

REMUNERATION, RISK AND PERFORMANCE IN ITALIAN COMPANIES: AN EMPIRICAL ANALYSIS ON SYSTEMS OF REMUNERATION IN THE BOARD OF ITALIAN LISTED COMPANIES

Marco Artiaco*

Abstract

The recent financial crisis highlighted the issue of Board of Directors compensation, which had been analyzed by many authors.

In fact, there is a vast academic literature on the impact of the compensation of Board of Directors on corporations characterized by the separation of ownership from control.

The compensation of Board of Directors has been a subject of debate, also by global regulators like OECD, FSB, Central Bank of Italy and European Commission and many are pushing for an international uniform regulation.

This paper aims to investigate the relationship between the board of Directors compensation, the company performance and the risks decided by the Board.

The article analyses a sample of Italian listed companies in order to test whether or not the Board of Directors compensation structure could turn into a performance incentive, given the risk taken.

Keywords: Remuneration, Risk, Performance, Italy, Board of Directors

* Viale dei Parioli, 47/A – 00197 Rome, Italy

Tel: +39 06 888 16 111

Fax: +39 06 888 16 110

Email: marco.artiaco@studioartiaco.it

1. The reasons for the relevance of the theme

The recent financial crisis has highlighted that executive compensation does not encourage decisions that would take risks and potential business growth into consideration. Despite large losses or financial circumstances that the company might face, Administrators are still entitled to high degrees of compensation (fixed and variable).

Remuneration systems are a key element of corporate governance. Their purpose is to acquire the management and cater its choices to align the goals of the members of the board with those of the shareholders using motivational levers.

Some studies (Rappaport, 2005; Walker Report 2009) support the need to align the compensation of top management administrators while putting into perspective any long-term trends, and by always taking into account the interests of company, and that of the shareholders. Others (G. Kirkpatrick, OECD in 2009), support linking compensation and risk.

Such analysis thus highlights the need to align the remuneration of top management figures over a longer term perspective, always taking into account the interests of society and those of the shareholders. In fact, as pointed out by "The Senior Supervisors

Group" (in "Observations on Risk Management Practices During the Recent Market Turbulence", 2008), the proper adjustment between pay and incentives is difficult to determine, therefore the focus is based on balancing between propensity and risk aversion, short and long term performances, as well as inter sectorial and global policies.

A method widely used for preparing the Board of Directors for proper risk management is to foster a culture of strategic decisions that would take into account different "risk management scenarios". Some of these approaches have been defined by The Senior Supervisors Group as an essential, and necessary dialogue that must occur between "Senior Management" and "risk function".

The recent crisis however, has revealed some significant failures of both risk management systems, and compensation systems in some of the largest financial institutions. The system of incentives has encouraged, and rewarded even high level risk operations; yet, the responsibility for these failures can be attributed mainly to remuneration systems rather than to risk management models.

The purpose of this article is to verify whether remuneration systems of Italian listed companies are a way to encourage the Board of Directors to focus on managing risks, that is, to guide top management to

take the right decisions taking into account the shareholder's inclination to risk.

A search for the different configurations of compensation systems (level of remuneration and its components) and contributing factors that determine them, is relevant for the following reasons.

The separation between ownership and control determines that the priorities of the first may not coincide with those of the latter. In fact, in the presence of a public company, the board is able to affect the extent of compensation to favor their own remuneration.

It is also important to consider that the compensation system is able to attract and motivate the human capital to conditions that are not lower than the market average. Human capital has become a key resource for the business system (this is especially true for areas such as ICT and Banking). For this reason, remuneration systems, in their different components, must be able to attract the necessary professional and managerial capital.

The recent financial turmoil has highlighted how remuneration systems are based on short term results and do not put into consideration a lasting economic balance in the company, and the management of risks.

Several factors can determine the remuneration system, such as ownership structure, firm size, the sector in which the company operates, the level of professionalism required by the Board of Directors. The recent financial crisis shows the inconsistencies between the financial requirements of company and the executive compensation of top management figures.

