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Stock Based Compensation as a tool to address Agency Costs: determinants and relationship with Corporate Performance

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Abstract

This study aims to empirically verify the relationship between Stock Based Compensation and both Corporate Governance and the company's performance.

What I argue is that, other thing being equal, corporations characterized by stronger Agency Costs and higher values of certain performance indicators are associated with higher levels of Stock Based Compensation. Therefore, the investigated research questions are: is there a relationship between Corporate Governance indicators suggesting the presence of Agency Costs and the Board's Stock Based Compensation?; is there a relationship between the company's performance and the Board's Stock Based Compensation?

In particular, such two aspects have been analyzed, with respect to Agency Costs, by relating the Board's Stock Based Compensation to variables concerning the Board's features and the company's ownership structure. The second aspect have been explored relating both accounting and market-based performance indicators to Stock Based Compensation. The whole analysis has been conducted breaking down the two research questions into seven different hypotheses tested one by one.

To test the various hypothesis, I used a sample of 487 companies, analyzing the effects of both Corporate Governance and performance variables on the level of Stock Based Compensation by running multiple linear regressions. All the available data refer to the last available year (i.e. 2020).

The results of the study provide empirical evidence that: companies with a less "independent" Board (characterized therefore by the presence of the "CEO-Chairman Duality, the absence of the Independent Lead Director and a strong dispersion of ownership) are characterized, on average, by stronger levels of Stock Based Compensation within their Boards; companies characterized by higher market evaluations and higher Return on Assets are associated with higher levels of Stock Based Compensation.

Eventually, I discuss the relevance of adopting proper Corporate Governance structures to improve the relationship between top managers and both shareholders and investors, increasing the overall transparency and reliability of the company towards the capital markets and its capacity to enhance value creation policies for its shareholders.

Keywords: Corporate Governance, Agency Costs, Stock Based Compensation

Chapter 1: Introduction

Although the Stock Based Compensation policy of the company's top management is one of the most important decisions taken by any corporation's Board, very little is known about how such compensation is set (meaning what are the major determinants of it) and even less is known about its link with both Corporate Governance and the company's performance. In these past years, cross-country comparisons have been conducted leading to controversial results. This since the use of Stock Based Compensation, in spite of having spread globally, is still strongly embedded into the Anglo-Saxon countries. Countries which are characterized by company's structures, features, Governance practices and overall capitalism models which have significant differences compared to non-Anglo-Saxon countries. Therefore, the current Stock Based Compensation's debate is still mainly focused in such Anglo-Saxon countries, also in light of several global-scaled corporate scandals that took place in those same countries and the recent 2008 financial crisis (which started in the United States). In those occasions, most of the top executives of the companies that were either involved in such scandals, or that contributed to the crisis' breakout, made fortunes thanks to Stock Based Compensation contracts in the years immediately precedent to the scandals or the crisis itself.

This study aims to deepen the understanding the Stock Based Compensation practices enhanced by modern large-sized public corporations by analyzing certain Corporate Governance indicators as potential drivers of more intense or indigent Stock Based Compensation policies within the Board of Directors. In particular, this research provides several insights concerning the role played by multiple Board features and the company's ownership structure. At the same time, this study seeks to demonstrate the relationship between the use of Stock Based Compensation within the company's Board and several performance indicators, with the ultimate goal to figure out what could be the relationship, under a performance perspective, between some performance variables and the adoption of a certain Stock Based Compensation policy. More precisely, in order to achieve an all-around view of the phenomena, indicators concerning both the accounting performance and the market performance of the company were taken into account. Thus, the main purpose of this master dissertation is to enhance the existing literature regarding Stock Based Compensation, trying moreover to find out what could be considered valid determinants of it and the relationship with several performance indicators.

In these past years, abundant literature concerning Stock Based Compensation have been produced. In spite of this, few researches have focused their attention on multiple Corporate Governance indicators at the same time as explanatory variables that could have potentially explained a certain impact in the use of Stock Based Compensation and its related policies. The majority of the existing literature have focused on specific aspects related to Corporate Governance. Therefore, I have found little or no evidence of studies to my knowledge that tried to picture Corporate Governance as a whole as a potential determinant of certain Stock Based Compensation policies and practices. At the same time, the existing literature

concerning the relationship between the use of Stock Based Compensation and the company's performance is strongly divided between the ones who believe a positive relationship exists and the ones that found no evidence of it. Such division was what actually triggered my curiosity in exploring this aspect, in order to realize which part of the literature would have been confirmed from the study itself. Not to mention, moreover, how many of the existing studies have focused on only one of the multiple Stock Based Compensation's current alternatives, without considering Stock Based Compensation as a whole.

The underlying theoretical assumption that drives the empirical analysis conducted in this dissertation mainly relies on the idea that Stock Based Compensation could be considered as an effective tool in mitigating Agency Costs between top managers and the company's shareholders. As a consequence, the Corporate Governance variables mentioned above that have been taken into account in this study are mainly related to the potential arise of such costs, meaning that they are variables that, if following a certain trend, could suggest the potential presence of Agency Costs within the company itself. Variables that have been, in many cases, neglected by the existing literature. At the same time, I take into account performance measurements that reflect both accounting metrics and market based metrics. Even in this case, I have found little evidence of researches that have been conducted testing not only multiple performance indicators, but also indicators that belong to both mentioned metrics' families.

Therefore, this thesis aims to fill such gap in the existing literature by empirically testing the relationship between Corporate Governance and Stock Based Compensation. In doing this, I contribute to the exploration of such relationship by empirically testing two research questions divided into seven Hypothesis that can be grouped into the following: firstly, this study tests the impact of the Board's composition (taking into account the number of Independent Directors, the presence of the "CEO-Chairman Duality" and the presence of the Independent Lead Director) on its level of Stock Based Compensation; subsequently the relationship between the ownership structure (the stake of the company's largest shareholder, and the typology of such larger shareholder) and the Board's Stock Based Compensation is tested and, to conclude, I test the relationship between both accounting-based (ROA and ROE) and market based (Tobin's Q Ratio) performance indicators and Stock Based Compensation. Therefore, such research questions can be more broadly divided into the exploration of the determinants and of Stock Based Compensation and its relationship with corporate performance.

The interest in such relationship between Stock Based Compensation and Corporate Governance covered in this study also arises, other than from the above mentioned gap in the existing literature, from a personal recognition and belief of their relevance and indispensability for the survival, healthy long-term management and value creation capability of any corporation, as it have also been demonstrated by an unfortunately high number of corporate scandals and crisis that have taken place in these past decades. In fact, both Anglo-Saxon and non-Anglo-Saxon's companies (especially the large listed ones), find themselves in the constant pursue of the reduction or elimination of such costs, seeking mechanisms that

will allow them to keep the interests of the shareholders, the top managers' and all the remaining stakeholders aligned (as higher corporate dimensions imply a higher number of subjects whose interests have to be satisfied). Therefore, large companies must be able to enhance proper mechanisms in order to mitigate Agency Costs that arise as their nature becomes more complex and mature.

Concerning Stock Based Compensation, the existing literature shows that there are two major school of thought regarding their use as a tool to address Agency Costs. The first one is the "Optimal Contracting Theory" (Fama, 1980) and the latter is the "Managerial Approach Theory" (Bebchuck and Fried, 2004). These two mentioned theories, properly illustrated throughout this thesis, have divergent views concerning Stock Based Compensation. In fact, according to the first one, the use of Stock Based Compensation is a natural solution that, holding other variables constant, can automatically neutralize the misalignment of interest that might be generated from the separation of ownership and control typical of the large corporations. Therefore, the adoption of Stock Based Compensation Contracts (defined by the author as "Optimal Contracts") should itself, by making the executive's compensation a "marketable asset" (linked to the company's own stock) and therefore subject to those same capital markets mechanisms, including revaluations or losses of value, to which the company's shareholders are subject to, neutralize the executives' incentive to deviate from the shareholder value creation objective for which they are hired. In this first view therefore, an increase in the Board's Stock Based Compensation is considered as solution to address Agency Costs arising into the company, and therefore a positive impacting factor for the company's performance. Such first more optimistic view is argued by Bebchuck and Fried (2004) who, contrarily, believed that the excessive influence that most Boards' executive directors used to hold in their respective companies was able put them in a position to overcome such "Optimal Contracts", and directly or indirectly set them in a way that could have still generated misalignment of interests to arise within the companies. Such excessive influence, according to the authors, was not only able to compromise the Compensation Committees in charge of designing the compensation packages, but also to breach the independence of the Boards themselves, causing therefore Agency Costs not to be eliminated or mitigated. Therefore, what was argued was that Stock based Compensation is not a sole and optimal solution to address Agency Costs, as such compensation contracts could have been excessively manipulated by the top managers to the shareholders' expense. In this second view therefore, no precise relationship is seen between the enhancement of Stock Based Compensation and both the addressing Agency Costs and the company's performance. To conclude, I have also analyzed other less relevant scholars' theories, which mainly concerned the opportunity cost for the company arising from Stock Based Compensation contracts and the dilution effect that those same contracts can generate for the company's pre-existing shareholders.

The above was the major literature thought concerning Stock Based Compensation and both agency Costs and Corporate Governance from which I took inspirations to develop the various research questions. All of this in order to ultimately verify if Stock Based compensation is really, as Fama suggested, more

properly enhanced whenever indicators suggesting a higher presence of Agency Costs within the company arise and if a relationship with the company's performance exists or not, as argued by Bebchuck and Fried.

Thanks to a wide range of data provided by Bloomberg Database, a global leading database platforms containing information on millions of public and private companies operating in more than 160 different countries, this study bases its inferences on an analytical analysis which includes information from 487 different companies operating into a wide range of industries. All data are referred to the last available year (i.e. 2020).

The study addresses, as mentioned, two research questions: is there a relationship between Corporate Governance indicators suggesting the presence of agency Costs and the Board's Stock based Compensation?; is there a relationship between the company's Stock Based Compensation and its performance? Such two macro research questions have been explored analyzing three sub areas which include the relationship between the Board's Stock Based Compensation and Board features, ownership structure and the mentioned performance (divided into accounting and market-based).

The results of the study demonstrate that a strong relationship exists between Corporate Governance Variables indicating a higher chance of Agency Costs to arise and the Board's Stock Based Compensation. In particular, what emerged was that companies characterized by a less "independent" Board (meaning boards characterized by the presence of the "CEO-Chairman Duality, the absence of the independent Lead director and a dispersion of ownership into their shareholding structure) record, on average, significantly higher levels of Stock based Compensation. Also, I have empirically found that the companies which record a higher ability to properly manage its assets to generate income (ROA) and overall market evaluation (Tobin's Q Ratio) are related to higher enhancements of Stock Based Compensation within the Board. Such last finding shows that, among others, the investor's preference is driven by the level Stock Based Compensation within the target companies and it is considered an important reference point in the decision if whether to invest money or not inside a certain company.

