with incentive alignment to mitigate agency problems and more relation with the CEO's self-enrichment. (Bertrand and Mullainathan, 2001). The literature supporting evidence on the magnitude of the relation between compensation and past firm performance is mixed and on-going. These works emphasize that CEO compensation should be established according firm's performance (Fama and Jensen, 1983; Jensen and Meckling, 1976). Although several changes in

corporate governance, stakeholders remains apprehensive about CEO's pay, especially when their compensation remains high, even when firm performance declines.

Performance is measured by different profit associated variables. According to Devers et al. (2007), several measures of firm performance have been used by students of CEO compensation, including both market-based measures, such as share price increase or shareholder return, and accounting-based measures, such as return on equity or return on assets. Finkelstein and Hambrick (1989) used ROA-return and show that firm profitability was positively related to CEO compensation. They also found that ROA was positively related to variable pay but it was unrelated to base pay. Using annual return on assets as measured by EBIT/ total assets at year end, Chalmers et al. (2006) found that return on assets was positively related with all compensation types except share ownership. Because performance measures are mostly based on accounting indicators, CEO's may have the power to manipulate the figures in order to increase compensation (Ortín-Ángel and Salas Fumás, 1998).

Agency problems arise when CEO's have either too little or too much performance related pay (Filatotchev and Allcock, 2010). According to the agency theory, CEO compensation is an efficient means of aligning CEO interests more closely with those of shareholders through a compensation contract that rewards greater company performance. It is argued that principal-agent theory expects a positive link between CEO pay and firm performance. Although the principal agent model predicts an optimal contract to align executive and shareholder interests, results show this may be fable. In fact, the empirical evidence of the relationship between pay and performance has provided mixed conclusions, with many researches reporting only weak or even non-existent relationship. For example, studies of CEO pay show strong correlations between pay and performance in the US (Hall, 2003) and fairly lower effects of equity-based incentives in the UK and Germany (Bruce et al., 2005), while CEO pay in Japan has no performance impact (Kubo, 2005).

Jensen and Murphy (1990) and Tosi et al. (2000) find a positive but weak relationship between CEO compensation and shareholders wealth. However, this relation has subsequently shown to be more substantial (Hall and Liebman, 1998). Jensen and Murphy (1990) found that the pay-performance sensitivity for executives is approximately \$3.25 per \$1,000 change in shareholder wealth (Gomez-Mejia and

Wiseman, 1997). They observe that the significance of pay to performance is so small that it is doubtful to be much of an incentive for managers. Coughlan and Schmidt (1985) and Murphy (1985, 1999), among others, find a positive relationship. Other studies have found very weak or no relation between pay and firm performance (Gregg et al., 2005). Overall, firm performance seems to be a weak determinant of CEO compensation. However, based on agency theory arguments, we hypothesize a positive relationship between pay and firm performance.

- Hypothesis 6a: The level of CEO base salary is positively associated with firm performance.
- Hypothesis 6b: The level of CEO other compensation is positively associated with firm performance.

b.3) CEO pay and firm's culture location

The structure and level of CEO compensation differ significantly around the world and this may reflect important institutional differences among countries (Filatotchev and Allcock, 2010). The US and the UK are good examples of spread ownership markets. Agency costs are an important problem, and shareholder monitoring has historically been somewhat weak. US and UK firms are characterized by diffuse share ownership and, therefore, rely on incentive pay systems to more closely align the interests of managers and shareholders. In other major industrial countries, however, concentrated share ownership is the norm. Hence, as Thomas (2009) mentions, the pertinence and success of a particular incentive scheme may depend on the institutional context in which the firm operates and the level of its conformity to the standards in that labor market. Research on international pay provides essential support for the notion that a firm's home country may be a significant determinant of pay practices abroad (Ferner, 1997).

Variable pay is considerably more common in the US than in other parts of the world. For example, Thomas (2009) showed that total executive pay in Germany, Sweden, and

China represented 51%, 44%, and 21% of CEO pay at comparable US firms. Furthermore, compared with European firms, US firms are more likely to influence the pay policies in their foreign units (Ferner, 1997). Bryan et al. (2006), compared the structure of CEO compensation of US firms with of non-US countries for the period 1996-2004, finding that the average ratios of variable to total pay in England (0.366) and the United States (.534) are much higher than in France (0.176) and Germany (0.063).

Hence, the arguments presented above:

- Hypothesis 7a: The level of CEO base salary is higher in Anglo-Saxon countries than in other countries.
- Hypothesis 7b: The level of CEO other compensation is higher in Anglo-Saxon countries than in other countries.

3.3 Data and the Methodology

Sample and data

This research examines both base and variable components of CEO compensation disclosed by a sample of 1013 large firms with market capitalization superior to 1,000 million of euros. Primary, the data was obtained from a Boardex Database. All these compensation data refer to 2007. To complement this information, we use Datastream Database to get financial information. These financial data report to the period 2004-2007. For each firm we obtained measures of firm performance (ROE-Return on equity, Tobin's Q, the value created in 2007 year and the global value created), size (total assets and the number of employees), industry and country.

For each CEO we have information about some human-capital variables (age, tenure at the current job, gender and the condition of being expatriate or not), and about her or his

annual compensation (base salary, other compensation-performance-based). Therefore we can relate the compensation to each CEO with characteristics of the firm and personal characteristics of the CEO. We model compensation as a function of CEO characteristics, performance, and firm's characteristics.

As some CEO compensation was too high, we deleted some firms because they represent severe outliers for the executive compensation. This procedure eliminates 11 firms which results in a final sample of 1,002 firms.

We consider severe outlier, when: $X_i > Q_3$ (3 quartile) + 3 * IQR (Inter quartile range)

Measurement of the variables

a) Dependent variables

In our analysis, we used two dependent variables to study CEO remuneration. The first is LOGBASESALARY, equal to the logarithm of the annual amount of base CEO remuneration. The second dependent variable is LOGOTHERCOMP, equal to the logarithm of the annual amount of performance-related pay. In performance-related pay we consider the amounts of bonus and long-term incentives.

c) Independent variables

The characteristics of the agents were captured through four variables: executive age, AGE, measured in years; Gender (a dummy that takes a value of 0 for male executives, and 1 for female executives), GENDER; Tenure (time in role), TENURE and nationality (a dummy that takes a value of 0 if the executive is a country's native and 1 otherwise), EXPATRIATE.

Among the explanatory variables, the size of the firm will be measured by three variables: the market capitalization (MARKCAP_2007), number of employees (NO_OF_EMP_) and total assets (TOTAL_ASSETS).

Using data from DataStream, we compute four measures of firm performance: return on equity, value created, global value created and Tobin's Q. The first measure, return on equity (ROE), was measured using prior year return on assets, represents the benefits to stockholders. We used the following indicator (ii):

$$ROE = \frac{\text{Net Income}}{\text{Total Equity}} \quad \text{(ii)}$$

Problems with the return on equity indicator include the encouragement of a short term outlook at the expense of longer-term profitability, and the manipulation of accounting numbers by managers. Additionally, value created in 2007 (VAL_CREA_07) and global value created between 2004 and 2007 (VAL_CREA_04-07) are harder to manipulate than earnings and they supposedly measure longer-term profitability of the firm. Thus, we considered:

$$\text{Value Created 2007} = \text{Market Capitalization 2007} - \text{Market Capitalization 2006} + \text{Dividends 2007},$$

and

$$\text{Value Created Global} = \text{Market Cap. 2007} - \text{Market Cap. 2004} + \text{Dividend 2005} + \text{Dividend 2006} + \text{Dividend 2007}$$

For the Tobin's Q, we constructed a variable following the definition set out by Khanna and Palepu (2000) as follows:

$$Tobin's Q = \frac{\text{Market Capitalization} + \text{Total Debt}}{\text{Total Assets}} \quad \text{(iii)}$$

Culture of the firm is captured by a dummy variable, ANG COUNTRY, which takes the value zero when the executive works for an Anglo Saxon firm and one otherwise.

c) Statistical Procedures

OLS regression analysis was utilized as the main statistical procedure for examining the relative importance of the hypothesized determinants of executive remuneration. The model includes the measures of compensation: base salary, other compensation and

total compensation. We applied natural logarithmic transformation to all measures of compensation prior to modeling to reduce heteroscedasticity.

3.4 Descriptive Statistics

Industry Effect

Sample companies are representative of all industry categories. Table 3.4.1 presents descriptive statistics on compensation, firm industries, and the two types of executive compensation. While firms are not bunched in any particular industry, the majority are spread across Utilities (6.5%), Specialty and Others (6%), Electronic and Electrical equipment (5.8%), Banks (5%) and Oil and Gas (5%). All the other industries have a lower representation.