The structure of this paper is as follows. The literature on remuneration systems is discussed in section 2, the research hypothesis is discussed in section 3, in section 4 the recent regulation of payment systems and risk management is shown, section 5 breaks down the risk configuration, the methodology for the analysis of the sample is described in section 6, section 7 shows the empirical results and finally in section 8, an overview of the work limitations and the conclusions.

2. The literature on systems of remuneration

Remuneration systems of the board are considered to be either the mechanism that influences and guides the decisions taken by top management figures or, ultimately the tool that stimulates and attracts the necessary professional resources to corporate governance.

More specifically, literature shows research on issues such as coherence between the goals and the objectives of the board and those of the shareholders, the determining factors of the remuneration system, the correlation between compensation and firm performance, and the incentives of the different components of the remuneration system (fixed part,

variable compensation and stock options). These studies have used empirical analysis, which links the levels of compensation and / or structure of the remuneration system with the variables under study.

Regarding the capacity of remuneration systems to influence the Board of Directors, the main reference is the Agency Theory, according to which a subject, the agent (the Board) is acting in favor of, or as a representative to a second subject, the principal (the shareholder). This theory shows problems in the relationship between the agent (the Board) and the principal (shareholder) in the presence of uncertainty and information asymmetry. In fact, in this case the agent will most likely be motivated to maximize their goals at the expense of the shareholder.

The studies on this issue have tried to verify whether the system of remuneration may be a tool of alignment between the objectives of the agent and those of the shareholder. The empirical analysis which allows this approach to reach different solutions, is done by relating the financial size of the system (amounts and structure), with variables such as ownership, and the separation between ownership and control. On one hand, executive compensation is just a matter of contract, it is only necessary to identify, previously, the optimal compensation model that aligns the objectives of the board with those of the shareholders (Jensen - 1990 Murphy, Coreguay Larker-2001) . On the other hand, the system of remuneration, is only partly influenced by the need to align the board's objectives to those of the partners. This will also depend on other variables, such as the ability the board has to influence the extent of compensation to the executives, making it an **annuity** of the board of directors (Shleifer 1994, 1997 and Bertrand-Mullainathan Yermak 2001).

Regarding the construction and operation of the Board of Directors as a determinant of the remuneration system, more recent studies have attempted to identify the relationship between pay and the characteristics of the board. This is done by using empirical models that relate the size of the compensation system (amounts and structure) with variables, such as the characteristics and functioning of the Board of Directors (number of meetings, number of independent directors, the level of remuneration of the CEO, the level of remuneration of independent directors).

Decisive elements are the size of the Board of Directors and the effort spent (Boyd 1996). Others have investigated through empirical analysis, the correlation that exists between pay, professional characteristics of the members of the Board of Directors and business variables (Bryan, Hwang, Klein and Lilien 2000).

Still others have identified a relationship between the level of remuneration of the entire Board of Directors and that of the CEO. The underlying assumption in this case, is that as the compensation of the CEO increases, so will the propensity of the other

members to ask for higher returns. The same study also notes that there is an indirect correlation between the level of commitment required by the CEO, and the board for control. In fact, in the presence of more complex businesses, there is a larger increase in the compensation of the CEO, and for the Board of Directors (Brick, Palmon and Wald 2002).

With regards to compensation systems and firm performance, studies have attempted to identify the relationship between the extent of remuneration of the Board of Directors, depending on other variables. This is based on empirical models that analyze the interdependencies, whether positive or negative, between the reported "level of remuneration of the board / firm's performance" and factors such as ownership and / or characteristics of the Board of Directors.

Jensen - Murphy (1989) detected an inverse relationship between pay and company performance in the presence of a separation between ownership and control. The results of this research would indicate that in the presence of a weak shareholder, the Board of Directors is able to obtain rents above the market level. Yermak (1996) shows a negative correlation between the number of board members, and the positive relationship between performance and level of remuneration. Core, Molthausen and Laker (1999) have highlighted how variables of the board, such as interlocking, influence the already weak correlation between the level of remuneration, and corporate performance.