This study consists of five chapters including the Introduction, which is Chapter 1. The second chapter, named "Literature Review and Hypothesis Development" is divided into three macro areas. In the first one, I illustrate the major categories, alternatives and functioning mechanisms of Stock Based Compensation, focusing my attention on its use at the "Governance Level" of corporations. Also, this section provides an in-depth analysis of the above mentioned school of thoughts concerning Stock Based Compensation. Secondly, an entire section of the chapter is dedicated on the analysis of the current Corporate Governance Landscape, with a particular attention on the various forms of Corporate Governance Models and Mechanisms worldwide, highlighting how they change in different parts of the world. The last section of the second chapter is dedicated to the illustration of the various hypothesis, explaining their rationale. Chapter 3 deals with my study's Research Methods as well as a description of the sample data used to test the mentioned hypothesis. Subsequently, Chapter 4, "Results and Analysis"

deals with the empirical findings of my analysis, including my own interpretation to it in relationship to the relevant literature. Finally, in the "Conclusions" illustrated in Chapter 5, I have described the limitations of my study as well as implications for future research.

Chapter 2: Literature Review and Hypothesis Development

2.1. The Stock Based Compensation

Stock Based Compensation, as anticipated in the introduction of this thesis, certainly constitutes a constantly debated topic among the current Corporate Governance landscape. The complexity of the phenomena and the various issues that such compensation form tries to address are deeper than it might seem. Hence, in this paper's section I'll try to cover all the major aspects concerning Stock Based Compensation. Starting from what are the concrete forms under which it is enhanced in modern large-sized corporations, both in the lower-mid "Firm Level" of the organization all the way to the alternatives for the company's top executives at the "Governance Level" of the company, we'll also analyze the current best practices in the Compensation Design process as well as a cross-border analysis to understand how Stock Based Compensation differs worldwide. Subsequently' I'll focus my attention on several school of thought concerning this topic, to understand what are the main views concerning the existing relevant literature. All of this with the objective of ultimately achieving an in-depth analysis of the phenomena, which I believed was dutiful to implement given the above mentioned complexity and actuality of the Stock Based Compensation phenomena itself. Therefore, the subsequent focus will be on the Stock Based Compensation alternatives for the "Firm Level" of corporations, which corresponds to the mid-lower level employees of an organization. In fact, even though our analysis in mainly based on higher-level employees, it is important to be aware of how Stock Based Compensation is as well enhanced in other parts of the company which relate to different subject compared to its top managers.

2.1.1. Stock Based Compensation alternatives at the "Firm Level"

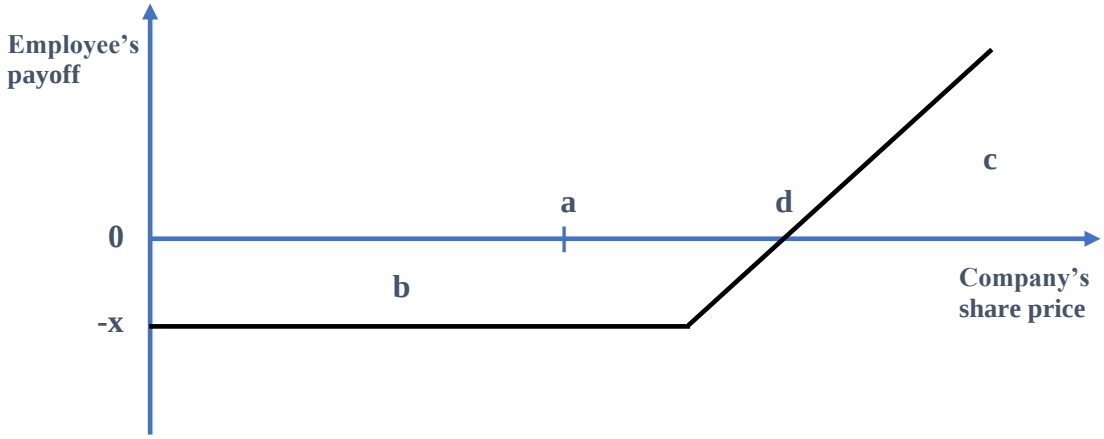
As of today, the most generally accepted alternatives (the technical details might vary from country to country based on local laws and regulations) among which companies can choose in order to provide Stock Based Compensation to their "Firm-Level Employees are[1]:

- Stock Options
- Restricted Stock
- Restricted Stock Units
- Stock Appreciation Rights
- Phantom Stock
- Employee Stock Purchase Plans

[1] Source: Eqvista Database

With respect to Stock-Option compensation, it is a mechanism by which the employee of the company obtains the future option (therefore not an obligation) to acquire, at a future time, a certain predetermined number of shares of the company at an established price. How long the option is viable can vary, where a further factor coupled with (other than a simple time measure) is the achievement of a certain goal by the single employee, a division, or the entire company. Therefore, the mechanism is set in such a way that should the stock price of the company in the future exceed the predetermined price (also known as the strike price), the employee is likely to exercise it since he could obtain stock of the company worth a certain amount by paying them less, and subsequently obtaining a capital gain by selling that same stock in the financial markets bought at a lower price. To obtain such a right, the employee must pay a certain amount of money according to which the agreement with the organization has been set up: the higher the value of the stock price compared to the strike price the higher the payoff for the employee. Vice versa, if the value of the stock price is lower than the strike price, the employee will not exercise the option (as it is senseless to buy the shares of a company at a price that is higher than the current market price) and will have a negative payoff.

Figure 1. Stock Option mechanism and payoff
(Source: Personal elaboration)



Where:

- x: is the "Option Price", correspondent to the amount of money that the employee is required to pay in order to potentially exercise the future right of buying the shares at the agreed price;
- a: is the "Exercise Price", the pre-agreed price at which the employee will be entitled to buy the shares independently from their market value;
- b: relates to the "negative payoff area". In fact, if the share price does not exceed the value "d" in the graph, the option is "not in the money", which means that the price at which the shares can be sold in the market is lower than the "Exercise Price" (a) plus the Option Price (x), making the total payoff negative for the employee;

- c: is the "positive payoff area". Contrarily to b, in this case, since the share price of the company is higher than the difference between the Exercise Price (a) and the Option Price (x), therefore the payoff for the employee is positive. The higher the share price compared to d and the higher is the payoff
- d: is the "Brea Even Point". If the share price of the company is equal to d, it means that is equal to the Exercise Price plus the Option Price. In that point, the net payoff is equal to zero, which marks the passage between positive and negative payoffs.

Stock option compensation is usually one of two types Non-Qualified Stock Options (NSOs) and Incentive-Stock Options (ISOs). What NSOs are characterized by is that in case of the exercise of the option, the spread of the stock on top of the exercise price (therefore the capital gain) for the employee is taxable as personal income and therefore taxed at the personal income rate. Such taxation can take place even if the shares have not yet been sold by the employee. Moreover, when the shares are eventually sold, the employee will have to pay the capital gain tax rate. As compared to the NSOs, the ISOs have some particulars. First of all, the taxes paid by the employee are not constituted as income tax rates, but on the capital gain tax rate[2] that is usually lower compared to the personal income tax rate. This means that the employee will only pay the eventual taxes on the capital gain in case he sells the shares. Therefore, the employee will know in advance the amount to be paid in relation to the capital gain since the rate is determined at the birth of the option. Moreover, for ISOs, the taxation does not occur until the underlying shares are sold by the employee. Therefore, at first sight, the ISO would seem to be more convenient when compared to an NSO[3]. However, there is a trade-off, as the employee has to meet some specific conditions to be eligible for ISOs. First of all, the employee cannot receive the stock prior to one year from the exercise date. Secondly, the employee has to exercise the option no later than 10 years after the exercise date. Thirdly, if the employee potentially reaches (thanks to the future exercise of the option) more than 10% of the voting power, the predetermined strike price has to be at least 110% of the fair market value of the stock at that time and the option cannot last for more than 5 years. Also, the exercise price cannot exceed the market price of the stock at the time in which the option is subscribed. If such conditions are not met a "disqualifying disposition" is then applied, and the employee would lose the above-mentioned benefits of the ISO and, therefore, pay the ordinary income tax rate on the eventual capital gain.

The next typology of equity-linked benefit is the Restricted Stock or Restricted Stock Plans. Under this option, the employee is entitled to buy the shares of the company in the future not at a previously fixed price, but at a discount from the current market price. This small feature is the main difference with a

[2] In the U.S. such capital gain rate was around 20% in 2019 (Source: IRS.gov)

[3] For the employing company, an NSO would be more convenient as the company can enhance tax deductions when the employee exercises the stock options whereas no tax deduction for the company can be done in the case of ISO (Source: Investopedia.com)

stock option. However, in such circumstances, the shares are not fully considered property of the employee until a series of specific requirements are met. Only then, the stock can be purchased and until then there is a restriction (hence the name Restricted Stock) Normally, there is a limitation period (after which the employee is entitled to purchase the stock) which lasts from 3 to five years and the employee can only buy the shares if he is still employed by the company after such period. In some cases, the restriction can be relaxed not requiring a certain amount of time to elapse, but subject to meeting certain individual, division, or company goals. However, a peculiarity for Restricted Stock is that before the end of the restriction, the company holds the right to decide whether or not to pay dividends and grant voting or other shareholder rights to the employee. Moreover, for Restricted Stock, we do not have taxes on capital gains but only an income tax of which the taxable income is represented by the fair market value of the stock (minus the price at which they were bought) as of the date they are bought by the employee[4].

Slightly different from the Restricted Stock is the Restricted Stock Units. This form of compensation is a simple grant achieved through a distribution schedule which is given to the employee as a reward for having either remained with the company for a certain period or having achieved certain performance targets. No taxes have to be paid by the employee, as for this type of compensation the amount of stock which is given is already net to income taxes, meaning that the moment in which the shares are to be distributed to the employee, a portion is withheld by the company to pay income taxes on behalf of the employee. This is the main difference, the restricted stock shares have to be bought by the employee, whereas the restricted stock units shares are granted directly to the employee, which means that he does not have to pay for them. The number of shares given to the employee is, therefore, free of any limitations and can be freely sold. These stocks do provide voting power but do not provide dividends.