Table 3.4.1 - CEO Compensation by Industry

Industry	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
Aerospace & Defense	18	631	317	684	4,886	5,530	2,689	5,518	5,702	3,230
Automobiles & Parts	16	810	350	631	5,129	4,079	3,638	5,938	4,355	4,274
Banks	50	785	431	684	5,677	5,645	3,804	6,462	5,712	4,546
Beverages	9	851	315	750	5,786	3,791	5,199	6,637	3,805	5,755
Chemicals	34	743	326	698	5,020	4,718	3,577	5,764	4,827	4,167
Construction & Building Materials	45	681	386	684	3,533	3,606	2,050	4,214	3,688	3,090
Diversified Industrials	24	803	446	836	1,945	2,153	1,028	2,749	2,198	2,025
Education	6	474	85	452	4,181	3,276	4,401	4,655	3,323	4,821
Electricity	15	623	234	600	1,599	1,453	800	2,222	1,619	1,380
Electronic & Electrical Equipment	58	592	317	568	5,044	3,470	4,086	5,636	3,612	4,741
Engineering & Machinery	33	692	176	684	6,335	4,739	5,319	7,027	4,797	6,368
Food & Drug Retailers	10	824	195	814	3,324	3,417	2,166	4,148	3,496	3,129
Food Producers & Processors	27	644	273	712	6,013	5,001	4,511	6,657	5,128	5,037
Forestry & Paper	12	578	308	649	4,599	3,960	4,330	5,176	4,034	4,992
General Retailers	39	710	273	675	4,889	4,291	3,303	5,599	4,386	4,351
Health	31	667	210	650	4,570	4,864	2,501	5,238	4,919	3,070
Household Goods & Textiles	15	865	483	764	3,494	4,989	1,177	4,359	5,086	2,115
Information Technology Hardware	16	503	214	531	4,313	5,648	1,344	4,815	5,689	1,630
Insurance	45	660	269	655	5,217	4,426	4,007	5,878	4,523	4,554
Investment Companies	4	541	366	522	505	436	476	1,046	456	972
Leisure & Hotels	17	664	332	772	4,639	4,318	3,414	5,303	4,483	4,411
Life Assurance	11	760	284	681	2,275	2,161	1,582	3,035	2,271	2,263
Media & Entertainment	23	853	345	858	3,961	4,413	2,074	4,813	4,492	2,931
Mining	19	849	554	681	5,520	4,417	4,387	6,368	4,646	4,849
Oil & Gas	50	633	333	572	5,538	5,124	3,848	6,171	5,273	4,320
Personal Care & Household Products	13	853	530	658	4,920	4,482	3,490	5,773	4,721	4,138
Pharmaceuticals and Biotechnology	41	727	353	718	7,010	5,511	5,546	7,737	5,676	5,779
Private Equity	1	536	0	536	2,031	0	2,1031	2,031	0	2,031
Publishing	4	587	252	594	5,538	528	5,317	6,125	588	5,996
Real Estate	22	404	189	414	2,683	2,865	1,735	3,087	2,925	2,086
Software & Computer Services	39	480	330	473	3,783	3,726	3,104	4,263	3,819	3,566
Specialty & Other Finance	60	603	416	518	3,319	4,053	1,831	3,922	4,002	2,552
Steel & Other Metals	10	720	351	613	4,357	4,401	2,297	5,077	4,276	2,885
Support Services	46	731	376	658	3,881	3,440	2,854	4,612	3,423	3,554
Telecommunication Services	33	609	368	550	4,706	5,255	2,389	5,316	5,461	2,988
Tobacco	4	1,110	346	1,081	6,918	2,405	6,035	8,029	2,287	7,442
Transport	32	620	307	632	4,539	5,346	1,869	5,159	5,436	2,524
Utilities - Other	65	601	273	633	3,966	3,427	3,231	4,567	3,550	3,741
Wholesale Trade	5	360	103	370	2,662	2,676	1,977	3,022	2,736	2,353
Total	1,002	669	328	640	4,545	4,216	3,151	5,213	4,311	3,807

All monetary values are in thousands of EUR

The total median CEO base compensation is EU€ 639,000, and the total median CEO variable compensation is EU€ 4,430,000. The base pay median per industry ranges from EU€ 370,000 (Wholesale Trade) to EU€ 1,081,000 (Tobacco), and the variable pay median ranges from EU€ 476,000 (Investment Companies) to EU€ 6,035,000 (Tobacco). In most of our analyses we use median data to give a good sense of the center of distribution without having the data skewed by outliers.

Age Effect

Table 3.4.2 shows that pay level across almost all groups of ages is similar. Except younger executives (less than 40 years) earns around half of all the other. Although, age doesn't look to differentiate pay levels, there is a positive relation, until the 70 years old, with base pay and variable pay.

Table 3.4.2 - Age Effect on CEO Compensation

Age Group	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<40	5	332	185	352	1,435	2,044	588	1,767	2,163	757
40-50	181	623	336	595	3,636	4,208	2,086	4,259	4,276	2,688
50-60	501	678	332	644	4,835	4,332	3,609	5,514	4,438	4,336
60-70	267	693	367	660	5,066	4,768	3,770	5,759	4,870	4,533
>70	38	656	443	612	2,756	3,170	2,051	3,413	3,238	2,745
Total	992	670	348	637	4,582	4,429	3,299	5,251	4,528	4,009

All monetary values are in thousands of EUR

Tenure Effect

We were expecting that a longer tenure would be associated with higher pay until a certain time (Finkelstein and Hambrick, 1995; Johnston, 2002) and that variable pay would be higher at begin of CEO's career (Hall and Murphy, 2002). Table 3.4.3 shows that there is some evidence for non-linearity, as in general, pay levels show no particular trend with tenure. CEO's with longer tenure are not more costly than the youngest. But

pay mix is somehow different in what tenure concerns: CEO's with longer tenure receive 85% of their pay in the form of variable pay. On the other hand, variable pay represents 89% of total pay of CEO's with less tenure. But variable pay of CEO's with longer tenure is 75% of the variable pay of the starters. Variable pay, however, increases strongly with tenure. New CEO's receive higher variable pay than CEO's with longer tenure. It seems that CEO's require higher levels of variable pay to compensate her risk averse. We do not find, as Hall and Murphy (2002), that CEO's make a complementary mix of their pay, reversing their preference from variable pay to base pay. We find a drop of variable pay instead of a movement from variable pay to base pay.

Table 3.4.3 - Tenure Effect on CEO Compensation

Tenure Group	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<3	388	629	334	600	4,986	4,483	3,987	5,615	4,590	4,556
3- 6	294	689	336	644	4,192	4,227	2,919	4,881	4,324	3,625
6 – 10	190	732	373	684	4,790	4,677	3,325	5,522	4,777	3,909
>10	130	651	371	631	3,665	4,142	2,233	4,316	4,235	2,926
Total	1002	669	349	633	4,545	4,423	3,321	5,214	4,523	3,949

All monetary values are in thousands of EUR

Expatriate Effect

Typically, one expects that expatriate CEO's would be costly to the firms but with this solution, the owners of the firms could mitigate agency problems.

Table 3.4.4 show that native expatriates earn on average more 33% in base pay than their expatriate colleagues, but this gap is compensated with variable pay. The total compensation package is similar. These results happen because of the small representation of expatriates in our samples and, also, because the majority of the few expatriates are from Anglo-Saxon culture.

Table 3.4.4- Nationality Effect on CEO Compensation

Country	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
Native	747	894	480	839	4,318	3,926	3,059	5,212	4,037	3,732
Expatriate	86	670	339	644	4,584	4,572	3,231	5,254	4,673	3,909
Total	833	871	465	819	4,345	3,992	3,077	5,216	4,102	3,750

All monetary values are in thousands of EUR

Gender Effect

Table 3.4.5 provides a detailed comparison between male and female CEO compensation. CEO level seems to be a male field, where women are not able to break the glass ceiling. For each 49 men only one woman reach this position, But these few that reach this level, earns on average 25% more in base pay and about more 95% in performance-based pay.

While male CEO received, in 2007, a median of €3,842 thousands, the 20 female CEO in consideration has been compensated, in median, with €9,307 thousands. The substantial proportion of total compensation is generated by long term and short term options, and bonus – other compensation. The base salary represents about 15% of total compensation. With more observations of women in our sample, we believe that this gap favoring women would be smaller. This evidence of the existence of a “glass ceiling” supports Arulampalam et al., (2007), Adams et al., (2007) and Ryan and Haslam (2009), among others.

Table 3.4.5 - Gender Effect on CEO Compensation

Gender	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
Male	982	666	350	635	4,460	4,348	3,183	5,126	4,445	3,842
Female	20	832	226	829	8,694	6,017	8,450	9,526	6,138	9,307
Total	1,002	669	348	638	4,545	4,381	3,289	5,214	4,478	3,951

All monetary values are in thousands of EUR

Size Effect

Table 3.4.6 provides evidence that in all firms' size criteria CEO remuneration increases with firms' size, both in base salary and other compensation. For base salary, the ratio is around 1.7 between larger and smaller firms and, and it is 2.0 for other compensation. It is curious to note that the mean and median values are quite closely similar, meaning that the distribution of values is not skewed. These observations lead to the conclusion that CEO remuneration (base and others) are linearly related to firms' size no matter the chosen criteria to measure firms' size.

Table 3.4.6 - Size Effect on CEO Compensation

Total Assets (000 EUR)	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<2,400,000	247	515	240	506	3,134	2,967	2,389	3,649	3,020	2,931
2,400,000 - 6,200,000	252	640	307	629	3,944	3,961	2,932	4,585	4,028	3,599
6,200,000 - 18,600,000	246	659	30	676	4,902	4,147	3,780	5,561	4,223	4,548
>= 18,600,000	249	865	430	814	6,161	5,569	4,589	7,025	5,648	5,546
Total	994	670	349	636	4,535	4,405	3,206	5,205	4,505	3,884

Market Capitalization 07 (000 EUR)	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<3,110,000	247	514	229	515	2,805	2,506	2,154	3,319	2,561	2,716
3,110,000 - 6000,000	252	621	305	600	3,533	3,603	2,694	4,154	3,671	3,159
6,000,000 - 14,000,000	246	675	362	673	4,990	4,434	3,798	5,665	4,474	4,532
>=14,000,000	249	868	384	833	6,817	5,424	5,720	7,686	5,496	6,724
Total	994	670	350	636	4,539	4,406	3,214	5,209	4,505	3,885

Number of employes	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<5,000	247	511	280	470	3,119	3,284	2,118	3,629	3,328	2,695
5,000 - 14,000	252	602	255	596	4,246	4,039	3,347	4,847	4,097	3,884
14,000 - 39,500	246	697	313	681	5,004	4,688	3,632	5,701	4,755	4,426
>= 39,500	249	877	414	851	5,900	5,044	4,479	6,777	5,140	5,546
Total	994	670	348	637	4,554	4,423	3,214	5,224	4,521	3,886

All monetary values are in thousands of EUR

Firm's Performance Effect

Table 3.4.7 illustrates that the variation of CEO compensation tend to be fairly poor correlated with performance of the firm. Depending on the criteria to measure firms' performance, the values are not consistent among them. Considering the absolute values of firms' value creation, it looks that higher creation of values is related with higher executive compensation. But, strikingly, in our sample, the worst performers, using the Tobin's Q, enjoy the highest levels of compensation. It seems that bad performance is not severely punished in annual pay. The results of ROE present insignificant difference of CEO remuneration across all levels.