Finally, with regard to systems of remuneration and long-term objectives, studies have examined how to link the compensation of the Board of Directors to long-term goals of 3-5 years. The result of the Board of Directors depends on the ability to generate wealth over the long term, which eventually determines the growth value of the company and the payment of dividends to its shareholders. The performance over short-term is particularly significant for the less mature companies, where expectations about future growth are much more important than current results (Rappaport 2005).

Within these approaches, models have been developed that provide for compensation tools such as stock options with lock-up and variable remuneration methods that are appropriate to the results at 3 years, as recently endorsed by regulators.

It is noted that few studies analyze the relationship between compensation systems, and business risk, which is defined as the ability of the remuneration system to be an incentive for the Board of Directors to make the right choices, taking into account the various risk profiles.

Our study aims to fill this gap, or investigate the relationships between compensation systems, and the possible risks assumed by the company. Therefore, this research is thought to believe that the compensation systems will represent the overall incentive mechanisms of the Board of Directors (both

positively and negatively), and they still depend on many variables such as the ownership structure and governance.

3. Research Hypothesis

The hypothesis of this work, is that the correlation between risk and performance in a company is not positive when the board's remuneration levels vary. That is, the higher the level of compensations, risk and performance will tend to have opposite signs.

This phenomenon can be observed in situations where remunerations are high, but nevertheless, there is no decrease in the amount of risks taken by management or an increase in the financial performance. The hypothesis supposes that, before the introduction of recent regulations (2009), remuneration systems were not considering risks. It is believed that compensation systems do not take risk management into account, that is to say, remuneration tends to be prone to higher risk profiles.

Risks in a company constitute the sum of the positive, and negative effects of a specific event on the patrimonial, economic and financial condition in a company. The corporate risk management means referring to the result of random events on asset values, economic and financial. The pre and post financial evaluation of risks, allows the introduction of useful elements to the decision-making process in the Board of Directors.

Therefore, we have analyzed the different possible configurations of remuneration systems of the Board of Directors in terms of the actual components, the value of the remuneration, and allocation of the latter to the different directors (CEO and independent directors) all while factoring in performance and risk .

In the presence of a strong debate among the Corporate Governance experts on the efficiency of remuneration systems, and on the adequacy of the board's compensations; the present study proves to be especially useful in answering the following questions:

- 1) Are remuneration systems designed to correlate the compensation of the CEO, to the company's performance and to the level of risk?
- 2) Are remuneration systems an incentive to align the decisions of the Board of Directors with the objectives of shareholders in terms of risk?
- 3) Are remuneration systems designed to correlate remuneration with the company's performance in a medium term (3-5 years)?
- 4) Do remuneration systems encourage 'aggressive' accounting policies?
- 5) Are there types of business that are more likely to introduce remuneration systems that might end up being incentives to managing risks (e.g. banks)?

- 6) Has the lack of regulation on remuneration, and on risk determined that the compensation systems do not take the risk component into account?

The above hypothesis is tested by empirical analysis, based on a statistical model that measures the level of Remuneration - Performance and Corporate Risk of a sample of Italian listed companies.

4. Regulation of remuneration systems and risk management

Following the financial crisis of 2007, international regulatory institutions, and national authorities have developed a scheme of remuneration and risk as described below. In particular, it discusses the principles emanating from the FSB (Financial Stability Board), the European Commission's recommendation - 3 April 2009 and the Bank of Italy document on the surveillance measures of the CRD III (capital requirement directive).

The FSB along with the "implementation standards" on "Principles for Sound Compensation Practices" in 2009, provides proper guidance on the structure of compensations, and risk management. In the above mentioned document, guidelines are provided on the structure, and reasoning behind the system of remuneration for relevant financial institutions. Specifically, the F.S.B. indicates that the system of remuneration should be linked to medium-term results, and to risk.