Another form of compensation is the Stock Appreciation Rights. They can be considered as a sort of bonus for the employee which corresponds to the appreciation of the equity of the company within a predetermined period. The mechanism can be compared somewhat to a call option, as the employee obtains a profit from the Stock Appreciation Right if the stock price of the company rises. In such a scenario, the employee is exempt from the payment of the exercise price and instead of obtaining the company's stock (with the possibility of obtaining a profit by reselling it) the employee is given in cash periodically corresponding to the amount by which the stock's value has risen. This means that the employee can potentially obtain a profit from the stock's growth without having to purchase anything. This is, therefore, a way for the company to share the monetary value of equity with the employee but not the equity itself. Moreover, Stock Appreciation Rights have the feature, which differentiates them from the next category, that they apply only to a specific number of the company's shares. In case of a certain

[4] Another peculiarity for Restricted Stock is the possibility for the employee to apply for the "83 (b)" eligibility, an Internal Revenue Code Provision which allows the employee to pre-pay the tax on the market value of the shares, not the moment in which they will be ultimately received, but when the contract is signed therefore in advance, when the share's market value is usually lower (Source: IRS.gov)

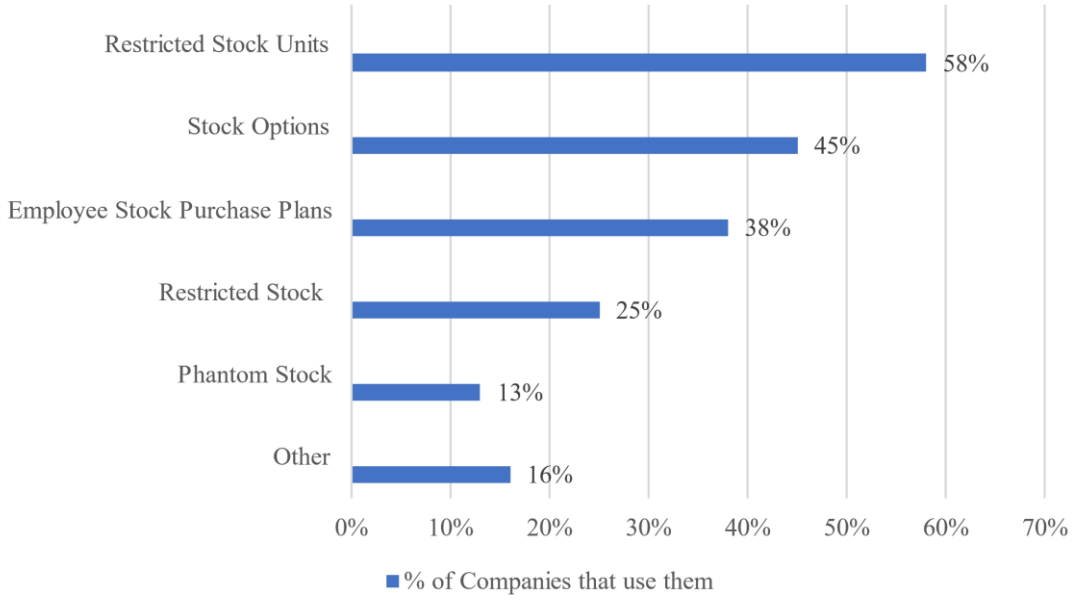
increase in the company's share price, the employee will receive the monetary amount by which the shares have increased in their value times the number of shares included in the Stock Appreciation Rights. The penultimate form among the most common forms of stock-based compensation at a firm level is what is known as the Phantom Stock. Phantom Stock plans work the same way as Stock Appreciation Rights. The mechanism is identical, but we have an ideological difference. Even in this case, the employee is involved in a plan where he receives the benefits resulting from the appreciation of the stock without actually owning them and de facto by never receiving them. However, in the case of Phantom Stock, there is no application for a specific number of the company's shares as in the case of Stock Appreciation Rights. Phantom Stock relates to the totality of the company's shares, which means that in case of a share price increase, the employee will receive the amount of money by which the shares have increased times the totality of the company's shares. It is as if the employee received a "false stock" that assures him that he will receive an incentive proportional to the market value of the totality of the company's shares. This is the ideological difference, as in the other case (Stock Appreciation Right) the employee directly obtains the amount of cash equivalent to the eventual capital gain, not of the totality, but of a specific number of the company's stock over time. Both Stock Appreciation Rights and Phantom Stock have the same effect but resulting from two slightly different philosophies. However, the tax treatment is similar, since for both Phantom Stock and Stock Appreciation Rights the monetary amount received by the employee is taxed as ordinary income with the income tax rate.

Finally, we have the Employee Stock Purchase Plans. Generally speaking, these purchase plans are company-run programs where the employees are given the opportunity to purchase shares of the company at a discounted price. An important initial feature of this plan, constituted by the fact that employees are free to decide whether or not they want to participate. Should they decide to do so, they are effectively allowing the company to apply a deduction to the payroll, which grows over time into a separate account for the duration of a period up to a pre-fixed purchase date upon which the company uses the accumulated money to buy the shares on behalf of the employees. The stock of the company is bought, as mentioned, at a discount and taxation is calculated as follows: the discount is taxed as ordinary income and the remaining amount is taxed under the form of long-term capital gain. Concerning eligibility, employees cannot participate in such programs if they already have a 5% or higher stake in the company. A sub-category of Employee Stock Purchase Plans is represented by the Employee Stock Ownership Plans. These plans are slightly different and simpler. They consist of offering directly a predetermined amount of stock to the employees periodically as part of their annual salary and so the ramifications of giving the employees stocks in the future and under certain conditions are not considered. All it entails is that as an employee you are directly paid (the part varies from company to company) in stock periodically as part of your annual compensation independently from what happens to the stock price of the company and to other conditions, such as how you perform or the goals achieved.

These were the main categories of Stock-Based Compensation for employees at the firm level. It becomes clear then why it is difficult to determine which of these is the best, as there is no perfect recipe and many different aspects need to be taken into consideration (such as the expectations of the company's growth, its existing shareholding structure, its age, and the country or region where it operates). However, it is possible for us to know which are currently the most utilized among these alternatives. We can obtain a clear picture examining the "Global Equity Survey" conducted by Deloitte. This annual survey explores the various forms of Equity-Based compensation offered to employees of over 500 companies globally. First of all, it is interesting to observe that only 20% of the companies have declared that they do not offer any sort of equity compensation or award to their employees. This shows how Equity-Based Compensation has become an extremely important and commonly accepted form of compensation among modern companies. Secondly, and this is strictly related to our analysis, when asked which (among the previously described forms of Equity Compensation) forms of Stock-Based Compensation were provided within their company, the result was as follows (respondents were allowed to choose multiple answers)[5]: Stock Options were provided by 45% of the companies, Restricted Stock Units by 58%, Employee stock Purchase Plans by 38%, Restricted Stock by 25%, Phantom Stock by 13% and other forms by 16%.

Even from this relatively small sample size we can note that Restricted Stock Units turn out to be the most popular form of Equity-Based Compensation among employees, even more than the more "traditional" Stock Options. It is not immediately obvious why Restricted Stock should be more popular than Stock Options, as both of them have several advantages and disadvantages. From the employee's perspective, a Restricted Stock Unit is less risky than a Stock Option since Restricted Stock Units can

Figure 2. Stock Based Compensation categories' application frequency
(Source: Personal elaboration from Deloitte Equity Survey, 2019)



[5] Source: Deloitte Global Mobility Equity Survey 2019

consist of stock given in the future to the employee at no cost (obviously as long as certain conditions are met).

Therefore, at zero cost, a Restricted Stock Unit is comparable to a Stock Option with an exercise price equal to zero. This means that it will always be more convenient than a regular Stock Option, where there is the constant risk that at maturity the stock price of the company will be lower than the exercise price, therefore rendering the option "out of the money" and entailing a loss for the employee. Whereas, in the case of a restricted stock unit, the employee will still obtain a "gain" even if the stock price does not perform above a certain established level. Of course, the lower the value of the stock the lower will be the amount of the compensation. The critical point is that as long as the company is still alive and not bankrupt (which means that its shares still have some value) the employee, in the case of Restricted Stock Units, will always receive stock worth something. Vice versa, in the case of a Stock Option which is "out of the money" the value of the shares is irrelevant since if the stock price is below the exercise price the value of the option is equal to zero. This riskiness factor could be a reason why Restricted Stock Units are more popular, even though we cannot be exactly certain of the reason employees tend to prefer them because not all the employees are equal and there will be differences in personal considerations such as risk aversion. To this, we can add differences among companies themselves, relating to factors such as future growth prospects and the overall riskiness of the company.

Table 1. Stock Based Compensation alternatives' main features
(Source: Personal elaboration from Eqvista)

Form of Stock Based Compensation for Employees	Purchase Price	Condition	Taxes	Pros	Cons
Stock Options	Pre agreed price ("Exercise Price")	Time, in some rare cases the achievement of performance targets	Personal income tax rate (for NSOs) or "capital gain rate (for ISOs)	It provides the right to buy not the obligation	Worthless value if the option is "out of the money"
Restricted Stock	Discount to current market value based on a pre agreed discount rate	Time and individual, divisional or company's performance achievements	Personal income tax rate	Discount to market value is always positive unless the company goes bankrupted	Potential excessive restriction on the stock
Restricted Stock Units	It is equal to zero, as it consists in a stock grant	Time and individual, divisional or company's performance achievements	Already net of taxes	Always worth something unless the company goes bankrupted	Potential excessive restriction on the stock
Stock Appreciation Rights - Phantom Stock	It is equal to zero, as it consists of a payment in relation to the appreciation of the stock	Time	Ordinary income tax rate on the amount received	Monetary benefit of equity without bearing the negative aspects of equity	No payment in case of reduction of company's share price overtime
Employee Stock Purchase Plans	Obtained under the form of periodical deductions from payroll	Time	Already net of taxes	Discount to market value is always positive unless the company goes bankrupted	Opportunity cost related to paycheck in case the share performance is not satisfactory