Table 3.47 - Firm's Performance Effect on CEO Compensation

Value Created 07 (000) EUR	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<-915,000	245	633	319	614	4,084	3,994	2,927	4,716	4,081	3,601
-915,000 - 17,000	245	635	274	581	4,542	4,322	3,372	5,177	4,389	3,984
17,000 - 1,400,000	245	722	392	715	5,364	4,708	4,545	6,086	4,786	5,604
>=1,400,000	245	931	465	923	6,768	6,056	4,192	7,699	6,167	5,236
Total	980	670	350	636	4,534	4,407	3,199	5,204	4,507	3,884

Value Created Global (000 EUR)	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<407,000	245	630	272	617	4,738	3,962	3,977	5,369	4,063	4,496
407,000 - 1,800,000	245	571	268	552	3,701	3,553	2,883	4,273	3,636	3,414
1,800,000 - 5,400,000	245	652	370	624	3,924	4,248	2,379	4,576	4,320	3,090
>5,400,000	245	821	396	793	5,844	5,326	4,361	6,665	5,400	5,327
Total	980	671	346	636	4,564	4,414	3,245	5,235	4,510	3,909

ROE	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
<11.77	245	611	318	581	4,183	4,064	3,303	4,794	4,157	3,864
11.77 – 17.70	245	691	359	649	4,917	4,387	3,626	5,608	4,484	4,307
17.70 – 25.50	245	683	354	649	4,786	4,567	3,475	5,469	4,660	4,051
>= 25.50	245	692	361	662	4,146	4,478	2,427	4,838	4,583	3,149
Total	980	669	349	636	4,508	4,385	3,195	5,177	4,483	3,873

Tobins Q	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
< 0.89	252	722	382	684	4,197	4,363	2,900	4,920	4,453	3,691
0.89 – 1.35	245	696	363	680	4,735	4,442	3,609	5,431	4,521	4,335
1.35 – 2.22	247	656	310	616	4,421	4,255	3,195	5,077	4,365	3,705
>= 2.22	250	606	328	558	4,792	4,554	3,475	5,398	4,678	4,037
Total	994	670	349	636	4,535	4,405	3,206	5,205	4,505	3,884

All monetary values are in thousands of EUR

CEO Compensation by Country

Table 3.4.8 - CEO Compensation by Country

Country	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
Austria	3	771	411	600	1,802	1,290	1,596	2,572	1,692	2,196
Belgium	7	555	389	500	911	1,266	432	1,466	1,597	572
Canada	1	392		392	1,320		1,320	1,712		1,712
Denmark	5	789	104	764	544	154	467	1,332	243	1,178
Finland	12	656	287	649	1,797	4,346	632	2,453	4,480	1,192
France	74	701	472	692	2,244	2,679	1,164	2,945	2,965	2,046
Germany	53	751	442	694	2,675	2,664	1,791	3,426	2,980	2,705
Greece	1	254	0	254	0	0	0	254	0	254
Ireland	4	543	82	573	2,208	2,558	1,123	2,751	2,573	1,720
Israel	1	0	0	0	2,889	0	2,889	2,889	0	2,889
Italy	31	695	578	550	2,179	3,360	880	2,874	3,385	1,644
Luxembourg	1	676	0	676	169	0	169	845	0	845
Netherlands	19	730	298	710	1,892	1,769	1,493	2,622	1,903	2,671
Norway	10	414	189	414	340	317	246	754	279	680
Portugal	1	686	0	686	601	0	601	1,287	0	1,287
South Africa	3	337	167	396	1,842	770	1,573	2,179	770	1,573
Spain	22	732	571	615	1,817	4,533	340	2,549	4,762	1,044
Sweden	25	717	369	727	831	668	690	1,549	949	1,507
Switzerland	34	835	581	737	1,525	2,044	842	2,360	2,207	1,948
UK	141	824	358	780	3,556	3,287	2,483	4,380	3,461	3,260
USA	554	608	245	616	6,267	4,638	5,136	6,875	4,755	5,738
Total	1,002	669	319	652	4,547	3,770	3,513	5,215	3,923	4,209

.All monetary values are in thousands of EUR.

In order to make the CEO compensations more comparable, excluding country richness effects, we deflate the levels of compensation by the GDP per capita of each country. The result is a new variable that represents the proportion of the compensation level in the GDP per capita of each country.

Table 3.4.9 - CEO Compensation Vs GDP per Capita by Country

Country	N	PIB per capita Thousand EUR	Base Salary (1)		Other Comp.(1)		Total Comp. (1)		Gini Index
			Mean	Median	Mean	Median	Mean	Median	
Austria	3	34,10	22,60	17,60	52,84	46,79	75,44	64,39	29
Belgium	7	32,70	16,97	15,29	27,87	13,21	44,84	17,48	33
Bermuda	9	67,57	12,00	12,43	88,19	59,98	100,19	78,16	
Canada	1	34,80	11,27	11,27	37,94	37,94	49,21	49,21	33
Cayman Islands	1	41,28	6,47	6,47	2,07	2,07	8,53	8,53	
Denmark	5	42,50	18,56	17,98	12,80	10,98	31,35	27,71	25
Finland	12	33,30	19,69	19,47	53,97	18,98	73,65	35,78	27
France	74	29,90	23,45	23,13	75,05	38,94	98,50	68,42	33
Germany	52	30,50	24,62	22,75	87,72	58,72	112,34	88,68	28
Greece	1	20,10	12,64	12,64	0,01	0,01	12,65	12,65	34
Israel	1	21,48	0,00	0,00	134,52	134,52	134,52	134,52	39
Italy	31	25,70	27,04	21,40	84,80	34,24	111,84	63,97	36
Jersey	2	42,92	15,07	15,07	41,78	41,78	56,85	56,85	
Luxembourg	1	79,50	17,22	17,22	18,78	18,78	36,00	36,00	31
Netherlands	19	35,40	20,17	20,06	51,89	31,80	72,06	52,99	31
Norway	10	64,50	6,42	6,41	5,27	3,81	11,69	10,54	26
Portugal	1	16,20	42,35	42,35	37,08	37,08	79,43	79,43	38
Republic of Ireland	4	34,90	15,55	16,42	63,26	32,17	78,81	49,29	34
Spain	22	22,80	32,12	26,97	79,68	14,92	111,80	45,78	35
Sweden	27	37,20	19,00	19,06	21,23	17,01	40,23	36,69	25
Switzerland	34	53,40	15,79	13,80	30,75	15,76	46,54	36,47	34
United Kingdon	134	27,50	30,10	28,31	128,76	89,26	158,86	117,32	36
United States	546	35,30	17,25	17,45	178,09	145,90	195,34	162,81	41
Total	997								

All monetary values are in thousands of EUR

Source: Eurostat and Worldbank

(1) Base salary, other compensation and total compensation are computed as the ratio between the amounts of table 3.4.9 and GDP per capita for each country

Country and Culture

As we mentioned above, most of the research on CEO compensation has been focused predominantly on the US/UK reality. However, many components of the Anglo-American model of corporate governance is absent in other countries. There are clear differences among countries in terms of the total value of CEO compensation. Our findings are consistent with Bryan *et al.* (2006). As documented in both Tables 4.8 and 4.9, the composition of total CEO compensation does not follow a similar pattern by country/culture. In Anglo Saxon countries, variable pay is the norm, and in the other non-Anglo Saxon culture, the weight of variable pay doesn't represent such a high multiple factor of base pay. In US and UK's firms' CEO variable pay are 10.3 and 4.3 times respectively of the amount of base pay. If there is not a significant difference in base pay (it accounts for around 20%), the US CEOs enjoy 2.3 and 1.8 times more of total variable pay than their CEO colleagues from Germany and UK respectively.

For this study, we consider UK, US and Ireland, Anglo-Saxon countries.

Table 3.4.10 - Culture Effect on CEO Compensation

Countries	N	Base Salary			Other Compensation			Total Compensation		
		Mean	Std	Median	Mean	Std	Median	Mean	Std	Median
Anglo Saxons	698	653	283	633	5,700	4,529	4,477	6,353	4,630	5,140
Other	299	714	464	677	1,889	2,724	864	2,604	2,922	1,650
Total	997	671	348	639	4,545	3,979	3,383	5,228	4,529	3,909

All monetary values are in thousands of EUR

3.5 Analysis and Results

Table 3.5.1 presents the results of summary statistics for the variables used in this study, including means, medians, standard deviations and Pearson correlation coefficients. The average age (AGE) of the employees is around 56 years, with an accumulated experience in the firms (TENURE) of 5.3 years. Women (GENDER) and expatriate (EXPATRIATE) executives are insignificantly represented.

The average performance measures are all positive with the average return on equity (ROE) being 23.2% and the average Tobins's Q (TOBIN_Q) being 1.8. In terms of value creation, the global value creation for the period of 2004-7 is much higher than the equivalent annual value of 2007 in a value of about two times more. On average, around 70% of firms are from Anglo Saxon culture (ANGCOUNTRY).

Table 3.5.1 - Summary Statistics

	Mean	Median	Std
1 – LNbasesalaryGDP	2,88	2,93	0,64
2 – LNOtherCompGDP	4,11	4,62	1,94
3 – LNTotalCompGDP	4,62	4,79	1,04
4 – Age	56,16	56,00	7,26
5 – Tenure	5,26	3,90	4,77
6 – Expatriate	1,10	1,00	0,30
7 – Gender	0,02	0,00	0,14
8 - Markcap 2010 (1000 EUR)	15.171.496	5.957.957	27.950.000
9 - Number of Employees	39.718	14.000	91.740
10 - Total Assets (000 EUR)	45.847.023	6.114.527	180.000.000
1 - Val_Crea_2010 (000 EUR)	530.903	168.666	7.666.567
12 - Val_crea_07-10 (000 EUR)	4.445.357	1.817.288	12.460.000
13 – ROE	23,23%	17,66%	46,64%
14 - Tobins Q	176,00%	135,00%	147,00%
15 - Anglo Saxon Coutries	30,00%	0,00%	46,00%

In terms of correlation, most of coefficients are statistically significant due to the large sample dimension and despite the relative small absolute values. Based on this we can admit that no serious multicollinearity problems occur in our sample data.

Table 3.5.2 - Correlation Matrix

	Mean	Median	Std	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1-Logbasesalary	6.38	6.47	0.61	1.00														
2-Logothercompensation	7.60	8.07	1.97	.27 **	1.00													
3-Logtotalcompensation	8.12	8.27	1.04	.45 **	.85 **	1.00												
4-Age	56.12	56.00	72.28	.05	-.07 *	.03	1.00											
5-Tenure	5.25	3.90	4.76	-.04	-.07 *	-.01 **	.26 **	1.00										
6-Expatriate	1.10	1.00	0.30	.14 **	.02	.04	-.09 **	-.07 *	1.00									
7-Gender	0.02	0.00	0.14	.07 *	.08 *	.10 **	-.09 **	-.02	.04	1.00								
8-Markcap 2007 (000 EUR)	15,145,790.00	5,980,362.00	27,888,608.00	.20 **	.11 **	.18 **	.03	-.06	.07 *	.01	1.00							
9-Number of Employees	39,678.00	14,000.00	91,526,361.00	.16 **	.09 **	.13 **	.01	-.07 *	.09 *	.00	.40 **	1.00						
10-Total Assets (000 EUR)	45,641,876.00	6,108,063.00	179,584,673.00	.14 **	.04	.08 *	.02	-.04	.07 *	-.02	.37 **	.21 **	1.00					
11-Val_crea_07 (000 EUR)	537,232.00	168,907.00	7,650,915.80	.06	-.04	-.04	-.01	.03	-.01	-.01	.24 **	-.04	-.25 **	1.00				
12-Val_crea_04-07(000 EUR)	4,451,152.00	1,817,302.00	12,441,492.00	.18 **	.01	.06	.01	-.01	.05	.00	.64 **	.09 **	.15 **	.68 **	1.00			
13-ROE	23.21	17,675.00	46,524.00	.04	-.02	-.00	-.09 **	-.01	.00	.03	.01	-.01	-.02	.01	.00	1.00		
14-Tobins Q	1.81	1.35	1.84	-.17 **	.01	-.03	-.12 **	-.00	-.02	.03	-.01	-.09 **	-.17 **	.11 **	.05	.10 **	1.00	
15-Anglo Saxon Coutries	0.30	0.00	0.46	.01	-.44 **	-.47 **	.01	.03	.10 **	-.03	.04	.07 *	.14 **	.10 **	.16 **	.01	-.14 **	1.00

**Correlation is significant at the 0.01 level (two-tailed).

* Correlation is significant at the 0.05 level (two-tailed).