With regard to the structure of the remuneration system, it states that:

- 1) The variable part of remuneration of the board must be related to long-term goals and risk, through:
 - Allocation of shares or related instruments (including non-cash instruments) to create incentives apt to align the development of long-term value to the time line of risks;
 - Provision of these, over a period of not less than 3 years, provided that this period is sufficient depending on the nature of business, risks and business activities.
- 2) Bonuses (e.g. compensation related to seniority or to tasks of greater responsibility) must be:
 - provided with a variable and deferred, whose weight should not exceed the average of past retributions.
 - These fees should be subject to approval by external, and independent auditors.
 - Such remuneration should take into account the results achieved over time, and be constructed in a way so as not to reward bad management results.
- 3) Remuneration systems must contain disencouragement to management decisions that can lead to a reduction in the value of the company, either with eventual reparations, or through the introduction of 'clawback

arrangements' for the compensations already paid, or with a real "penalty".

It is also interesting for the purpose of this article, to observe the FSB's approach regarding risk management in relation to the structure of compensation (fixed, variable). In particular, the remuneration systems that combine performance with risk management policies, allow the adoption managerial policies with less risks. In fact, depending on its structure (fixed-variable), and how they have chosen to make the payment in time (all together, or delayed), the remuneration system can play an important role in being an incentive to performance and risk.

With regard to risk, the FSB identifies the risk categories to be included in the remuneration system as they affect the firm's performance in the medium term. The categories are:

- Equity risk, which indicates the impact of negative events on future cost and the amount of capital needed to support the risks taken;
- Liquidity risk, which indicates the amount, and cost of necessary liquidity required, in function of negative events;
- Economic risk, which indicates the impact of an adverse event on the future profitability of the business.

These risk categories are relevant to the economic and equity balance of companies in the medium term, and therefore should be incorporated as variables in the remuneration system.

The European Union Commission, with the "Recommendation of the Commission" of April 3rd, 2009, expressed its points of views regarding the modalities of top management remunerations in listed companies, and on remuneration policies in the financial services sector. This is done by encouraging states to assimilate recommendations addressed in the document within their own legal framework. As for the financial sector, the Commission has put a strong emphasis on risk management, stressing that remuneration policies have led many bad financial companies to undertake excessively risky behavior. This specific behavior could have been corrected by the different member states, if they had used the tools for risk control, and remuneration policies that discourage risk.

The Committee, provides indications, prescriptive and on risk typology, as follows:

- Member States should ensure that financial firms develop, implement and maintain a compensation policy that is consistent with a sound, and effective risk management, that does not induce excessive risk-taking;
- Quantification of the results as a basis for awards to the board which would include an adjustment to current or future risks, and should take into account *the financial, and liquidity risk*.

It is also important to mention the position that the Bank of Italy has taken on these issues. The Capital Requirement Directive III (CRD-III), in force since December 2010, concerning the discipline of systems, and harmonized remuneration practices in banks and investment firms, reflects the guidelines developed in other international regulatory institutions, in particular to coincide with the FSB's September 2009 standards.

In March 2011, final regulations on retributions for bank managers were introduced. The eleven most important institutions are obliged to follow them. These regulations define the '*Risk Takers*' (top management), and still confirm the fixed compensation of the internal auditors. To be able to identify the most 'relevant' personnel (to which they apply the rules to greater detail), whose activity may in fact have an 'significant' impact in terms of risk to the bank, the bank should carry out a process of self-evaluation.

In particular, there is a visible trend among the risk takers when it comes to amounts of less than 200,000 Euro per year, and a variable percentage of less than 20%.

In line with the CRD III, and the CEBS *Guidelines*, the regulations require that, unless proven otherwise, the following are included: the executive directors, the Director General and the heads of major business lines, other senior management figures, managers and staff that are at a higher level of internal control functions, and others who individually or collectively can cause significant risks for the bank. A final category comprised by those who are paid an amount equal to that of senior management, and other *risk takers*.

For 'risk takers', there are mixed systems of remuneration, whose variables, in some cases, exceed by 50% in regards to the remaining fixed component. In addition, clawback arrangements are introduced for the fees already paid and proper "penalties" (malus) to reduce the variable part to even zero in some cases.

The three institutions have introduced highly innovative principles that will impact significantly on the construction of systems of remuneration of the board. It is believed that the important introduction of the regulation on remuneration / risks, will certainly influence the practices that determine the reasons behind remuneration systems, prompting the introduction of the risk component.