2.1.2. Stock Based Compensation alternatives at the "Governance Level"

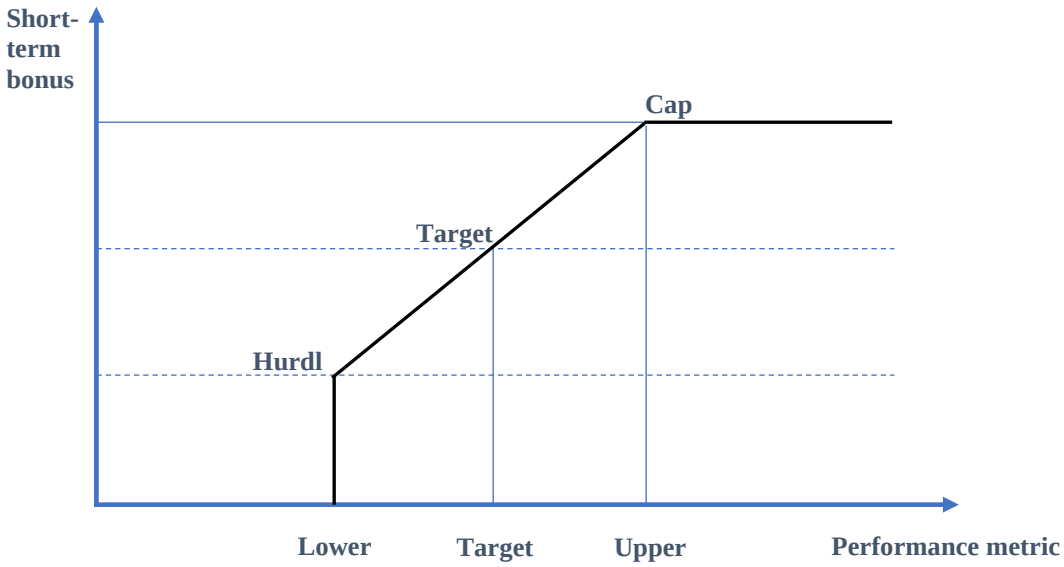
The "Governance Level", as anticipated in the previous section, of every organization is critical, being the body in charge of making the most important decisions within an organization and whose actions have a significant impact on the company, its "Firm Level" employees, and the company's stakeholders. This is why, to understand the forms of stock-based compensation at the governance level, and most importantly the rationale behind them, it is important to touch on the concept of Agency Costs since modern compensation systems at the firm level are structured and defined to be reduced or even eliminated. The compensation at the firm level is connected to Agency Costs, as suggested by Conyon (2006). The Agency Costs refer to the conflict of interest that might arise in the board of directors of large-sized companies characterized by non-concentrated ownership and, therefore, by the absence of a majority shareholder. The control and its related decision-making power are therefore transferred from shareholders to the governance level of the organization. Such a separation between ownership and control creates the main precondition for the existence of a "Principal-Agent" problem, consisting of that conflict of interest mentioned above among the shareholders (interested in the long-term prosperity of the firm) and managers at the governance level (that might be interested in maximizing their personal benefits) at the expense of the company's shareholders (Fama and Jensen, 1983). It is therefore evident, as indicated by the relevant literature, that compensation at the firm level is extremely important since, if properly designed and structured, can significantly reduce or eliminate Agency Costs, thus reducing the risk of value disruption for shareholders (Conyon, 2006). Hence, the major debates among scholars concern the proper structuring of such compensation packages, in order to mitigate agency costs and reduce the mentioned misalignments between top manager and shareholders. The reduction and elimination of Agency Costs is the main purpose behind the director's compensation. This macro objective also includes several others that are however all oriented to the same end. As indicated by Zattoni (2020), there are three other major objectives. The first is attracting top-level managers, qualified by a high level of competency and experience who can properly fulfill their roles and responsibilities within the organization. The second objective is related to the retention of these top managers, to keep them from leaving the company. Finally, and perhaps the most important, to motivate those managers. This means giving them an incentive to effectively contribute to the company's performance and strategy. All three of these objectives have in common the ultimate purpose of discouraging the risk of opportunistic behavior and, therefore, the rise of Agency Costs.

It helps to distinguish the types of employees at the firm level. There are, within the Board of Directors, two distinctive categories of directors: executive and non-executive. In synthesis, the main distinction is the following: executive directors are ones who not only serve on the board but also have managerial responsibilities, which means that they are also involved in decisions regarding the company's daily operations. Non-executive directors instead, have no managerial role and are therefore not involved in the

daily operations. But they are very useful for companies since, being less involved and not responsible for the daily managerial decisions, they can provide independent and objective opinions related to how business is being conducted (Price, 2019). Moreover, they are usually professionals in other sectors (professors, academics, retired executives, or consultants). This further increases their independence since they already have another career outside the company and so are unlikely to fear losing their job. Among the non-executive directors, we have the "independent directors" with even more independence features. This should encourage them to make their voice heard and to be less subject to blackmail from executive directors. Apart from their role, we can discern differences in the compensation for these two types of directors. For non-executive directors, the type of remuneration is less complex compared to the one of executive compensation. It consists of a fixed remuneration (comparable to a fee) based on the commitment and the responsibilities held by the director (Zattoni, 2020). Non-executive directors can obtain additional fees on top of the fixed one under several conditions. In particular, if they serve contextually in one or more board committees (the additional fee changes depending on the committee), whether they are independent directors, or are also the Chairman of the company. This fixed remuneration is the main aspect of non-executive compensation. However, it is debatable whether non-executives should be eligible to obtain stock-based compensation. According to several scholars in fact, including Dalton (2011), on the one hand, stock-based compensation might provide an additional incentive to non-executive compensation, driving them to perform better and not be misaligned with the shareholders' interest. However, he argues that providing stock-based compensation to non-executive directors could create an obstacle and destabilize their independence and objectivity in their role, thus increasing the probability of a rise in agency costs (Dalton, 2011). Executive directors' compensation instead, is more complex. Its composition is mainly made up of four parts (Devers, 2007; Bachelder, 2014; Zattoni, 2020). The first is the basic salary which is essentially a cash payment repeated monthly. It is the classic money compensation or salary. The level of the salary depends on many factors related to the company such as its size, country, industry, the purchasing power of the related currency, and to the executive itself, including experience, tasks performed, and so on. The second part is in the form of short-term incentives which consist of an additional portion (either extra cash or stock) that is linked to a short-term parameter indicating the performance of the company. The term could be annual or briefer, such as an interim, quarterly or semiannual. This is what is traditionally known as a "bonus" and cash bonuses are more common compared to the ones that are equity related. Such shorter-term mechanisms exist to incentivize the fulfillment of a determined performance objective measured using either financial statements metrics (EBITDA, EBIT, ROE, ROA, and so on) or other strategic measures (such as the market share or number of customers). The benchmark to understand whether the achieved performance is satisfactory or not depends on various factors. It could be a comparison with the result of the previous year, the annual budget, or the business plan's expected result. The amount of bonus paid usually varies between two values, following a standard scheme, as indicated by Zattoni (2020). We have the "hurdle", which is the

minimum, and the "cap", the maximum level. If the performance reaches the minimum established level (threshold) in terms of metric, the executive is immediately entitled to obtain the hurdle amount. Then, the more the performance exceeds the threshold the higher the bonus will be, all the way to the cap amount, set as the limit of the bonus (independently from the achieved performance).

Figure 3. Short-term incentive plans' structure
(Source: Personal elaboration from Zattoni, 2020)



However, such a mechanism, as argued by some scholars, might induce executives to maximize the short-term performance of the company, which could be done by undertaking some risky decisions in the short run. For instance, Allock (2017) argues how such decisions might increase the company's performance only temporarily yet destabilize the long-term stability of the firm. In other words, executives might be prompted to maximize their personal gains via bonuses at the expense of the shareholders, who risk losing the value of their investment in the long run. To prevent this, the third component of the compensation contains long-term incentives. These are mechanisms that link the remuneration to the company's long-term performance, measured either with an accounting metric or a financial metric (the stock price of the company). These plans might provide extra cash, but this is quite rare. They mainly consist of stock or stock-related items. This is the most consistent and the most "true" part of stock-based compensation, as short-term incentives are more likely to consist of cash. So instead of providing extra cash, long-term incentives provide equity compensation, under the form of either stock options or restricted stock. Sometimes such long-term plans might be combined. For instance, an executive might obtain stock options when given financial results are obtained and a stock grant for the achievement of strategic results within a certain long-term horizon (Bachelder, 2014). Finally, the last part of the compensation for executives consists of fringe benefits which are a series of benefits and items purchased by the company and freely used by the executive and vary among a wide range of options to include the most diverse items, for example, cars, club memberships, insurance policies, vacations expenses

reimbursement, or rent payments. Other forms of fringe benefits might include other types of benefits such as "golden parachutes" (stock or cash payments in case of early termination of employment, special retirement plans as well as post-retirement consulting). Different from the short or long-term incentive plans, fringe benefits are not usually related to the performance of the executive (Devers, 2007).

Non-executive directors are placed within companies to exercise some form of control over executive directors but this doesn't mean that they are immune from conflicts of interest or from originating Agency Costs. In any case, there is less probability of their being involved in opportunistic behavior as compared to executives. As remarked by Price (2019), they usually have other jobs and have fewer stock payments, which means that they are less likely to be subject to conflicts of interest. That is why agency costs mainly involves the executive rather than the non-executive directors, and therefore it is their behavior that needs to be somehow controlled, to offset the information asymmetries between them and shareholders. We will now examine the executive directors' compensation in further detail.

2.1.2.1. Stock Based Compensation for Executive Directors: Objectives

As mentioned before, executive directors usually have a 4-fold component compensation. Excluding salary and fringe benefits (since they are not equity related) we will focus our attention on short and long-term incentive plans to better understand their pros and cons and how effectively and efficiently they can address agency costs.

We have previously described how short-term incentives, in spite being based upon accounting metrics (and therefore potentially being easily verified by shareholders), can be very risky and must be carefully balanced with other forms of incentives. An excess of short-term incentive plans compared to other forms of equity compensation might generate, as suggested by the previously mentioned Allock (2017), exactly the opposite effect and not the reduction of agency costs. The first reason why this could happen with an excessive value of short-term incentives is what is known and defined by several scholars, including Bebchuck and Fried (2004) as "managerial myopia", which refers to the propensity of executive directors to pursue short-term results, knowing that they will be mainly rewarded based on its outcome rather than the outcome of long-term decisions. By pursuing such short-term objectives, executives might ignore what could be the long-term impact of their decisions which might lead to actions that could even improve the company's short-term performance at the expense of the long-term prosperity and sustainability of the company itself. Concerning the reduction of the company's long term sustainability, such decisions might include, as indicated by Baker and Jensen (1988), the cut of R&D investments and disposals of fixed assets to boost profits. A second risk that might arise from excessive short-term incentives suggested by Zattoni (2020), is related to the fact that executives can "play" with accounting rules to turn the metrics into generating values in their favor allowing them to obtain the short-term incentive. Accounting measures such as EBTDA, EBIT, and several other accounting ratios are not

forward-looking. Being based on past data, they do not reflect the future performance of the company. Executive directors might use discretionary accounting rules to show values in the financial statements that do not fully represent the value created by the company. Some practices include profit-moving, cutting discretionary costs, anticipating or delaying revenues or expenses, and so on. At the same time, executives are also involved in the budget formulation, which means that they might be induced to modify several budgeting assumptions in their favor. Finally, another risk is related to the hurdle and the cap (the upper and lower thresholds for short-term incentives mentioned previously). Several scholars in fact, believe that a difficultly achievable hurdle might be less motivating for executives to put all their efforts to reach it. On the other hand, if the cap is exceeded, any additional effort would have no impact on the short-term incentive and thus reducing the level of motivation (Conyon, 2006; Allock, 2017).

Such risks remarked by the relevant literature underline how an excessive quantity of short-term incentive plans can potentially present multiple risks for the company and therefore render properly addressing agency costs difficult. That is why this form of incentive plans usually constitutes only a small part of the overall compensation. Short-term incentives, however, can prove to be extremely useful when accompanied by the other forms such as the long-term incentive plans.