The variables in the data set are not linearity dependent. Multicollinearity is an issue if the correlation coefficient is greater than 0.70 (Tabachnick and Fidell, 1989). Examining the correlations of the independent variables suggests no such issues for the data sample. The highest correlations 0.68 and 0.64 were observed between value created in 2007 (VAL_CREA_07) and value created global (VAL_CREA_04-07) and between value created global (VAL_CREA_04-07) and market capitalization (MARKCAP 2007), respectively. Table 11 provides the results of the regression analyses testing hypotheses. We describe results in relation to the individual hypothesis.

Hypothesis 1a predicted that the level of CEO base salary would be positively associated with the age of CEO's. The relationship between age (AGE) and base salary (LOGBASESALARY) ($\beta = 0.002$, n.s.) is not significant and negative. Therefore, this result is consistent with our expectation. Hypothesis 1b proposed that the level of CEO other compensation is negatively associated with the age of CEO's. The relationship between age and other compensation ($\beta = 0.017$, $p < .05$) is significant and negative. Therefore, the findings offer support for Hypothesis 1a.

In hypothesis 2a we suggested that the level of CEO base salary would be positively associated with the length of the CEO's tenure and, in hypothesis 2b, we expected that the level of CEO other compensation would be negatively associated with the length of the CEO's tenure. As shown in our regression model of table 3.5.3, we found that the relationship of tenure with both types of compensation is not statistically significant (β

= -0.006, n.s.; $\beta = -0.009$, n.s.). However, it is worth noting that the relationship of tenure with total compensation (LOGTOTCOMP) is significant and negative ($\beta = -0.015$, $\rho < .05$). Therefore, results do not support Hypotheses 2a and 2b.

We expected that the level of base salary of CEO executives (EXPATRIATE) would be higher than the level of base salary of local CEO (Hypothesis 3a) and predicted that the level of other compensation of CEO executive would be higher than the level of other compensation of local CEO's (Hypothesis 3b). We found a positive and significant relationship between expatriate executive and base salary ($\beta = 0.220$, $\rho < .01$), supporting Hypothesis 3a. In contrast, the results show that expatriate executives are unrelated to other compensation types ($\beta = 0.346$, n.s.).

Hypothesis 4a and 4b were not supported: the relationship of gender (GENDER) and base salary is positive but not significant ($\beta = 0.263$, n.s.), thus not supporting that the level of base salary of women CEO would be higher than the level of base salary of men CEO (Hypothesis 4a). Also, Hypothesis 4b, stating that the level of other compensation of women CEO would be lower than the level of other compensation of men CEO, doesn't receive support as the relationship of gender with other compensation is positive and statistically significant ($\beta = 1.001$, $\rho < .05$).

Table 3.5.3 – OLS Estimate of Determinants of CEO Remuneration

	LogTotcomp		LogBasesalary		LogOthercomp	
AGE	0.004		0.002		-0.017	**
TENURE	-0.015	**	-0.006		-0.009	
EXPATRIATE	0.198	*	0.220	***	0.346	
GENDER	0.817	***	0.263		1.001	**
MARKCAP_2007	4.48E-09	**	1.90E-09		4.21E-09	
NO_OF_EMP_	1.73E-06	***	1.35E-06	***	2.76E-06	**
TOTAL_ASSETS	2.62E-10		1.39E-10		2.60E-10	
VAL_CREA_07	1.08E-09		5.29E-09		-5.61E-09	
VAL_CREA_04_07	3.17E-10		5.87E-10		3.27E-09	
ROE	0.001		0.001	*	-6.15E-05	
TOBINS_Q	-0.076	***	-0.053	***	-0.088	
ANGCOUNTRY	-1.103	***	-0.067		-1.841	***
C	8.033	***	6.092	***	8.731	***
R-squared	0.290		0.103		0.203	
Adjusted R-squared	0.279		0.088		0.190	
F-Statistic	2.622		7.204		1.632	
Prob (F-statistic)	0.000		0.000		0.000	

*** Significant at 1% (one-tailed)

** Significant at 5% level (one-tailed)

* Significant at 10% level (one-tailed)

Hypotheses 5a and 5b suggested that CEO compensation (base salary and other compensation) is positively related to the size of the firms. We used three measures as proxies of firms' size. We found that the number of employees (NO_OF_EMP) is positively and statistically significant related to base salary ($\beta = 1.35E-09$, $\rho < .01$) (Hypothesis 5a) and to other compensation ($\beta = 4.21E-09$, $\rho < .05$) (Hypothesis 5b). Therefore, Hypotheses 5a and 5b receive support. In addition, market capitalization of the firm (MARKCAP_2007) and the number of employees are positive and statistically significant related to CEO's total compensation ($\beta = 4.48E-09$, $\rho < .05$) and ($\beta = 1.73E-09$, $\rho < .05$).

Hypotheses 6a and 6b stated that base salary and other compensation would be positively related to firm performance. As shown in our model, the relationships of value created 2007 (VAL_CREA_07) and of value created global (VAL_CREA_04_07) with CEO base salary and CEO other compensation are not statistically significant. However, the relationships between return on equity (ROE) and Tobin's Q (TOBINS_Q) with base salary ($\beta = 0.001$, $\rho < .01$; and $\beta = -0.053$, $\rho < .001$) are both significant but with opposite signals. For other compensation, the relationship of these two measures is not statistically significant. Finally, for total compensation, our model shows that the relationship with Tobin's Q ($\beta = -0.076$, $\rho < .001$) is statistically significant and negative.

Hypothesis 7a suggested that the level of CEO base salary would be higher in Anglo-Saxon countries than in other countries. As shown in our model, the relationship of firms in Anglo-Saxon (ANGCOUNTRY) with CEO base salary is not significant ($\beta = -0.067$, n.s.). Therefore, results don't support Hypothesis 7a. In Hypothesis 7b, we predicted that the level of CEO other compensation would be higher in Anglo-Saxon countries than in other countries. As shown in table 11, the relationship between firms in Anglo-Saxon with CEO base salary is negative and statistically significant ($\beta = -1.841$, $\rho < .001$). The signal of this coefficient means positive effect of Anglo-Saxon country, as in the construction of the dummy variable ANGCOUNTRY, Anglo-Saxon countries assumed zero value. Therefore, results support Hypothesis 7a.

In order to test if firm variables increase the explanatory power of the dependent variables variation, we performed a Wald restriction test where in the null hypothesis

we considered that all the coefficients associated to the firm variables (MARKCAP_2007; NO_OF_EMP_; TOTAL_ASSETS; VAL_CREA_07; VAL_CREA_04_07; ROE; TOBINS_Q; ANGCOUNTRY) are zero. Our Wald test result was 287.5774 (0.0000).

According to the probability associated with the test (0.0000), we reject the null hypothesis. It means that at least one of the estimated coefficients under the null is statically different from zero. Thus, we can conclude that firms' variables are important to explain executive compensation.

3.6 Summary and Conclusions

Our study makes several important contributions to advancing a theory of managerial compensation. First, we demonstrate the fable importance of firms' performance in the definition of CEO compensation by showing inconsistent and contradictory results based in the variables we used. Indeed, it is surprising the negative relationship between Tobin's Q and CEO remuneration. Second, we show that age and tenure of CEO have a small effect in their compensation package. Third, we show that CEO's in Anglo-Saxon countries and as expatiates have higher compensation. Fourth, we demonstrate that the number of employees, as proxy of firm's size, has a strong relationship with all types of CEO compensations, in contrast with other measures of firm's size.

There is no support for the agency argument that CEO compensation is established by aligning pay with firm financial performance. Contrary to predictions CEO base salary compensation is negatively related to market performance measure and positively related to accounting performance measure and, other types of compensation were not related to either accounting or market performance variables. Results are consistent with Gregg et al. (2005), who also found a very weak or no relation between performance and all components of compensation. The negative and statistically significant association between base salary and firm market performance allows for major concerns on the establishment of the criteria for the compensation policy.

The association between firm size and all types of compensation was supported. But, strikingly, from all the three measures we used: market capitalization in 2007, number of employees and value of total assets, only the number of employees was significant. This result support the argument that CEO`s that run large firms, in terms of number of workers, are better rewarded by both base salary and other compensation forms. It is worth reiterating that the size, measured as the number of employees, is the unique variable that it is significant in all forms of compensation.

Age and length of CEO`s tenure has no or relatively weak relationship with both base salary and other compensation. Contrary to expectations, however, other compensation forms are likely to be lower as CEO`s become older. Thus, we cannot confirm that firms are more likely to reward accumulated expertise of CEO`s to retain them within the organization. It seems that CEO labor market start to be small, which makes tournaments and networking a reality with turnover consequences.

There is evidence that foreign CEO and Anglo-Saxon firms relates positively to higher levels of compensation. This confirms Reynolds (1997) and Selmer (2001), who state that expatriate`s CEO compensation is much higher than local ones. This appears to suggest that most of the firms of the sample that made foreign direct investment are Anglo-Saxon.

Furthermore, looking to the actual economic crisis and permanent appearance of frauds by executives, adopting a multilevel approach will likely shed new light on the complex ways in which shareholders influence affect compensation amounts and schemes. Managers seem to be able to influence pay policies and transfer part of firm creation of value to their pockets. Our results offer support for a very weak relationship between firm performance and CEO compensation than previously observed, indicating a tiny alignment between CEO` and shareholders` compensations schemes.

A few limitations of this study are worth noting. First, the sample consists of large firms. Therefore, the results may not directly be transferable to small and medium sized firms. Accordingly, we encourage future studies to investigate CEO compensation in small and medium sized firms. Second, we are limited in our conclusions to only the variables available in the data base. Other variables may contribute to a better clarification of the determinants of CEO compensation. Third, taking a cross-sectional approach of only 2007 year doesn`t allow the analysis of trends. Future research should

take longitudinal approach to assess the determinants of the variability of pay, especially for the period covering “the before,” the actual” and “the after” of the economic crisis.