5. The different configurations of risk

There is no one consensus regarding the definition of risk. Preliminarily it is noted that there is a clear distinction between risk and uncertainty, where risk (or stochastic variable) implies the random nature of events, while uncertainty is lack of knowledge. This undoubtedly leads to a correlation between the two phenomena, a subject that has been discussed in literature since the 1970s. In recent decades, decision-

making techniques have been enhanced with tools to reduce uncertainty, and to better manage risk.

For the purpose of this article, it is necessary to analyze the definition of risk. Business risk is defined as the set of effects, both positive and negative, of a specific 'risky' event on the economic and financial value of a company. Corporate risk management means referring to the consequences of random events on asset values (economical, financial, equity). Defining risk in monetary terms, pre and post, allows the introduction of incentives in the decision making process of the board.

Although risk is a phenomenon, or a "variable" difficult to control, you can introduce methods that through scientifically supported decision-making criteria, deal with the random uncertainty that is typical of many decisions made by top management figures.

Business risks can be classified as follows:

- "*External Risks*": arising from events outside the company, who undoubtedly have an impact on economic values and capital (interest rate developments, natural disasters, etc.). They cannot be influenced by management in the company.
- "*Internal Risks*": related to the degree of productivity, worker-safety, the proper functioning of the corporate information system, etc. Because this encompasses organizational aspects, it is a given that managerial decisions play a central role in managing the risks.
- "*Operational Risks*": these relate to usual business activities, and are divided into five categories:
 - 1) Strategic: measures the possibility that a negative event occurs minus the probability of management reaching the strategic plan objectives.
 - 2) Economic: measures the possibility that a negative event may diminish the ability to generate revenue.
 - 3) Financial: measures the possibility of a negative event affecting the financial balance, or to cover in the short term, negative cash flow with available cash flow. These include liquidity and change related risks;
 - 4) Equity: measures the probability of a negative event affecting the Equity stability. Likewise, the ability to cover current or future losses with the equity of the company. This risk is especially important for financial institutions due to regulatory capital constraints.
 - 5) Pure risks: those are observed when an accident occurs. These type of risks are handled by insurance companies.

The decision making processes of the board have introduced "Risk Management" techniques. Risk management is the process by which we are

concerned with risks associated with the activities of the undertaking, aiming to balance the investment decisions in function of both return and risk.

Associating risk to remuneration, shows an interest of the board vis à vis the different types of risks, to introduce risk management tools, and follow a more structured process, selecting specific criteria for risk assessment, and for deciding on what the optimal way to deal with the risk is.

In this paper we have considered the risk of the stock market value of a listed company, as a summary index of the economic, equity and liquidity risk. This summary index can be observed in the Beta Risk, which represents the risk component in a firm with regards to its share value in the market.

Moreover, Beta Risk measures the covariance between the assets return and the market return, divided by the variance of the market return. That is, the slope of the regression line showing the relationship between the rate of return of a security, on the y axes, and the rate of market return, on the x axes.

A Beta Risk greater than 1, means that the title in the past has moved (either upward or downward) to a greater extent than the actual benchmark. This is interpreted as 'aggressiveness' of the equity security, and is a heightened risk. However, a Beta Risk lower than 1, means that the title has 'softened' the movements of the index, and thus is considered 'defensive', and therefore less risky.

This configuration, systematically shows both external and internal risks of the listed company, and it does not depend on specific categories of random events.

6. Analysis methods and description of the sample

Our analysis model assumed that remuneration systems were not correlated to risk before the latest regulatory actions. It is believed that, compensation systems did not take risk management into

consideration, that is to say, remunerations increased for high risk profiles.

In order to test the hypothesis, the relationship between *the level of remuneration, performance, and business risk was analyzed*.

The hypothesis shows that in order for the Board of Directors to obtain further remuneration, it makes high risk managerial decisions. This phenomenon derives from the remuneration model structure (stock options, target model, pay for performance, etc.). It only rewards performance, as an increment of company's share value, with no regard to risks.