The long-term incentive plans are rarely made up of additional cash, but are, instead, equity-based due to the previously mentioned risk of "manager myopia". That is, according to most scholars, the main reason why such long-term incentives are equity-based: to align the interests of the executives with those of the shareholders and so reducing the chance of opportunistic behavior at the expense of shareholders (Bebchuk and Fried, 2004) rendering less likely for executives to act against the interests of the shareholders. A second aspect and reason why such long-term payments are equity-based, highlighted by Zattoni (2020), is the stimulation of entrepreneurial activity and value creation. This is particularly true for relatively small or medium sized companies that still have taken the final steps to become an established company. It is also true for start-ups or private equity-backed companies where this form of payment can stimulate the risk-orientation of the executives encouraging them to try to do their best to improve performance and render the company more valuable and in this case, the company is likely to implement transactions such as IPOs or be sold by the private equity firm that backs them. In all these circumstances, it leads to whoever owns company stock making a fortune and it follows then that in this case enhancing the long-term value of the company is in the interest of executives. A further reason is the attraction and retention of skilled top-level managers. Of course, executives, like all other employees, tend to be risk averse. Therefore, providing a high level of equity-based long-term incentive plans should prevent executives from undertaking risky actions that could be detrimental to the company in the long run and, therefore, diminish the value of the shares they would receive. This process would be a kind of "natural selection", bringing within the organizations skilled and self-confident managers that will not act opportunistically while fulfilling their duty (Devers, 2007). Moreover, considering that these forms of compensation are widespread nowadays, not- including such incentive plans into a compensation package

would make the company seem less attractive for potential top managers. Another reason, still remarked by Zattoni (2020) is psychological. Providing a large part as equity-based incentives can contribute to increasing the employee's identification with the company's objectives. One of the various consequences of these incentives is that they "tie" the outcome of the executive's compensation to that of the company he is working for. If following bad managerial decisions, the value of the company's stock drops, the executive's compensation will suffer significantly. This means that what before would have been if the compensation were entirely made of cash, only a company objective now would be both the company's and the executive's. This significantly impacts the executive's motivation and effort in fulfilling his duty, ensuring safe, sustainable, and low risk decisions by managing the long-term performance (Bachelder, 2014). Finally, another interesting reason indicated by Heugens and Otten (2012) is represented by the cost and tax treatment of equity-based compensation. Relative to the latter, a radical change in its accounting occurred in 2005 when companies were obliged to record the issuance of stock options expenses in their income statements. However, modern fiscal legislation tends to obtain financial benefits from all forms of non-cash compensation, incentivizing companies to use it meaningfully. With respect to the costs, equity compensation provides a "cost saving" for the company, meaning that the liquidity that would have been used to pay salaries, thanks to equity compensation, can be preserved for other purposes (such as being reinvestment in the company), with a positive impact on the income statement since what would have been an additional expense is saved.

2.1.2.2. Stock Based Compensation for Executive Directors: Long-term incentive plans

The specific forms of long-term incentive plans can be classified into two categories. The first is the "Stock-Option Plans" and the second the "Non-option stock plans" (Bachelder 2014; Zattoni, 2020). The difference is quite intuitive: stock-option plans provide the executive with stock options. As an option, it provides the executive the right to buy, if he so wishes, a certain amount of the company's stock in the future at a pre agreed price. It is not guaranteed that the executive will receive the stock since if at maturity the option is not in the money it will not be exercised. Non-options stock plans instead have a simpler mechanism, as they consist of a grant. This means that at a certain point in the future the executive will receive a direct payment under the form of stock. There is no right in the hand for the executive whether or not to buy the stock based on whether the stock price is above or below a pre-determined exercise price. Other non-option plans include phantom stock and stock appreciation rights. They provide the beneficiary with a share or cash bonus proportional to the increase in value to the company's stock on top of the exercise price. Therefore, instead of exercising the option, the executive is compensated with a bonus proportional to the eventual capital gain on top of the exercise price. The only difference whether there is the actual ownership of the stock (true in stock appreciation rights but not in phantom stock). Also, another form of non-option plan for executives is restricted stock, which is

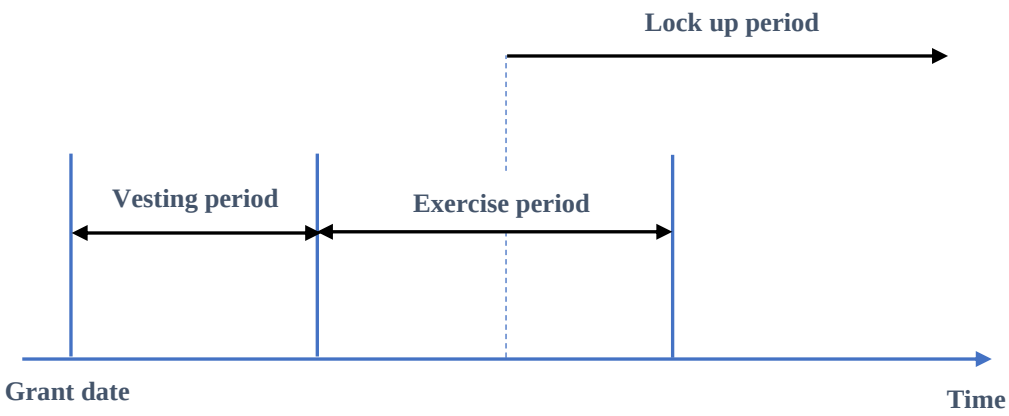
basically a stock grant to the executive should he achieve certain performance objectives or permanence in the company a certain number of years. Finally, another form of non-option stock plan is the "performance share". Performance shares consist of a share grant upon reaching one or more medium long-term objectives. They are different from other forms of grants as the performance is evaluated using financial metrics of which the most common are, apart from the share price, the earnings per share, or the return on equity (Zattoni, 2020).

Other than their mechanism, we have two other important differences highlighted by the relevant literature between stock options and non-stock option plans such as the risk profile and the incentive power for the receiver of the plan and the impact of the plan on the dividend policy of the firm. Regarding the risk profile, non-option stock plans involve fewer risks as compared to stock-option plans since ,should at maturity the stock price be even only one cent below the exercise price, the option is automatically out of the money and therefore is value is null. Whereas, in the case of a non-option stock plan, unless the company goes bankrupt (meaning that its share price is zero) the receiver of the plan will always receive some form of stock payment of at least some worth. That's why non-option stock plans are less risky than option stock plans, since (apart from a bankruptcy scenario) they always provide some sort of value to the receiver. However, stock option plans can have a higher incentive power, as suggested by Wheeler (2004). This is mainly due to the implicit sensitivity of the option and its relative leverage effect which means that, given the same upside change of the share price of the company, the increase in total remuneration is higher for the stock than non-stock option plans. Consequently, the higher remuneration in case of upside potential should give a higher incentive to the executive to perform better and enhance the long-term share value of the company. Finally, several scholars remark the impact of such plans on the dividend policy of the firm. For instance, Baker (2006) recalls how, in case of a greater presence of stock option plans, executives might be induced to change their attitude towards the dividend policy of the firm since the value of the option decreases the more dividends are distributed. According to the Black, Scholes, and Merton model (1973) in an efficient market, the share price reflects the future rate of return of that same share and such a rate of return is related to the sum of the increase in the share market value and the level of distributed dividends. The higher the level of dividends the more negative will be the impact in terms of the share price because the share price of the company reflects the future cash flows generated by the company. Once the dividend is paid, potentially new shareholders are not entitled to receive such cash flow since the dividends have already been distributed. This means that in the long run, having a strong divided policy usually generates lower performance as compared to a policy characterized by a more contained dividend distribution. Therefore, to avoid a possible negative impact on the share price, Baker (2006) indicates how executives with stock options plans are less likely to promote a consistent and elevated dividend distribution, but rather opt for other types of operations such as share buyback, which have the opposite effect on the share price of the company.

2.1.2.3. Stock Based Compensation for Executive Directors: focus on Stock Option Plans

In the previous sections we looked at the overall mechanism related to the functioning of a stock option and how this constitutes a form of compensation. However, given the importance of stock options plans in the context of executive compensation, stock options are worthy of further investigation (also considering the relevant literature) with respect to non-option stock plans, which are easier to understand given that they all have in common granting stocks to the employee. Such grants are managed differently and based upon different preconditions, but the effect is straightforward, as the company's stock (or, in the case of stock appreciation rights, a cash sum corresponding to its value) is obtained directly. Stock options instead are more complex, and their mechanism is based on other aspects and features with multiple factors to consider when analyzing them. Fundamentally, stock options are contracts used as an incentive mechanism to reduce the misalignment of interests between the executives and shareholders and therefore address agency costs. This contract gives the beneficiary the right to buy a certain amount of newly issued (or even preexisting) shares of the company during a set period of time at an established price. The beneficiary potentially gains from this contract should the price of the shares that he is entitled to buy exceeds, within a certain time frame, the established price he is entitled to. In this case, the beneficiary can buy a certain number of shares at the agreed price and then realize a profit by reselling them at a higher price. This is the general mechanism. The various elements of this scheme are clear. There is the executive (who holds the right to buy), the price at which he is entitled to buy, the period in which he can eventually buy the shares and in which the value of the shares may either exceed or fall below the established price. Such general mechanism is made up of different parts that relate to each other. The stock option plans major variables are, in fact, according to the relevant literature, based upon the beneficiaries, the vesting period, the exercise period, the number of options, the exercise price, the method of payment, the type of shares, and the sale restrictions (Baker, 2006; Zattoni, 2020).

Figure 4. Timeline of a Stock Option Plan
(Source: Personal elaboration from Zattoni, 2020)



In detail, the beneficiary may be anyone within the company, though we are here interested more in the executive directors, holder of the right of whether to buy or not to buy the shares of the company and the final recipient of this plan. The scope of the plan to link the beneficiary's compensation with the value of the company's shares can intuitively be considered a measure of how the company, and therefore the executive, is performing. In other words, the beneficiary is simply the holder of the right who can actually obtain a profit from the plan should the share price of the company exceeds the established price. Usually, executives of high growth companies such as biomedical or high-tech companies are likely to obtain a higher portion of stock option plans as compared to executives in other more stable and mature industries (such as oil&gas), since the growth prospects and the relative risk of the industries tend to vary more (Wennberg, 2013).