Clearly, more research is needed to understand the determinants of CEO compensation. The results provided overwhelming support firm size as a significant determinant that must be considered in designing remuneration schemes.

However, a key implication of the present study is that performance related pay should be deeply analyzed and put in question whether that relation exists or whether it is just a way of executives extract rents from the firms.

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3.7References

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CHAPTER IV

4. The Fable Paradigm of the Gender Pay Gap: Evidence from Portuguese Private Firms

Abstract

This study investigates gender income disparity in Portuguese firms using separate Tobit models for men and women. While job segregation seems to be one of the major sources of gender disparity, women do not appear to be systematically underpaid in predominantly female occupations regardless of the industry. We found that gender pay gap is larger in Portuguese firms that it increases with employees' accumulated tenure and decreases with advanced education for women and on labor market entry. Despite showing some encouraging cracks, the glass ceiling still continues to prevent women from reaching top management positions. Finally, despite that it appears wage disparity does exist, and that it will probably continue to exist, our results point towards a window of opportunity for women.

JEL Classification: J79; M12

Key words: Segregation; Gender pay gap; Compensation policy; Tobit model

4.1 Introduction

Most papers that investigate the issue of wage disparity between genders have found that there is a gender pay gap, mainly driven by job segregation i.e., women and men being attracted towards different kinds of occupations, and also by an uneven load of family and home responsibilities assumed by women (Babcock and Laschever 2003; Blau and Kahn 2007; Boushey 2008; Bowlin and Renner 2008; Cornelius and Skinner, 2008).

While disparity in earnings may result from differences in skills, qualifications, and levels of experience relevant to employers (Blau and Kahn, 2007; Bertrand and Hallock, 2001), Van der Meer (2008) states that the gap in productive characteristics e.g., education and tenure between men and women has been reducing over time. Moreover, Bowlin and Renner (2008) argue that inequity is negligible at top management levels, though Adams, Gupta, and Leeth (2009) and Ryan and Haslam (2009) emphasize that women experience considerable difficulty breaking into top positions. Still, the gender pay gap seems to persist in spite of anti-discrimination legislation and the closing of the educational gap between men and women. In this way, some authors have identified differences in employment possibilities and remuneration as gender discrimination and failure in labor markets that ought to be corrected through public policy intervention (Babcock and Laschever, 2003).

The majority of gender studies analyze the largest and wealthiest countries, namely the US and the UK. However, the wage gap is considerably greater in the Anglo-Saxon economies compared to many other countries, which might invalidate some findings from previous studies (see e.g., ITUC Report, 2008). Moreover, the availability of paid family leave and public support for childcare in many European economies (unlike the situation in the US) may constitute a key variable that could potentially affect the results. In this way, this study investigates the gender pay gap in Portugal, a representative small European country that ranks 39th by GDP (see the International Monetary Fund World Economic Outlook database, October 2008). The first contribution of this paper is thus to consider the relevance of previous findings to smaller and less rich economies, using a sample of 75 small and middle-sized

establishments in 2003 that include 3.953 employees, classified by gender and function: top managers, middle managers, technicians, and staff.

Unlike previous research that is based on the whole economy, this paper examines the gap using a unique dataset where each firms' compensation program is matched to its financial characteristics. In fact, previous authors have recognized the need to account for employer characteristics in this type of study, such as firm size (Brown and Medoff, 1989; Agell and Bennmarker, 2007), profits (Blanchflower, Oswald, and Sanfey, 1996), industry (Gibbons and Katz, 1992) and productivity (Gneezy, Niederle, and Rustichini, 2003). Hence, the second contribution of this paper is to quantify the role of both individual workers and the workplace itself at explaining the gender pay gap.

The results support the existence of a "glass ceiling" in Portugal , with women suffering from an overall average gender pay gap of 2,2 percent, with advantages of 4 percent at top management and staff levels, but disadvantages of 12 and 28 percent at middle management and technician levels, respectively. This study finds that the gap is larger in Portuguese firms, that it increases with employees' accumulated tenure, and decreases with advanced education for women and on labor market entry. However, and in contrast to previous work, the study finds deeper gaps in larger and more profitable firms. At the same time, the gap does not seem to be related to predominantly "female" areas and industries, and the glass ceiling is not weaker in female-dominated firms either.

4.2 Theory and Hypotheses

Some researchers have found that there is a gender pay gap and that it is largely driven by: (1) job segregation i.e., women and men gravitate towards different kinds of occupations, and (2) a disproportionate share of family and home responsibilities borne by women (Boushey, 2008; Bowling and Renner, 2008; Blau and Khan, 2006, 2007; Babcock and Laschever, 2003).

According to the human capital theory (Mincer, 1974; Becker, 1993) the gender gap in earnings is attributed to differences between male and female employees in productivity-related endowments. It was indeed the case that at one time men did generally have more education than women. However, in some countries there is now educational parity, and in some the trend has been reversed and women are currently better educated than men (Blau and Khan, 2007). As women have reached, or exceeded, the educational levels of men, they have also progressively gained more access to jobs that previously had been primarily held by men. Women have increasingly managed to obtain skilled jobs in both the public and private sectors, including management, business, and finance (Betrand and Hallock, 2001; Selmer Leung, 2003). Almquist (1987) found that wage differences between men and women in occupations requiring comparable skills could be due to the fact that women are channeled into a limited number of occupations. Thus, it is not necessarily the case that the gender wage gap is the result of overt discrimination i.e., unequal pay for the same work in the same firm, rather it grows out of occupational segregation. Assuming that men do still enjoy an internal market advantage, there are two possible reasons that can partly explain the gender pay gap: (1) men genuinely have a stronger commitment to the labor market, or employment segregation by gender is related to the division of the labor market in distinct sectors/segments and the existence of disadvantaged groups of workers into sectors/segments with the worst pay conditions; (2) the labor market is divided into distinct sectors/segments, some desirable and others less so, and males and females are funneled into those sectors/segments according to their gender. If one accepts that, then male-female income disparity stems from men being in “primary” sectors/segments of the market and women in “secondary” ones. However, dual/segmented labor market theories have not fully identified the causes of employment segregation by gender.

The constrained decisions that men and women make about work and home issues are indeed another source of the pay gap. Women are more likely than men to work fewer hours and to take time out of the labor market. Such decisions result in very different pay for men and women, with women on average having lower rates of job tenure than men (Blau and Khan, 2007) and married women most likely to take leaves (Betrand and Hallock., 2001). Such interruptions in employment have an even greater negative impact on future pay increases, in particular if the employee lacks previous work experience. In fact, Neumark (1993) found that the longer the period of absence, the lower the future increases in pay, despite the length of previous employment. It may well be the case that employers are uncertain about undertaking human capital investments in women fearing that women will not stay with the firm, but will rather choose to stay at home (Betrand and Hallock, 2001).

Becker (1957) and Hellerstein et al. (2002) say that larger firms enjoy higher market power and can thus afford more discrimination, and Betrand and Hallock (2001) find that female top managers typically work for smaller firms. However, Neathey et al. (2003) and Yurtoglu and Zulehner (2007) amongst many others argue that larger firms tend to monitor their relative pay structures very closely while at the same time being subject to a wider scrutiny from the media and the public. In this way, one would expect larger firms that are in competitive labor markets to conduct “equal pay audits,” and hence a negative relation between the gender pay gap and the size of the firms. Firm ownership is another factor that could potentially explain the gender pay gap. Multinational firms are more exposed to competition than purely domestic firms and for this reason, the magnitude of the gender pay gap in these firms is likely to be smaller. Aitkens, Harrison, and Lipsey (1996) show that foreign-held firms tend to give higher compensation than domestic firms. Given that the former are more exposed to competition it is expected that the gender pay gap will be smaller in multinational firms. Hellerstein, Neumark, and Troske (2002) find that firm profitability has no impact on the relative gender pay despite the anticipation that more profitable and high-growth firms could potentially practice smaller gaps. Hence, this study expects to find no relation between these variables and the gender pay gap.

- Hypothesis 1: The size of the pay gap between male and female employees will be (a) negatively related to the size of the firms, (b) positively related to the domestic nature of the employer, and (c) unrelated to firm profitability and growth.

Human capital variables such as age, education, training, and experience, relate very unequivocally to the ability of the employee and hence should have a direct effect on pay. Kunze (2005), Yurtoglu and Zulehner (2007), and Blau and Kahn (2007) find that gender segregation related to occupational qualifications is responsible for a significant portion of the wage gap, though Neathey, Dench, and Thomson (2003) argue that returning to university for further qualifications makes little difference to the pay gap. Blau and Kahn (2007), and Chevalier (2007) however show that the gap narrows with improvements in the level of qualifications of women, so the gender pay gap should be negatively related to the level of education. Arulampalam, Booth and Bryan (2007), and Jacobs (1992) find that the gender pay gap is typically less significant at the level of entry. Jacobs (1992) observe however a significant pay gap after several years of tenure. Given that tenure and educational qualifications are determinants of performance (Author et al. 2006), if women enjoy less tenure and display lower levels of qualification, then they will earn lower wages (Arulampalam et al., 2007), despite no differences in starting salaries of males and females.

- Hypothesis 2: The size of the pay gap between male and female employees will be (a) negatively related to the level of education, (b) small on labor market entry, and (c) greater with accumulated tenure.

Chevalier (2007) finds evidence of a large degree of segregation by sex in the labor market. Women tend to concentrate in low-paying industries and are typically channeled into areas of study that are less likely to lead to better compensation (Pfeffer and Davis-Blake, 1987). When it comes to pay and promotion, the existence of a “glass ceiling” that hinders the chances of women reaching top management positions substantially aggravates the pay gap, as the few females who previously managed to reach the top are probably not able to influence the system. Huffman and Velasco (1997), Pfeffer and Davis-Blake (1987), and Reilly and Wirjanto (1999) argue that firms and industries that employ a high percentage of women typically pay lower

salaries across the board, though the gender pay gap seems to narrow with the rise in the number of female managers, as documented by Jacobs (1992), who are more likely to promote women to top positions (Phillips, 2005).

- Hypothesis 3: Firms with a high proportion of women employees (a) will offer lower pay, but (b) will give higher hierarchical positions to women.

4.3 Data and Methodology

The sample used in this study is from 2003 and includes 3.953 employees working for 75 Portuguese firms with one hundred or more employees, classified by gender and by function level – top executives, middle-level managers, technicians, and staff. The data is from the Portuguese representative affiliate of a Human Resources Consulting firm and Dun & Bradstreet.