To verify this hypothesis, as noted in the revised literature, it is assumed that:

- The risk does not affect the level of remuneration, (models of compensation that include this variable were only introduced after 2009.
- The company variables (size, industry affiliation, etc.) can affect the level of remuneration.
- The ownership, in the case of Italy, does not affect the analysis in the presence of firms with high capital concentration.

This model refers to the years between 2005 and 2009. It was decided to focus on an extensive period in order to analyze this from a static point of view, identifying single variables; but likewise, from a dynamic point of view, correlating long and short term business productivity variables. Furthermore, this time-line served as a reference point in the analysis which intends to point out different trends in two different periods pre 2008, and post 2008. This examination is aware of the fact that past analysis did not yet take into account remuneration systems as such.

A *multiple regression* model was used to analyze the sample. It does not take into account the structure of the panel data (time series) in the data base. The model is comprised by a sample of firms, observed during the five relevant fiscal years (between 2006 and 2009). Approximately ninety Italian listed companies, divided in to two categories: 'Blue Chips', and 'Star'.

Table 1.

	2009	2008	2007	2006	2005
Number of listed companies					
Total	321	293	306	285	264
Number of companies observed					
Blue chips	71	71	81	84	81
Star	70	70	80	79	70
Companies not included in the sample					
Blue chips	21	21	31	34	31
Star	28	28	38	37	28
Companies included in the sample					
Blue chips	50	50	50	50	50
Star	42	42	42	42	42
Total	92	92	92	92	92
sample representativeness *	29%	31%	30%	32%	35%

(* total number of companies included in the sample / total number of listed companies)

Over 120 companies were identified for each year. The ones that did not have data relevant to this investigation were subsequently eliminated from the sample. Table 1 shows the number, and representativeness of the sample. For an in-depth analysis of the sample, it was decided to implement different measurement parameters, dividing the distribution in to two subgroups: the 'Industrial society' and the 'Financially regulated companies' (factoring and consumer credit companies, leasing companies, banks).

To properly conduct the empirical analysis, a quantitative model was used. This model measures

the statistical relationship between remuneration, performance and risk on the above sample. The statistical model, is a panel type. It correlates remuneration (R) with risk variables (B) and economic performance (P), in order to identify the extent to which remuneration is influenced by risk and by performance.

The model analyzes the following function, whose variables are described in Table 2:

$$R_{it} = Cons + a_1B + a_2P + Y_{it}$$

Table 2.

Statistic model variable	Description	Nature - Resources
(R)	remuneration of the <i>ith</i> company at the <i>tth</i> time	Total remuneration - balance sheet + SpencerStuart
(B)	representativeness of risk	Beta Risk - Bloomberg
(P)	representativeness of performance	Return - balance sheet
(Y)	representativeness of other exogenous variables*	Panel data model
(a1)	coefficient of risk	Panel data model
(a2)	coefficient of performance	Panel data model

(* taxation, markets liquidity, etc.)

The above model correlates the variables that pertain to the remuneration system (amount for the entire Board of Directors) with the level of risk to the company. The variables used for the empirical analysis were obtained from reports by the Corporate Governance, from balance sheets, and from data on the corporate structure on the Consob website. They were supplemented with additional data sources from previous research. For risk data, we used Bloomberg.

Upon using the empirical model, the variable 'total compensation of the board' (R), did not take into account the distinction between the fix part, the variable part, and the distribution of compensations

among executive and non executive directors (independent or not).

The parameters used for analyzing performance (P) is the return. However, the share value was excluded, that is, the annual variation in the stock price, as it would have caused distortions with the "beta-risk."

The risk variable (B), was adopted for the empirical model, Using the 'beat-risk' mean for each company for each year of observation. This variable, as shown above, is suitable for measuring the phenomenon, as it represents the economic risk, capital and liquidity.

Finally it should be noted that the coefficients of the model function (a_1 , a_2) can either be positive, negative or even zero. In the first case we measure a positive relationship between the variables (risk or performance) with remuneration. In the second case we measure a negative effect in the relationship between the variables (risk or performance) on remuneration. If null, the variable has no effect on the relationship implied.

The theoretical results of the statistical model are illustrated in section 7.