The vesting period is the period of time in which the option exists but cannot be exercised, from the grant date and the beginning of the exercise period and is in place. Given its nature, the longer is the vesting period the higher is the incentive for the beneficiary to perform well for the company since the more time the company has to "verify" whether the decisions taken by the executive actually improve the share performance of the company. So, on average, this period lasts 3 to 4 years but could be even longer. The relevant literature tends to divide among different forms of vesting, based on what the factor to end the period is. As suggested by Qu and Percy (2016), the most common is the "cliff vesting". It means that the vesting period automatically ends after a fixed period of time and is the most common one. However, there are several alternatives such as the "performance vesting", meaning the period ends upon the achievement of certain performance results. Another item of the stock option plan is the "exercise period", which starts at the end of the vesting period and ends on the expiration date of the option. It is extremely important as it is the period of time in which the beneficiary can eventually exercise his right to buy the shares of the company. Even in this case this period lasts on average three years but could last more. The same rationale behind the vesting period may exist for the exercise period. In fact, the literature suggests that if the exercise period was a short-term period, there would be the risk of a short-term objective orientation by the beneficiary and even influence of short-term market trends that could affect the company's share price. Thus, it is very rare to find exercise periods shorter than 3 to 4 years (Klein and Maug, 2011). However, some scholars argue that in certain cases, a shorter termed exercise period could result useful for the company if it were facing a crisis period or a turnaround. Zattoni (2020) for instance, indicates how in such an extreme situation requires achieving a positive performance swiftly and a shorter-term exercise period might motivate executives to act accordingly. Another key element is the number of options embedded into the stock options plan. This since the higher the number of options the higher the value of the related compensation for the beneficiary in case the options are exercised. Allock (2017), suggests that the number of options is influenced by two critical factors that have to compensate each other. On the one hand, it depends on the dilution effect on other preexisting shareholders (for newly issued stock). On the other hand, we have to consider the minimum level of

shares that will trigger the motivation and effort in the beneficiary. Therefore, the number of options must then be neither too nor too low . Unfortunately, there is no perfect recipe for the correct combination. The number of options may be few if, for instance, the controlling shareholder would lose his controlling position due to the potential exercise of the options within the stock options plan. Vice versa, many if the company is still a younger and riskier but fast-growing company. The subsequent variable is the exercise price, a crucial item in every stock option plan, as it is the ultimate threshold that will determine the profit or loss for the beneficiary. It is the fixed price with which the share price of the company will be compared to, usually fixed at the grant date and based on the market value of the company's shares on that same date. An interesting aspect of the exercise price, captured by Murphy and Hall (2000) , is that it can be equal to, higher, or lower this market value at the grant date and the choice can vary from company to company. Even in this case, there is no explicit rule. Companies that set the price below the market value usually do so to give their employees an advantage, taking into account factors such as risk aversion and how long they have been with the company. Others may set the exercise price higher than the market value mainly to increase the level of motivation of the beneficiary, prompting him to perform better to increase the long-term share price of the company (compared to the level at the moment in which the exercise price is set). In some other cases, the exercise price is set later, beyond the grant date. This is referred to as the "measurement date". Another interesting and less frequent feature of the exercise price is given by the "indexed" or "variable plans" (Meulbroek, 2001). Traditionally the exercise price is fixed. It means that once it is set, it cannot change during the entire life of the option. On the other hand, variable plans occur whenever the exercise price is linked to an external index which can vary, for instance, as stock index or any other variable measure such as an industry index. The rationale behind this sub form of exercise price is related to the fact that that the company's performance might be affected by external factors in the environment in which the company operates. Factors that are beyond the executives' control. The purpose therefore, is to incentivize the executives to achieve not just a positive performance, but an above-market performance. Another consideration is the method of payment from the beneficiary. It is usually cash. The company can allow the beneficiary to pay with stocks of the company that he already owns. This is a "stock swap". Or, as indicated by Blocher (2018), the company might grant a loan to the beneficiary permitting him to pay for the options. These loans have very low interest rates and the shares acquired with the loan are the collateral. The remaining two considerations for a stock option plan are the type of shares and the eventual presence of sale restrictions. The type of shares can be either newly issued shares or "treasury shares". Treasury shares are preexisting shares exclusively for the purposes of the plan. These shares can be either company's share or, in the case of a group, those of the parent company (Zattoni, 2020). Finally, are the sale restrictions usually included in stock option plans. The restriction is the "lock-up period" in which the shares acquired cannot be sold, whose length might vary from a couple of months to a couple of years. Scholars identify two major reasons why such plans exist. Wheeler (2004), suggests that the first one is to ensure that the exercise of

the option and the subsequent selling of the shares does not occur within a short-term speculative period. Secondly, if all the beneficiaries were to sell the acquired stock jointly, it would have a negative impact on the value of the shares of the company, driving down the share price.

These major features have to be taken into account setting the plan and no perfect combination exist, so the compensation committees that regulate the compensation policies need to evaluate them in detail. Table 2 summarizes the variables related to the different considerations of a stock option plan and their alternatives.

Table 2. Variables of a Stock Option Plan (Source: Personal elaboration from Zattoni, 2020)

Variable	Description	Alternatives
Beneficiary	The executive holder of the right of whether to buy or not the company's stock	Executives (this same plan might be applied to other employees)
Vesting Period	Period of time in which the option exists but cannot be exercised yet by the Beneficiary	Length of Vesting Time vs. Performance Vesting
Exercise period	Period of time in which the Beneficiary's right to buy the stock can be exercised	Length of Exercise period Eventual Pre mature exercise
Number of Options	Number of instruments and the related number of shares that each option gives the Beneficiary the right to buy	Relationship to the dilution effect on pre existing shareholders and minimum level to trigger motivation (high vs. low)
Exercise Price	Price at which the Beneficiary is entitled to buy the company's shares	Above, equal or below current market value Fixed vs. Variable (indexed) price
Method of payment	Source of payment for the Beneficiary in order to buy the company's shares	Cash or Stock Swap Beneficiary's money r loan
Sale restriction	Mechanisms by which the shares acquired by the Beneficiary cannot be sold for a certain period of time	Presence of restriction or not Time of the restriction

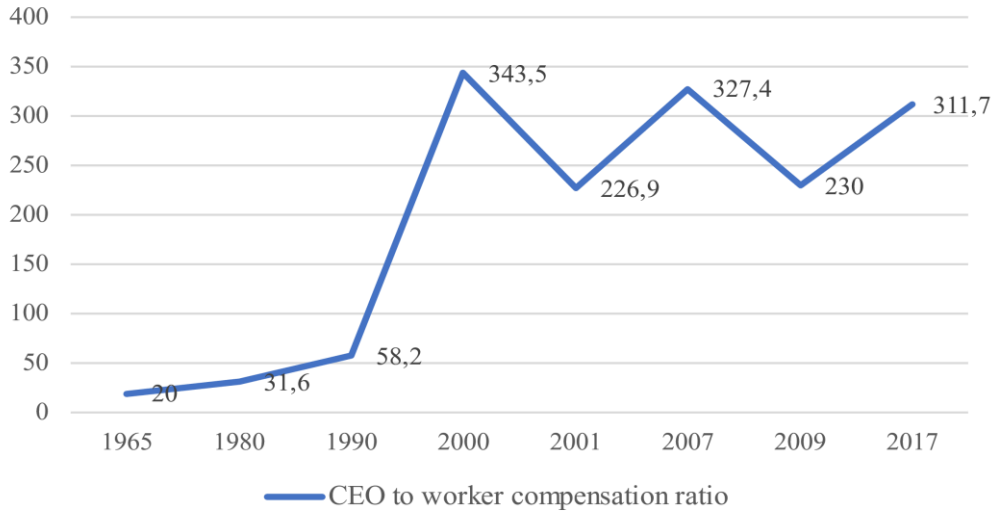
2.1.3. Stock Based Compensation comparison in the international scenario

After having looked at the components of stock-based compensation, we need to ask ourselves is whether such aspects differ at an international level. We will find significant differences among stock-based compensation practices among different nations. For instance, US companies have been paying higher salaries to their executives and CEOs than have other nations, with greater attention to incentivizing long-term plans. This emphasis on the governance level of the organization compared to the firm level has generated a significant gap between the compensation of top managers and the rest of the employees, as remarked by Fernandes and Ferreira (2012). Emblematic of this gap is the "CEO compensation ratio", which measures the salary gap between the CEO and the average worker of the firm. The CEO is the key figure among the executive directors and the gap between his salary and the rest of the workers can be seen as a good measure of the compensation gap between the governance and the firm level of the

company. As we can see[6] in Figure 7, this gap followed an exponential trend, reaching significant values at times. The gap is directly correlated to imminent financial crises, with spikes right before crisis periods (the dot-com bubble, the 2008 crisis, and so on).

The CEO payments are significantly higher in the US compared to other nations but, in recent decades this trend has been spreading worldwide, for different reasons including globalization, the spread of US companies and investors worldwide, the diffusion of the "shareholder theory" value creation, and the globalization of managers themselves and a convergence in the regulation (Cheffins, 2004).

Figure 5. CEO to worker compensation ratio in the U.S.
(Source: Forbes CEO Compensation Report, 2017)



To compare compensation practices among different nations, we can turn to a 2014 report edited by Equilar, a Corporate Governance data provider. The report shows multiple aspects of CEO and non-executive compensation and different factors in the U.S. and several nations in Europe.

Table 3. Stock Based Compensation Variables internationally
(Source: Equilar CEO Pay Strategies Report, 2014)

(in .000 euros)	Benelux	France	Germany	Italy	Scandinavian countries	Switzerland	UK	USA
CEO Compensation	5,720	3,950	5,665	4,878	2,106	7,018	6,100	7,641
% Salary	20	33	25	34	64	28	26	10
% Bonus	23	32	48	28	19	22	22	18
% Long Term IncentivePlans	57	35	27	38	17	50	52	72
Most common LTIP	Stock Grants, Stock Options	Stock Options	Cash	Cash	Restricted Stock Units	Stock Grants, Stock Options	Stock Grants, Stock Options	Stock Options, Restricted Stock Units
Non-executive directors fee	77	27	55	40	45	169	75	78

[6] Data obtained from a 2017 report conducted by the U.S. magazine Forbes, illustrated in the upcoming page, which has analyzed such ratio on U.S. firms from the 1960s to 2017

Interestingly, the CEO compensation, which the US is calculated as the average of S&P 500 companies appears significantly higher than the other nations in Europe with only Switzerland and the UK with an average close to the one of the US. A second interesting aspect is the division between cash salary plus short-term plans and long-term incentives. The US has the lowest percentage of salary plus short-term incentives, and an absolute majority (over 70% of total compensation) made up of long-term incentives. Even in this case, the UK and Switzerland are the closest with both reporting more than half of the total compensation made up of long-term incentive plans. Countries like Italy, France, and Germany report a slightly lower long-term compensation, varying from 30 to 40 percent. Other countries instead, such as the Scandinavian ones, put a very low emphasis on such plans, accounting for less than 20% of total compensation. This raises the question of which, among the various long-term plans, is the most popular. In the United States, the long-term incentive is provided by Stock Grants, particularly Phantom Stock and Performance Shares, followed by Stock Options. In Europe, instead, the most common form of long-term plan is Performance Shares adopted by 78% of their companies. Some European countries provide long-term cash payments as well, mainly Italy, Germany, and Spain.