Table 4.3.1 - Characteristics of the 75 firms of the sample

Type	Sector	Nacionality	Size (Nº workers)				
Mutinacional	58	Consumption Goods	6	United Kingdom	3	100 - 250	30
Domestic	17	Automotive	8	United States	12	251 - 500	15
		Distribution	11	Germany	15	501 - 1000	13
	Electrical	7	France	6	1001 - 2000	9	
	Pharmaceutical	8	Spain	2	2000 - 5000	4	
	Chemical	8	Switzerland	3	>5001	4	
	Industrial	5	Denmark	5			
	Service	7	Others	12			
	Finance	11	Portugal	17			
	Telecommunications	4					

Table 4.3.1 shows the characteristics of firms in the sample. We are therefore confident that our sample reflects the Portuguese reality in what concerns private sector activity.

The variables include the annual base pay, function level, function area, education attainment, age, years of tenure in current job, and firm characteristics such as size, sales growth, profitability, industry, and ownership (see Table 4.3.2 for the variables considered in the study).

Table4.3..2 - Variables Considered in the Econometric Models

Variables	Description	Scale	Measured as:
DEPENDENT			
AnnualBasePay	Annual Base Pay	Interval	
FemaleBasePay	Annual Female Base Pay	Interval	
VarDumFem	Existence of Annual Female Variable Pay	Binary	
FemaleVar	Annual Male Variable Pay	Interval	
MaleVar	Annual Female Variable Pay	Interval	
MaleBasePay	Annual Male Base Pay	Interval	
EXPLANATORY			
FGenAdm	Dummy variable of the functional area	Binary	1=if the employee is in the general administration area 0=no
Ffin	Dummy variable of the functional area	Binary	1=if the employee is in the financial area 0=no
FIIT	Dummy variable of the functional area	Binary	1=if the employee is in the information technology area 0=no
FHumanRec	Dummy variable of the functional area	Binary	1=if the employee is in the human resources area 0=no
FJurLaw	Dummy variable of the functional area	Binary	1=if the employee is in the juridic & law area 0=no
FMkt	Dummy variable of the functional area	Binary	1=if the employee is in the marketing area 0=no
Fcom	Dummy variable of the functional area	Binary	1=if the employee is in the commercial area 0=no
FEng	Dummy variable of the functional area	Binary	1=if the employee is in the engineering area 0=no
FQual	Dummy variable of the functional area	Binary	1=if the employee is in the quality area 0=no
FCallC	Dummy variable of the functional area	Binary	1=if the employee is in call centers area 0=no
FLogis	Dummy variable of the functional area	Binary	1=if the employee is in logistic area 0=no
Level	Hierarchical level	Ordinal	1=top, 2=middle manager, 3=technicians and 4=others
Nationality	Dummy variable of share ownership	Binary	1=if firm is national ownership 0=no
SConsum	Dummy variable of industry	Binary	1=if the employee is in the consumption industry 0=no
SAuto	Dummy variable of industry	Binary	1=if the employee is in the automotive industry 0=no
SDist	Dummy variable of industry	Binary	1=if the employee is in the distribution industry 0=no
SElectr	Dummy variable of industry	Binary	1=if the employee is in the electrical industry 0=no
SFarm	Dummy variable of industry	Binary	1=if the employee is in the pharmaceutical industry 0=no
SChim	Dummy variable of industry	Binary	1=if the employee is in the chemical industry 0=no
SInd	Dummy variable of industry	Binary	1=if the employee is in the industrial industry 0=no
SServ	Dummy variable of industry	Binary	1=if the employee is in the service industry 0=no
SFin	Dummy variable of industry	Binary	1=if the employee is in the finance industry 0=no
STelec	Dummy variable of industry	Binary	1=if the employee is in the telecommunication industry 0=no
Dimension	Size of the firm	Interval	Number of employees
Age	Age of employees	Interval	Number of years of the employees
Tenure	Experience of employees	Interval	Number of years of experience of the employees
Gender	Dummy variable of gender	Binary	1=if the employee is female 0=no
Education	Dummy variable of educational level	Binary	1=if the employee has university degree 0=no
Growth	Sales growth between 2002 and 2003	Ordinal	1= (< 0%), 2= (0 : +10%), 3= (> 10%)
Profitability	Variation of profits between 2002 and 2003	Ordinal	1= (< 0%), 2= (0 : +10%), 3= (> 10%)

In order to achieve the goal of identifying the determinants of gender gap in earnings in Portuguese companies this study uses separate Tobit models for man and women. Tobit

model is highly favored by researchers when the dependent variable cannot take negative values, as it is the case of the amount of annual base pay. We estimated regressions of the pay of men and women separately.

This methodology allows understanding, separately for men and women, the propensity of each of the explanatory variables in broadening or narrowing the pay gap. Thus, the signal from each of the coefficients of variables indicates the positive or negative tendency that is associated with it. If the signals of the coefficients of the same variable for women and men are opposites means that this variable has an impact of widening the existing gap, contributing to the maintenance and aggravation of the gender gap in pay.

4.4 Descriptive Statistics

The univariate analysis of the data shows that only 7,7 percent of women reach top management, though they account for 41 percent and 56 percent of all middle-level managers and technicians, respectively. Figure 4.4.1 expands on those the results.

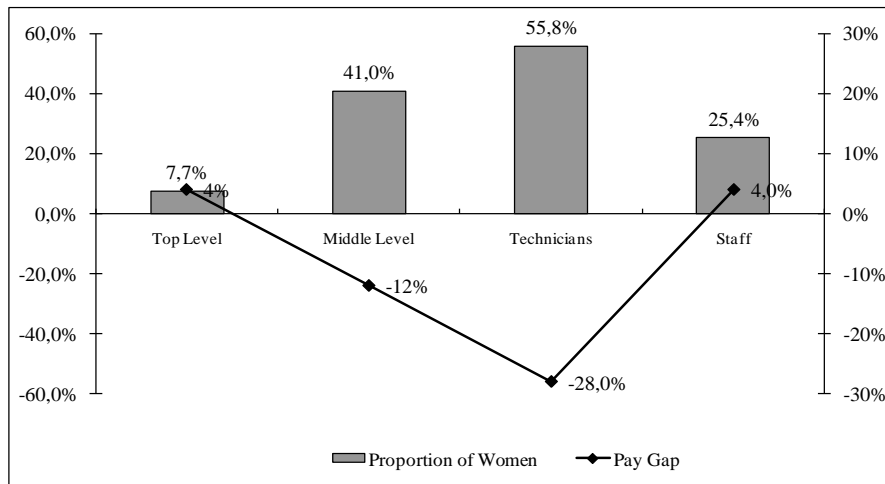


Figure 4.4.1- Proportion of Women and Relative Gender Pay Gap

Notes: Statistical analyses obtained with ANOVA outputs.

Gap means the ratio of average pay of female to average pay of male by function level minus one.

Female top-level managers earn 4 percent more than their male colleagues, on average, and female middle-level managers make 12 percent less. Female technicians earn 28 percent less than their male counterparts, the most significant wage gap we find, while female staff employees earn 4 percent more than their male colleagues. Similar to Bertrand and Hallock (2001), we find that on average females are paid 2, 2 percent less than their male colleagues. In summary, our data strongly support the result that female managers are under-represented in the highest paid and most prestigious jobs. Only a share of 0, 2 percent of women fall into the upper level category, compared to five times as many men in that top level position. We summarize statistics on demographic gender variables and pay patterns in Table 4.4.1

Table 4.4.1- Demographic Gender Variables and Pay Patterns

	Demographic Gender Variables and Pay Patterns											
	Managers						Employees					
	Top-Level			Middle-Level			Technicians			Staff		
	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b
Overall	7,70	1,00	0,4	41,00	1,00	-0,12	55,80	1,00	-0,28	25,40	1,00	0,04
Education												
Lower	0,00	0,00	n.a.	15,00	1,00	-0,18	62,30	0,90	-0,31	24,70	1,00	0,04
University	8,70	1,00	0,04	32,30	1,00	-0,11	37,40	1,30	-0,04	64,40	1,10	-0,09
Age												
<30	0,00	0,00	n.a.	0,00	0,00	n.a.	33,30	0,90	0,3	16,70	0,60	0,15
31-40	0,00	0,00	n.a.	36,40	1,00	-0,12	43,30	1,10	-0,17	43,00	1,00	0,07
41-55	16,70	1,10	-0,06	28,0	1,00	-0,10	67,30	0,90	-0,29	22,60	1,10	-0,01
>56	0,00	0,00	n.a.	31,30	1,00	-0,02	14,70	1,30	0,07	29,50	1,00	0,8
Tenure												
<5	20,00	1,00	-0,32	11,10	1,10	0,36	28,30	1,10	0,13	46,30	0,80	0,29
6-15	0,00	0,00	n.a.	26,20	1,00	-0,10	34,80	1,20	-0,05	21,70	0,90	0,14
16-25	12,50	1,20	0,18	44,80	1,00	-0,09	75,40	0,80	-0,29	24,90	1,10	-0,02
>26	0,00	0,00	n.a.	28,60	0,90	-0,19	36,00	1,10	-0,20	46,90	1,00	0,07

Notes: a Ratio of the average pay by demographic category to the average pay in each hierarchical level; b Ratio of the average pay of female managers/employees to the average pay of male managers/employees by demographic category minus one.

Our results thus provide evidence for the existence of a glass ceiling. If gender were not an issue, that is, if the number of women in higher-paid positions were in line with overall employment patterns, then the percentage of female managers would be around 30 percent, which is the share of female in the whole sample. However, female technicians who are university educated and younger, even though that also means with less work experience, face a smaller pay gap than other female technicians. Having a university degree helps to close the pay gap among middle managers, and it closes still further with age. Table 4.4.2 shows that a significant percentage of female middle

managers and technicians work for firms with negative profitability and average growth and those women experience the highest negative pay gap. However, the staff category does not present a similar pattern, as women benefit from higher pay gaps in firms with higher profitability and growth, where they are particularly well represented. Looking at the different functional areas, we see that women are represented in greater numbers in finance, human resources, and engineering. In these functional areas female middle managers and technicians are likely to earn more, but at the same time they are also likely to be paid somewhat less than their male counterparts.

Table4..4.2 - Firm Type Gender Variables and Pay Patterns.