7. Results of the statistical model

The hypothesis was verified by three different statistical processing methods, all of which use the

same multiple regression model described above. For the first solution, the full sample is used, it consists of all of its components. For the second, the field is narrowed down to industrial companies only. For the third, we measured the correlation on regulated financial firms. The three models show that the hypothesis of the statistical model does not put depth (years) into consideration, and that individual phenomena are not related. However, the three models do show results consistent with the hypothesis.

The first model, whose results are reported in Table 3, analyzes full sample return, risk and performance.

Table 3.

Remuneration	coefficient	Std. Err.	T	P> t	confidence interval 95%
beta	1930205,00	367922,20	5,25	0,000	1207176 - 2653234
performance	0,0007430	0,0001198	6,20	0,000	0,0005075 - 0,0009784
cons	878734,30	287603,80	3,06	0,002	313544,3 - 1443924

The model shows that the performance and the risks involved both have a direct effect on remuneration. The coefficients of the variables are significantly positive ($P > |t|$ equal to 0), while the model fitting the data (R^2) is relatively low, 14%. The test results are consistent with the hypothesis underlying the research, or the fact that compensation systems do not take risk management into account. This allows for a possible mismatch between the goals and objectives of the shareholders, and of the Board of Directors. As hypothesized, there is a positive correlation between pay and risk, the higher the risk, the higher the remuneration. This result is

thought to be attributed to the structure of the models of remuneration which, during 2005-2009, were not factored into the variables of risk management. In fact, the Board of Directors take operational decisions with greater risk profiles to obtain higher remuneration. This result follows the structure of the remuneration models (stock options, target model, pay for performance, etc.), where they only reward performance not associated to risk.

The second model, whose results are reported in Table 4, analyzes in a small sample of industrial companies, the relationship between remuneration, risk and performance.

Table 4.

Remuneration	coefficient	Std. Err.	T	P> t	confidence interval 95%
beta	1779715,00	367922,20	4,84	0,000	1056910 - 2502520
performance	0,0006657	0,0001108	6,01	0,000	0,0004479 - 0,0008836
cons	913387,20	276730,90	3,30	0,001	369234,3 - 1457540

The model shows in this case as well, that the performance, and the risk both carry a direct effect on remuneration. The coefficients of the variables are significantly positive ($P > |t|$ equal to 0), while the model fitting the data (R^2) is quite low, 16%. The hypothesis is further verified with the applications of the panel model for the sample labeled 'industrial companies'. These results, depending on the type of

company, lead to the observation that there is not a marked difference in the adoption of the remuneration policies, by top management figures, that take risk management into account.

The third model, whose results are reported in Table 5, analyzes the sample report on 'regulated financial firms'.

Table 5.

Remuneration	coefficient	Std. Err.	T	P> t	confidence interval 95%
beta	2047625,00	1252116	1,64	0,106	-4981716,80
performance	0,0023415	0,0007062	3,32	0,001	0,0009367 - 0,0037462
cons	716125,60	1134013,00	0,63	0,529	-4511825,00

According to the output of the regulated financial firms, where the different fiscal years of the company are treated as separate data, it is observed that (R^2) is similar to data previously obtained, while the model is of less significance, both globally, and with respect to coefficients of individual variables. The performance coefficient is still significantly positive, while the risk (beta risk) is not significantly different from zero. The result may indicate that in some way, regulated financial firms have decision-making systems that tend to encourage risk management.

The results that emerged from the empirical analysis, and the three statistical analysis used, confirm the hypothesis, specifically that the remuneration systems are based on performance, and not on risk (stock options, target model, pay for performance, etc.). The consequence of this is that in view of such mechanisms, the Board of Directors shall adopt management decisions with higher risk profiles in order to obtain further remuneration. This conclusion is in line with the literature because:

- a) This shows an alignment between the objectives of the Board of Directors and those of the shareholders (Jensen - 1990 Murphy, Coreguay Larker-2001). During the period under examination, the idea of risk management was poorly expressed by both the shareholder and by top management.
- b) It shows that the remuneration system, is partly influenced by the need to align the objectives of the Board of Directors with those of the shareholders, but also depends on other variables, such as the ability of the Board of Directors to influence the construction of a remuneration system making it an income for management as found by other authors (Shleifer 1994, 1997 and Bertrand-Mullainathan Yermak 2001).
- c) The findings are in line with the empirical analysis carried out in other countries, by S&P500 in 2007, regarding the average remuneration of a CEO. This reported a value of 8.4 million. This value did not decrease in the following years, even during a period when stock prices significantly decreased due to excessively high risk investments taken by companies.