Another interesting aspect is that, on average, European companies tend to adopt only one form of long-term plans, whereas in the US multiple long-term plans may be applied to the same beneficiary. For instance, stock options to promote value creation may be added to the time-based form of grants for retention and performance shares to encourage the achievement of certain results. Such combination tendency among various forms of stock based compensation within the same plan seems to confirm what was captured by Bachelder (2014). Finally, looking at the compensation of non-executive directors and recalling that the compensation of a non-executive director may be significantly lower compared to an executive such as the CEO it is interesting how even these compensations change among differing countries. The highest values are in Switzerland, the only country with an average non-executive compensation of over 160k dollars, all other countries being below 100k.

From this brief overview of the differences in compensation, we can see groupings of similar trends (US-UK, Italy-France-Spain, the Scandinavian countries). This is not a coincidence, the models vary worldwide, though the characteristics vary in many aspects, including the treatment of compensation and, most importantly, stock-based compensation, we see similar trends among closely aligned nations.

2.1.4. Current issues and design practices in executive compensation

So far, we have looked at the main features of executive compensation and their alternatives, the distinction between short and long-term plans (especially stock options).

We now turn to the most recent debate on executive compensations. The relevant literature tends to identify three very controversial aspects which are still debated today. The first one is the total volume of the executive compensation, as captured, among others, by Edmans (2016). Initially, large compensations

were mainly limited to US companies but from the 1990s they have become more common worldwide. The debate over this reached a peak during the 2008 financial crisis as several executives and CEOs managed to receive multi-million compensation packages even during the years imminent to either the bankruptcy or the bailouts of the companies they were working for. One famous case was the compensation to Richard "Dick" Fuld, CEO of Lehman Brothers. Mr. Fuld obtained over 480 million dollars in total compensation from 2000 to 2008, despite not having been able to avoid the bank's bankruptcy resulting in huge losses to thousands of investors. The crucial question, as remarket by the author, is whether such a large gap between the executives and average workers' compensation is fair. A study from the Economic Policy Institute carried in 2019 shows that the CEO compensation to average worker ratio in S&P 500 companies surged to 321:1 (as compared to 287 in 2018). Some countries reacted by drafting laws to put a cap on such a CEO to worker ratio but this is still in a developing phase. Switzerland held a referendum[7] in order put a cap of a ratio 12:1 in 2013, but it failed and was not implemented. In the US, the Todd-Frank Wall Street Reform (2010) imposed companies to disclose their CEO to worker ratio to provide this additional information to investors and other stakeholders, which could be the first steps that will hopefully lead to the introduction of some limits on gaps for companies with an excessively high ratio.

The second aspect is the relationship between executive compensation and risk-taking practices as well as the performance of the company (Smit and Swanepole, 2016). Worldwide, most compensation practices are characterized by a vast majority of the executive's compensation composed of medium and long-term incentive plans. The base salary rarely constitutes the greater part of the executive's compensation. Particularly in the United States, the long-term plans constitute the quasi totality of the executive's compensation and its volume is represented by the pay that would have been received over several years. Long-term incentives, in this case, are the main driver for the compensation. However, the 2008 financial crisis became the triggering event of the debate concerning the top managers' compensation and its relation to the company's performance. It became intense when many CEOs of top companies that went bankrupt still received multi-million bonuses in the preceding years as in the case of Mr. Angelo Mozilo, CEO of Countrywide Financial, a leading company in the subprime mortgage market that went bankrupt because of the house market collapse. In the years 2001 to 2006, the company was among the best performers in the industry, consequently Mr. Mozilo earned 470 million dollars in compensation for his long-term equity incentive plans[8] . Many scholars, including the previously mentioned Allock (2017) and politicians argued that an excessive compensation, especially long-term incentive plans, might induce

[7] Such referendum was promoted by the Swiss Socialist Party and have resulted in only a 34.7% of favorable votes. However, even if the pay cap was not introduced some other measures were introduced to limit executives power, including the abolition of "golden parachutes" and the "veto power" to shareholders when voting executives packages (Source: The Guardian.com)

[8] In the initial phases of the house market crisis, Mr. Mozillo have sold most of the shares he had acquired via the equity plans cashing in on their value, incentivizing investors to acquire Countrywide's shares to further inflate their price. On 2010 he was accused of both insider trading and corporate fraud, and reached a settlement agreement with the SEC paying a 67$ million fee (Source: Financial Times.com)

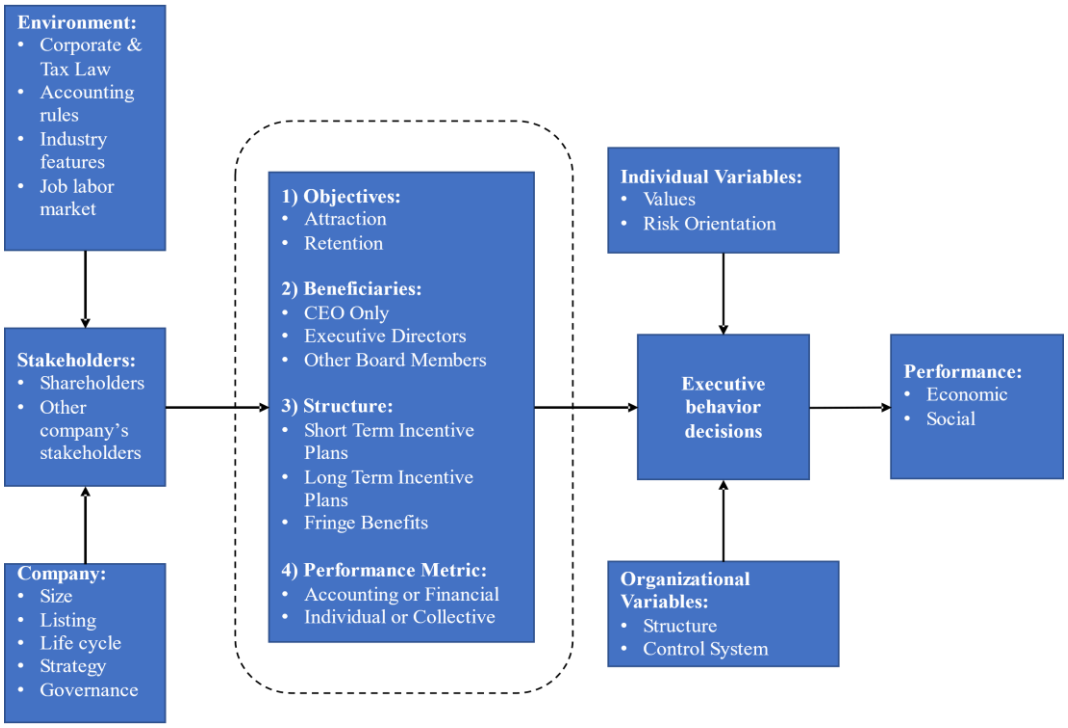
executives to adopt opportunistic behavior, undertaking risky short-term actions to maximize their compensation, whatever the cost, and taking enormous risks and destabilizing the long-term stability and prosperity of the firm. Policymakers then proposed several actions, including a balance of short and long-term incentives depending on the company's risk management practices, placing an upper limit to short and long-term incentive plans, and linking the performance objectives to metrics that can be reliably measured and are long-term oriented. The birth of Corporate Governance Codes introduced new alternatives, including "claw-back clauses", which allows companies to recover part of the executive compensation if they discover that it should have not been awarded due to illegal behavior or accounting restatements, or setting "ex ante" termination indemnities. Other items promoted by Corporate Governance Codes include, as reminded by Kirkpatrick (2009) setting a minimum vesting period and adopting performance vesting. The final debated issue was on the design and approval of the executive compensation. The organ which is in charge of designing such packages is the Compensation Committee, within the Board of Directors. Usually, other subjects, the HR manager (experts on the compensation policy) and external compensation consultants (aware of the main market trends and industry compensation levels), help the committee in designing such packages. However, excessively powerful executives (especially the CEO) might influence such design process to their advantage. This is the main concern of the Managerial Power Approach theory (Bebchuk and Fried, 2004). Powerful executives and CEOs can inflate or positively shape their compensation packages due to their excessive influence. To overcome these issues, laws and Corporate Governance Codes were reinforced, introducing several preemptive measures, including ensuring a fully independent compensation committee, hiring an independent external consultant, making the effectiveness of compensation packages subject to a shareholders for approval, and disclosing to the market the level of compensation (including its composition) for all the executives and the relative compensation policies.

We will now look at the design process carried out by the compensation committee, the HR manager, and the external consultant. Concerning this topic, many scholars have tried to define a general scheme that includes the major aspects considered in the design process. A general accepted scheme however, is the macro scheme proposed by Airoldi (2003), which takes into account several category of variables (represented in the following figure).

The first one identified by the author is represented by environmental variables which includes, at first, the local corporate and tax laws and regulations. Such laws could provide financial advantages to the beneficiaries of equity incentives or the possibility of a broader or shorter set of alternatives. In the US, for example, where the long-term incentive plans are more popular, there is a full range of alternative compared to other nations. Corporate and tax law can determine the eventual market disclosure of those same packages. Secondly are the accounting rules, which are very important as they determine how the cost the equity compensation is recorded in the income statement that impacts the level of profits. Other environmental factors include the industry features, such as the compensation structure being adopted by

similar companies within the same industry and (often used as a benchmark or reference point in designing the compensation). The industry's overall level of risk can also determine certain compensation policies. In mature and predictable industries, the use of equity incentives is less used, given the lower risk, whereas in higher risk industries, executives have to be more disciplined and therefore their compensation is likely to be tied to the company's performance via incentive plans.

Figure 6. Executive compensation variables in the design process
(Source: Personal elaboration from Airoldi, 2003)



Another environmental factor is the job labor market. Depending on the current demand and supply of the executives, the total volume of compensation will be higher or lower accordingly. And, finally, the nation's culture related to such aspects as power distance, risk orientation, and gender equality can impact the structure and the volume of compensation.