	Managers						Employees					
	Top-Level			Middle-Level			Technicians			Staff		
	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b	Fem. %	Rel. Pay ^a	Pay Gap ^b
Overall	7,70	1,00	0,04	41,00	1,00	-0,12	55,80	1,00	-0,28	25,40	1,00	0,04
Profitability												
Negative	0,00	0,80	n.a.	46,70	1,00	-0,36	73,00	0,80	-0,37	26,30	1,10	-0,01
Middle Positive	11,10	1,10	-0,03	26,70	1,00	-0,12	27,10	1,20	0,17	19,60	0,80	0,17
High Positive	0,00	1,00	n.a.	22,20	1,00	0,26	42,50	1,20	-0,24	45,20	0,80	0,27
Growth												
Negative	11,10	1,00	-0,01	25,60	1,00	-0,08	26,30	1,20	0,16	19,30	0,80	0,13
Middle Positive	0,00	0,90	n.a.	40,00	1,10	-0,17	71,00	0,90	-0,35	27,30	1,10	-0,01
High Positive	0,00	0,90	n.a.	21,40	0,90	-0,29	30,40	1,30	-0,12	36,40	1,10	0,16
Firm Size												
0-250	0,00	1,00	n.a.	36,40	1,10	-0,15	21,20	1,10	0,01	13,40	1,00	0,02
251-500	28,60	1,00	0,02	9,60	1,10	0,1	30,70	1,20	-0,03	25,00	1,00	-0,01
501-1000	0,00	1,20	n.a.	50,00	1,00	-0,07	29,60	1,40	0,19	13,80	1,00	0,07
1001-2000	0,00	0,80	n.a.	23,80	0,90	-0,33	25,70	1,40	-0,23	26,60	0,90	-0,16
2001-5000	0,00	1,00	n.a.	100,00	1,0	n.a.	0,00	1,70	n.a.	0,00	1,20	n.a.
+5001	0,00	1,00	n.a.	45,50	0,80	-0,11	78,40	0,80	-0,29	51,90	1,00	0,28
Nationality												
Multinational	9,00	1,00	-0,01	27,00	1,00	-0,04	29,60	1,20	0,08	22,90	0,80	.18
National	0,00	0,80	n.a.	36,80	1,00	-0,34	73,00	0,80	-0,36	26,30	1,10	-0,01
Function Areas												
Gen. Administration	0,00	1,10	n.a.	16,70	1,00	-0,24	40,00	1,70	-0,05	59,50	1,00	0,09
Finance	0,00	1,00	n.a.	55,00	1,00	-0,14	38,50	1,30	-0,05	47,60	1,00	0,03
I&T	0,00	0,90	n.a.	42,90	0,80	-0,04	13,90	1,40	-0,06	13,30	1,30	0,24
Hum. Resources	20,00	0,90	-0,22	50,00	1,10	-0,04	64,60	1,30	-0,23	65,20	1,30	-0,24
Jur. & Law	0,00	1,00	n.a.	25,00	1,00	-0,11	33,30	1,30	0,07	0,00	1,00	n.a.
Marketing	0,00	1,00	n.a.	25,00	1,00	-0,12	64,80	0,80	-0,25	36,50	0,90	0,00
Commercial	0,00	1,00	n.a.	0,00	0,90	n.a.	25,00	1,40	-0,23	0,10	1,10	-0,21
Engin.	0,00	1,00	n.a.	25,00	1,00	-0,29	83,80	1,60	-0,11	83,80	0,80	-0,17
Quality	0,00	1,00	n.a.	0,00	1,10	n.a.	7,10	1,20	-0,33	12,00	0,70	-0,15
Call Centers	100,00	1,30	n.a.	0,00	1,00	n.a.	23,10	1,80	-0,07	78,00	1,00	0,44
Logistics	0,00	1,00	n.a.	0,00	1,00	n.a.	25,00	0,70	-0,13	0,00	1,00	n.a.
Activity Sector												
Consumption	0,00	1,00	n.a.	33,30	1,10	-0,17	41,70	1,80	0,25	23,50	0,90	-0,29
Automotive	0,00	0,80	n.a.	0,00	1,00	n.a.	26,70	1,10	-0,12	8,60	0,60	0,14
Distribution	16,70	1,20	0,15	50,00	1,10	-20,00	44,00	1,80	-21,00	40,90	1,00	-0,13
Electric	0,00	1,20	n.a.	0,00	1,10	n.a.	19,50	1,10	-0,13	44,70	1,00	0,27
Pharmacy	0,00	1,00	n.a.	40,00	0,80	0,05	25,90	1,40	-0,04	66,70	1,30	0,10
Chemical	16,70	0,90	-22,00	29,40	0,80	0,12	20,30	1,00	0,22	26,10	0,90	0,10
Services	0,00	0,90	n.a.	35,30	1,00	-0,18	70,60	0,90	-0,37	27,00	1,10	0,00
Finance	0,0	1,00	n.a.	0,00	1,00	n.a.	50,00	1,20	0,27	66,70	1,30	-0,02

Notes: a Ratio of the average pay by firm category to the average pay in each hierarchical level; b Ratio of the average pay of female managers/employees to the average pay of male managers/employees by firm category minus one.

4.5 Analysis and Results

Table 4.5.1 presents the estimation of the models on the determinants of gender pay and Figure 2 present the results of the regressions in a schematic form. Our findings indicate that there is a significant difference in the constant intercept for men and women, which reinforces the previous finding that men earn more than women on average.

We hypothesized that large firms would be more transparent in terms of their pay policies. Nonetheless, we find evidence of women achieving better pay in small firms in line with Becker (1957) and Hellerstein et al. (2002). Women are better paid in small firms (the estimated coefficient for men is statistically significant at 5%). Affiliates of non-Portuguese firms appear to pay more to their employees, with women on average earning higher wages in foreign-held firms, thus supporting Aitkens et al. (1996). While firm growth does not seem to explain the gap, firm profitability seems to contribute towards increasing the gender pay gap, in contrast with Hellerstein et al. (2002), since men are more likely to have higher pay than women in more profitable firms.

When it comes to education, the results show that further education leads to higher wages on average, though the impact seems to be more significant for women, in line with Blau and Kahn (2007), and Chevalier (2007). But because women are less likely to hold top management positions, the gender pay gap can be partially explained by job segregation.

While less experienced men and women earn lower wages, men are found to reach top salaries much quicker, with wages further increasing with age and tenure. In fact men tend to reach peak pay between the ages of 41 to 55, compared to women who manage so during the following stratum. We found that the coefficients of the hierarchical level variable are negative (the level variable takes on smaller values the higher the hierarchical level; please refer to table 4.5.1 for the description of the variables) and highly significant but this likelihood is higher for men, thus contributing to a higher gender pay gap in these hierarchical ladders. This evidence of the existence of a “glass ceiling” supports Arulampalam et al. (2007), Adams et al. (2009) and Ryan and Haslam (2009), among others.

Table 4.5.1 - Estimation of the Models on Determinants of Gender Pay

Variable	Estimation 1		Estimation 2	
	MALE	FEMALE	MALE	FEMALE
FCALL C	-691,66 (767,399)	4978,541 *** (540,593)		
FCOM	1870,374 *** (471,716)	-5866,641 ** (2.600,173)		
FENG	-2646,96 (2.956,420)	-3649,541 ** (1.553,607)		
FFIN	-1389,51 (890,412)	-680,4453 (747,698)		
FHUM REC	-1320,11 (3.409,201)	-4306,721 ** (2.198,752)		
FIT	-5319,84 ** (2.320,764)	-753,7513 (3.835,533)		
FJUR LAW	-9210,61 *** (3.014,374)	-6075,247 (4.406,973)		
FLOGIST	-16711,3 (10.974,170)	-3411,164 (3.891,725)		
FMKT	-12055 *** (1.569,886)	-10106,67 *** (1.626,643)		
SCHIM	-6462,04 ** (2.730,207)	-3152,324 (2.058,608)		
SCONSUM	28,14132 (2.969,425)	2002,861 (2.739,877)		
SDIST	7786,378 * (4.859,264)	3453,866 (3.628,627)		
SAUTOM	-6266,81 ** (2.846,184)	-6279,694 *** (2.446,973)		
SELECTR	-631,244 (3.164,260)	-3622,467 (2.322,101)		
SFARM	-8,43746 (3.084,566)	-2137,954 (2.602,169)		
AGE	1610,235 *** (400,043)	2634,43 (636,269)	1639,969 *** (386,639)	1936,93 *** (622,900)
DIMENSION	0,353281 (1,370)	-0,23788 (0,59814)	2,149183 ** 0,094	-0,5893 (0,543)
EDUCATION	1124,151 (1.506,075)	6912,005 *** (1.183,443)	4274,554 *** 1.337,437	5608,78 *** (1.200,404)
GROWTH	-2293,71 (1.627,856)	-1183,564 (1.528,328)	-1491,13 (1.007,237)	-497,87 (1.096,214)
LEVEL	-23300,5 *** (1.397,677)	-13920,72 *** (1.700,766)	-19321 *** (1.140,977)	-14336 *** (1.593,026)
NATIONALITY	-3859,68 (10.789,000)	-6065,151 * (3.569,172)	-9600,06 (7.124,953)	-3397,3 (3.710,906)
PROFITABILITY	2282,773 ** (1.130,680)	-696,4078 (1.573,529)	4271,237 *** (1.176,091)	-621,23 (1.320,522)
TENURE	89,40035 (185,601)	-13,01232 (289,849)	20,41451 (204,010)	85,5962 (276,319)
TENURE ²	-2,27495 (4,273)	-0,773602 (7,003)	-2,69822 (4,578)	-2,4784 (6,666)
AGE ²	-16,2258 *** (4,513)	-25,78628 *** (7,477)	-15,4055 *** (4,388)	-18,551 *** (7,363)
SECTCOM			8297,001 *** (879,355)	7284,49 *** (1.674,656)
SECTSERV			2847,841 * (1.564,976)	1731,36 (1.483,861)
FGFIN			-5144,79 (3.936,503)	4007,89 ** (2.092,511)
FGOTHERS			-2974,14 (3.865,577)	9834,25 *** (2.425,343)
FGTECHN			-2507,57 (3.876,898)	-1553,6 (1.875,220)
FGCOM			-4609,3 (3.895,360)	-5313,2 *** (2.020,120)
C	71115,03 *** (10.590,170)	15362,33 (14.465,79)	43937,69 *** (10.691,560)	24188,7 ** (13.062,270)
R-squared	0,812779	0,718131	0,756628	0,723008
Adjusted R-squared	0,810968	0,711835	0,755003	0,718754
S.E. of regression	5214,865	4782,667	5936,849	4724,905
Sum squared resid	7,31E+10	2,66E+10	9,5E+10	2,62E+10
Log likelihood	-27112,84	-11775,04	-27450,25	-11762,05
Avg. log likelihood	-9,986312	-9,88668	-10,11059	-9,875773
Uncensored obs	2715	1191	2715	1191
Mean dependent var	18150,29	18099,02	18150,29	18099,02
Akaike info criterion	19,99251	19,8187	20,23518	19,78345
Schwarz criterion	20,05125	19,93392	20,27651	19,86453
Total obs	2715	1191	2715	1191

Notes: For the meaning of the variables see Table 1. Standard errors are in parenthesis.