In the next section, we present the limitations of this research, and share some prescriptive reflections.

8. Limitations of work and possible conclusions

The work carried out allows the development of reflections on the theoretical limits of our work, as well as on possible prescriptive impacts.

Research findings reveal, on one side, that there is no significant difference in the relationship between remuneration/risk with respect to the variables of the company, and on the other, a weak influence of regulations on compensation systems. Below we illustrate these aspects that require attention.

The research presents positive elements, there is consistency between the results, and the initial hypothesis. The results show that in Italian listed companies, remuneration systems are based on performance and not on risk, which according to the hypothesis may lead to conflicts between the Board of Directors and the company proprietorship. On the other hand, upon further investigation to observe whether there are differences that are influenced by other variables such as risk/reward/performance, this research faces difficulties due to the particular characteristics of Italian firms (reduced fractioning of the capital, the presence of interlocking, poor transparency in governance, etc.). International literature, Jensen - Murphy (1989), provides interesting information regarding this aspect. Jensen - Murphy (1989) detected an inverse relationship between pay and company performance in the presence of a strong fractionation of capital. The results indicated that during the presence of a weak shareholder, the Board of Directors is able to take compensations above market level. Yermak (1996) shows a negative relationship between the number of board members, and positive relationship between performance and remuneration levels. Finally, some scholars have recently highlighted how some of the board's variables, such as interlocking, influence the weak correlation between remuneration level and business performance. The present work has not been able to give an indication on these aspects.

The second aspect we observe is the influence of regulation on risk/remuneration. From our research sample of regulated financial firms, we can see in fact a clear difference in the relationship between remuneration, risk and performance. The explanation for these results are believed to be attributable to the fact that, for these specific companies, regulations had already introduced obligations regarding risk management. However, it does not consider the norms contained in section 4, to be an influence considering

they are a subject of recent introduction (2009-2010). As highlighted earlier, the regulation of these variables were taken into account to try to regulate mechanisms that would provide a balance to the delicate interrelations. Nevertheless, regulators have tried to propose guidelines to follow in order to maintain a stable relationship between the three investigated variables, so as to encourage training remuneration practices from the perspective of 'monitoring' risks and performance.

In light of these results and work limitations, we believe that it is useful to highlight the different aspects of a prescriptive nature, in regards to adjusting compensation systems so that they ensure the right incentives for the Board of Directors vis à vis risk management. Experts on the subject have proposed different solutions. Below are some of these approaches that prove to be consistent with the results of our work:

- a) Regarding the structure of remuneration systems: certain components of the compensation system must be influenced by risk management systems that guarantee an analytical approach through ad-hoc decision making models. This solution would align the objectives of the Board of Directors, to those of the shareholders. In fact, we believe that the structure of the remuneration system is comes down to a contractual issue, as noted by Jensen - 1990 Murphy, Coreguay Larker-2001, for which it is only necessary to identify, before hand, the optimal compensation model that aligns the objectives of the board to those of the shareholders.
- b) Regarding the transparency of remuneration systems: research has shown that management practices considered to be of excessively high risk, give the board a reason to adopt managerial profiles that do not take risk into account, having to do damage-control after any financial loss. To avoid these top management risky practices, it is necessary for the company to have a more transparent approach when determining remuneration systems. In this sense, the approach of 'say on pay', which is what the latest regulations point towards, seems to be on the right track to solving the issue at hand.
- c) In respect to Regulated firms: the involved regulators have begun implementing disciplinary measures for the Banking industry. However, an approach aiming to discipline only a certain type of firm, will most likely be inefficient, as it may produce two divided labor markets for the members of the Board of Directors: one regulated, and another lacking regulations (or less regulated).

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