*p<0,1, **p<0,05, ***p< 0,01.

Dependent variable is the annual base pay. Tobit models estimated by maximum likelihood, using the econometrics software Eviews. Method: ML-Censored Normal (Tobit) (Quadratic hill climbing), using QML (Huber/White test) standard errors & covariance. In estimation 1 the omitted variables are FGENADM, FQUAL, SFIN and STELEC. In estimation 2 the omitted variables are SECTIND and FGHUMREC.

Variables	Size		Function Level		Function Area		Education		Age		Tenure		Sales Growth		Profitability		Activity Sector		Ownership	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Propensity																				
Positive			↑						↑								↑			
Reference Variable																				
Negative			↓														↓			

Figure 4.5.1 - Determinants of the Gender Pay Gap

Notes: Dependent variable is the annual base pay. The highest the propensity difference, in each explanatory variable, the highest the gender pay gap. Summary results obtained from Tobit models estimated by maximum likelihood, using econometric model Eviews. Method: ML - Censored Normal (TOBIT) (Quadratic hill climbing), using QML (Huber/White test) standard errors & covariance. Black arrows and bold lettering mean statistically significant values at the 5% significance level.

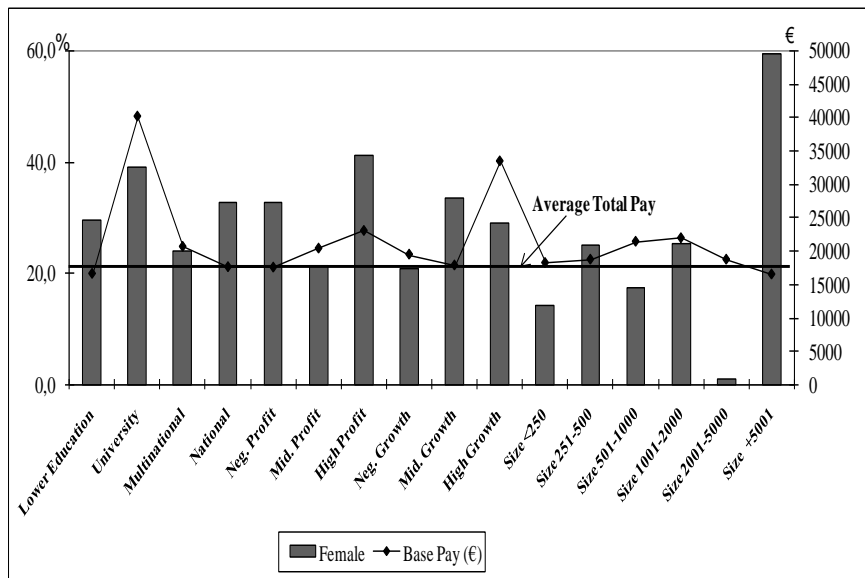


Figure 4.5.2 - Relative Representation of Women and Pay, compared with Average Pay

Notes: This figure combines information to test the correlation of average pay with the weight of women's representation. Average pay for each variable presents a weak relation to the proportion of women. Columns represent the percentage of women in each determinant and line represents the average base pay.

4.6 Summary and Conclusions

The main objective of our research was to examine the determinants of pay by gender in a small European country. While there have been a number of previous studies based on different data samples and in different cultures that show evidence of a significant wage gap between men and women, we found only scant and nuanced evidence of a gap of negative 2, 2 percent. Our findings may have also been different if we had considered part-time work, which is often lower paid, the fairness of which might be argued. We did not find that when women make up a large proportion of workers, wages are necessarily depressed. With our results, it seems reasonable to accept that gender pay determinants are similar for women and men, which is not to say that there are not steps to be taken by society, and specifically by firms, to eliminate the disparity that does exist.

Despite the progress in the labor market made by women in recent years, only a small percentage has actually managed to reach top positions, so there can be no doubt that the “glass ceiling” is still in place. There is some encouraging evidence that women have turned to a variety of jobs traditionally held by men, while at the same time women do not appear to be improperly penalized in case of career interruption to handle family responsibilities. Some countries already have legislation on gender equality in place. This setup is particularly important for women wishing to actively participate in informal networks and lobbying activities, and ultimately reduce the “glass ceiling” phenomenon. In summary, new ways should be pursued to efficiently address such issues as combining work and family commitments and leveling the playfield for women in a fair way.

One of the ways to close the gender pay gap is for policymakers to do more to help families in achieving that. Not only are women demanding a better balance between home and work, but men are as well. Some policy initiatives such as mandatory paid sick days and family leave, public support for childcare, and increasing the viability of flexible workplaces without pay penalties, are important steps that have encouraged men to take on more of housework and childcare responsibilities. In the long run, the increasing availability of public policies will make it easier for both sexes to combine work and family.

Labor markets currently fail to address issues related to combining work and family commitments. Additionally, we would not say that economies are not limited pies – that is, if women do better than men must do worse. Nonetheless, since we analyze female pay relative to male pay, if women do better in relative terms, by definition, men will not continue to have a relative advantage. In summary, new ways should be found to level the playing field for women, while at the same time not penalizing men.

One interesting extension of this study would be to look at data by company, for over several years. Data per employee, per firm, or both would allow for a dynamic study of career development and compensation package variations for middle managers in relation to human capital variables, firm performance variables and job characteristics. Clearly, more research is needed to shed light on the remaining, if evolving, gender pay gap.

Acknowledgements

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Summary and Conclusions

This research aimed at shedding new light and broadening the scope of debate on CEO compensation, with a focus on non-Anglo-Saxon countries.

The first two papers found evidence that variable pay is more used when there are risks of higher monitoring and agency costs. The first paper confirms this evidence in the context of the Portuguese economy, showing that ownership, firm age, location and education are significant determinants of variable pay

The second paper, also based on the Portuguese evidence, dealt with the impact of family ownership on the use of variable pay by CEO'S. Although this is a topic of rising interest in the compensation literature, few studies analyze the impact of family generations on CEO compensation. (Gomez-Mejia et. al, 2003) confirms that family firms are more frugal in CEO compensation than widely held corporations. This is consistent with agency theory as long as the firm ownership is relatively concentrated as is typical of the first generation firm, usually labeled the foundation corporation. However, as the firm ages and the ownership becomes more spread among different family members the separation of ownership and control emerges. In the study evidence was found that the use of variable pay at earlier stages, when this is not warranted by agency costs, translates into poorer performance.

On the other hand, this paper addresses a more subtle issue, grounded on the recent view, expressed by Schulze et al (2002) and Lubatkin et al (2007) that family firms also face significant agency problems, as caused by "altruism", positively discriminating family members, neglecting the interests of shareholders, firm employees and managers who are not part of the family. The main goal of this paper is to find whether the use of variable pay within family firms also reflects the intensity of their specific agency problems. The result on the use of variable pay shows that their performance impact tends to be less favorable for foundational, younger firms, where agency problems are still lower, than with family firms that are already on the second or more family generation.

In fact, this study confirms the larger use of variable compensation by public firms but shows that the potential for using variable compensation in second or third generation family firms is particularly high, due to higher potential firm conflict emergence among the different stakeholders.

The paper three has a broader scope as it covers CEO compensation practices for a large number of countries and industries. The main data source was BoardEx that covers compensation reports for a large number of countries. Although compensation disclosure within public corporations is on the rise worldwide, the data are still significantly incomplete for CEOs from regions other than North America and Europe. These data were complemented by firm specific data from Datastream. The cross-section analysis covers 1002 firms from 21 different countries.

Beyond the traditional explanations of CEO compensation, in a broader setting, such as executive age, tenure and gender or firm size, the study provides a larger country analysis, while covering variables that are not common in the compensation literature, such as the impact of CEO expatriation.

The results confirm that nationality and industry are both significant determinants of CEO pay. So are size and gender. By contrast, age and tenure have a small impact on the compensation package. Performance, as measured by Tobin's Q was found to be negatively related to total compensation, suggesting that executives act in their own self-interest, neglecting the interests of shareholders. Furthermore, we found that expatriated executives and those managing Anglo-Saxon firms achieve higher levels of compensation.

Finally, paper four has the main objective of examining the determinants of pay by gender in small European country. This study uses separate Tobit models for measuring the gender impact.

The sample includes 3953 employees for 75 Portuguese firms with one hundred or more employees, classified by gender and function level – top executives, middle-level managers, technicians and staff.

The results are that affiliates of non-Portuguese firms appear to pay more to their employees, with women on average earning higher wages in foreign-held firms. While firm growth does not seem to explain the gap, firm profitability seems to contribute

towards increasing the gender gap. When it comes to education, the results show that further education leads to higher wages on average, though the impact seems to be more significant for women. But women are less likely to hold top management positions, so the gender gap can be partially explained by job segregation.

In general, base compensation is less sensitive to the explanatory variables contrasting with other and total compensation. Base salary is the most homogeneous component of total compensation with only modest variations across both industries and countries.

These studies also convey some useful lessons for practitioners. Variable pay should be used with caution – even in the situations that require stronger alignment between managers and shareholders. Portuguese family firms that make more use of variable pay mechanisms and are beyond second generation seem to be more profitable.

This thesis also deals with a number of significant limitations which acknowledgment should lead to further research.

Papers one and two are based on a survey on compensation that could not explore more detailed aspects of ownership and governance of surveyed firms with a focus on compensation. Deeper observation of family ownership, through a longer and more specific survey, is required to shed light on issues such as the pervasiveness of altruism and family participation in management.

Paper three was based on listed companies, so we could not break into the less familiar field of family owned and managed firms that are not present in stock markets. This is a hard to dig in territory due to lack of available data that, again, requires survey based collection of primary data, but is highly relevant.

Another dimension that warrants further exploration is the international, country or region specific, nature of CEO compensation. The database covered in paper number 3 provided a fairly comprehensive coverage of US and Continental Europe nations, exhibiting some sharp contrasts. However we lacked representative data on such important parts of world such as Asia, especially South-East Asia, Latin America or emerging Sub-Saharan Africa. Are these fast rising regions more akin to the Anglo Saxon pattern of intensive performance based compensation or more similar to the more moderate approach, predominantly based on fixed pay, favored in Continental Europe?

Finally, CEO compensation is inextricably linked to corporate governance, another venue worth further exploration. The role of boards of directors or family boards on compensation as well as managerial description is another field worth attention that we expect this research to be able to encourage.