The second set of variables proposed by the author is related to the company's characteristics. The first is its size. Larger and more complex organizations need more experienced executives, so they tend to have higher volumes of compensation as well as more complex forms of equity incentives. The second is the listing in the stock markets. A listed company usually has a higher ownership dispersion compared to non-listed companies (with stronger ownership concentration) so there is a higher incentive from shareholders to provide incentive mechanisms to avoid the emergence of agency costs. Moreover, since the company's shares are more liquid compared to shares of non-listed companies providing equity incentives is easier. Another factor is the company's life cycle. Younger companies (such as start-ups) have less liquidity available for salaries and higher risk therefore tend to provide a higher level of equity-based incentives compared to mature or declining companies, which tend to provide a higher level of cash

bonuses. The company's strategy can be considered another variable. Horizontal conglomerates tend to emphasize egalitarian pay, whereas vertically integrated companies tend to have a hierarchical linked compensation structure. A final characteristic is its governance. Every company has its governance features which depend mainly on the geographical area in which the company operates. Also, Airoldi identifies as additional variables involved in the compensation design the company's shareholders and stakeholders. Once the compensation committee defines the compensation packages they have to be voted on by the shareholders which, in case of a non-approval, it cannot be applied.

At the same time, Airoldi's scheme includes aspects that designers have to consider which are related to the executive compensation itself. First of all, its objectives. It has to be clear whether the aim is to attract top management, retain the existing one, or simply align the interest with that of the shareholders (and therefore motivate). Secondly, the ultimate beneficiary. We usually refer to executives, however, some of them, like the CEO or the CFO, might be treated differently given their importance as compared to the other executives. Another aspect is the structure of the compensation and the technicalities in applying the compensation package (described in the previous sections).

Finally, a last decision concerning such macro category is related to the choice of the benchmark performance. They can be accounting, linked to formulas, qualitative, and so on. Moreover, they can regard the entire company or a division and cover an annual or other duration.

In the scheme proposed by Airoldi, all these factors influence the executive's behavior which is, at the same time, influenced by other factors including individual characteristics, such as values, entrepreneurial attitude, and risk aversion. Then there are organizational characteristics, which relate to the structure of the organization including the number of people directly supervised by the executive and the "line of sight", which relates to the ability and easiness by which the beneficiary can directly affect the metric upon which he will be judged. Other organizational factors include choosing between "outcome control" or "behavior" control. The first is preferred if more factors could potentially influence the executive's behavior or if multiple performance targets have to be reached.

The combination of all these features impacts the firm's performance, which can be analyzed from two different perspectives. First is the Economic performance. It is the most intuitive as it is measured by accounting (financial statement metrics) or using financial indicators (share price). Accounting indicators, however, could be manipulated by executives, unlike financial indicators. In many cases, financial and accounting indicators are used together to set a certain performance target (the level of both ROE and ROA). Social and environmental performance have been growing in popularity considering environmental protection and support, social policies, and governance practices (known as "ESG"). High social performance might not be related to financial statements but it can significantly impact the company's legitimacy and, most importantly, reputation among other characteristics. That's why many companies are designing compensation packages related to ESG or CSR (corporate social responsibility) practices and measures of gas emissions, waste management, and energy efficiency.

2.1.5. School of thoughts on executive compensation

Theories on executive compensation have been widely debated by scholars, especially in the United States where, as we saw, equity-based incentives are more common than in other nations. We will look at three of the major theories concerning stock-based compensation.
Two schools of thought constitute absolute milestones in the study of stock-based compensation, "Optimal Contracting Theory" (Fama, 1980) and "Managerial Power Approach" theory (Bebchuk and Fried, 2004) by authors of academic importance. We will also look, subsequently, at other perspectives to obtain a more complete picture of the literature regarding equity compensation.

2.1.5.1. The Optimal Contracting Theory

The Optimal Contracting Theory was theorized by the American economist Eugene Fama in 1980. This important theory of Corporate Governance studies is one of the first to theorize a solution to the concept of Agency Costs which is still taken into consideration today. To better understand this theory, it is important to understand the concept of Agency Costs, as it explicitly addresses it. The study of Agency Costs have been already observed by multiple scholars prior to Fama (including Ross, 1973; Mirrlees, 1976, Shavel, 1979) who have analyzed the arise of such costs as well as its implications on the company itself. Such studies have however mainly concerned the analysis and implications of Agency Costs on various aspects of the company, such as the value of the company itself or its ownership structure. Some other scholars have even debated on the difficulty to enhance a mechanism that would effectively find a solution to such issue (Jensen and Meckling, 1976). Fama instead, differentiates himself proposing a solution to such debated issue. Concerning the mentioned agency costs, they arise because of the separation in the company of two categories of subjects, the "agents" and the "principals" and their relationship. Most of the relevant literature concerning Agency Costs was developed in the US, where the vast majority of companies were (and are still today) characterized by high dispersion of ownership in their shareholding structure. The presence of a single large shareholder within a company (also called "blockholder") was uncommon and it is something that is still true today for the vast majority of US companies, unlike most other countries. With the dispersion of ownership, no single shareholder could exercise controlling power over the company, as his voting power was minimum, leading to a separation between the ownership of the company, in the hands of thousands of small shareholders, and the control, which is exercised by the managerial bodies of the company (the managers and the executives). In this scenario, the shareholders of the company are the above mentioned "principals" and the managers or executives are the "agents". The problem is that these two figures have different interests. While principals are interested in maximizing their profits the agents may be prompted to pursue more individualistic behavior to maximize their personal gains at the expense of the shareholders. These agency

costs, or "principal-agent" costs that arise from the misalignment of interests between these two subjects and a lack of control of the agents. In fact, as already remarked by and Meckling (1976), if both separate parties (referring to agents and principals) act as rational utility maximizers, there is a reasonable evidence to believe that the agent will not always act in the best interest of the principal. This is fundamental to understanding the Optimal Contracting Theory since agency cost is the issue requiring a solution. Therefore, as remarked by Mookherjee (1984), the theory's ultimate conclusion is that such agency costs are solved and mitigated through the adoption of optimal contracts set by the company's Board.

The theory began by recognizing that the classical theory behind the definition of a company could no longer be applied in the current context. The "classic" literature, following the "economic man theory", envisions the firm with a single person or a small group of entrepreneurs directly operate it to maximize their profits. (Baumol, 1959; Simon, 1959; March, 1963), which Fama rejects yet maintaining the concept of the corporation unchanged from classical theory. The company is viewed as a set of contracts among factors of production. The concept of the contract is crucial, in Fama's view, to the addressing of agency costs, as a contractual agreement between the principals and the agents is seen as the ultimate solution to create an efficient form of organization even with a separation of ownership and control. Classical theories all had one thing in common. The figure of the entrepreneur is equivalent to the agent who impersonates the whole company and is therefore also the shareholder. This is an ideal of the corporation where the managers were also shareholders, without any form of separation which is objected by Fama. In fact, as he states in The Theory of The Firm "*this [classical] literature fails to explain the large modern corporation in which the control of the firm is in the hands of managers who are more or less separate from the firm's security holders*". He therefore rejects the classical view of the entrepreneur as not fully describing the corporate economic outlook at the time. The starting point of his theory is the acknowledgment of the concept of corporation, where the two functions originally attributed to the entrepreneur (management and risk-bearing) are now separate. On the one hand, are managers, the subjects tasked with the decision-making power coordinating the inputs and carrying out the contracts agreed among inputs (within the set of contracts of the company) and on the other, we have the shareholders (defined as the "risk bearers" by Fama) who are the subjects that put their wealth ex-ante to purchase the capital and technology used by the company in its production process. It is important to note that Fama's concept of managers is slightly different from the current concept of management. Fama mainly referred to top management in charge of making the major decisions within the company and directly appointed by shareholders which today are the current executive directors instead of the overall management of the firm.

According to Fama, the problem caused by the mentioned separation of functions arises because shareholders act like rational investors. They will follow the fundamentals of portfolio theory which follows, as one of its major axioms, the ideal that the optimal portfolio for any investor is likely to be

diversified among different companies for the purpose, from his perspective, of not having his personal wealth depend excessively on one single company. As investors diversify their portfolios among more companies to reduce their risk, those same investors lose interest in monitoring the activity of the single firm, as they have a stake in many companies. This is critical since, in the authors' view, this waning interest of the shareholder (due to the diversification effect) is what causes less control over managers. At the same time, the reduction of the monitoring activity is also justified, as pointed out by Jensen and Meckling (1976), by the mentioned dispersion of ownership. This since if we assume a firm wholly owned by one individual, he will undertake operating decisions maximizing his own utility. But, as the owner's fraction diminishes, so will his claim on the business 'outcome, thus progressively discouraging the effort to properly monitor the company's activities. Moreover, the lack of control is the trigger, as pointed out by Jensen and Murphy (1990), of an "information asymmetry" problem, meaning that diversified shareholders rarely have full information concerning the company's activities or investment opportunities. The precise actions that the company's executives can take and the ones that will effectively increase shareholders' value are usually non observable by the same shareholders in the context of the mentioned separation of functions. Therefore, an information asymmetry issue arises as well in the context of a separation of the management and risk bearing functions.

The mentioned lack of control might induce managers to assume opportunistic behavior, which is also explained by the fact that managers used to receive a periodic inflow of wealth from the company (defined by Fama as the "rental rate") that was relatively risk-free, not being related to the firm's performance. Here is the source of the conflict of interest. Managers, who receive a periodic and secure form of wage, are not controlled by shareholders, which have multiple companies among their shareholdings (and are unable to properly monitor them). The managers could conduct the firm improperly and damage the long-term value of the risk bearer's shareholding and still receive the periodic sum of wealth represented by their wage. This is the core of the misalignment of interest. Concerning such misalignment of interest and opportunistic behavior, Himmelberg (1999) provides a scheme classifying the major areas under which the misalignment can take place. At first, there is the possibility of top executives of not retaining their position inside the company for a long period of time, thus creating destabilization in the company's organization and strategic direction in case of a high turnover. Secondly, there is the risk that the agent, capturing the full benefits of his wage, might be willing to work and put effort for the shareholders less than what would be the optimal amount, thus transferring only a fraction of his work's value to the company's shareholders. Finally, the most damaging aspect for the company's shareholders is related to the possibility that the top executives might enhance decisions that maximize their own utility instead of the company's shareholders one.

However, according to Fama, shareholders have one item that could be used to their advantage, the efficiency of capital markets. Security holders purchase securities being confident that the prices they pay reflect the level of risk they are currently bearing and that will allow them to obtain upsides (or downsides

– capital gains or losses) that reflect the firm's performance. This means that if the performance of the company is not satisfactory it will be reflected on the value of the firm's securities and vice versa. So, despite being potential victims of opportunistic behavior, shareholders are aware of the existence of an efficient capital market that will give proper information concerning the performance of the firm's management (and therefore of the overall company). The performance of the top management, whether good or bad, will be efficiently reflected by the company's share price. This is the second critical point in his theory. The efficiency of the capital markets and the idea of a mechanism reflecting the firm's management performance in the share value of the company is the basis for the solution offered by Fama. In this context, the best solution for shareholders to reduce their risk is to somehow "link" the manager's wage (the rental rate) to the market providing information on the firm's performance. And this is the fundamental point of the Optimal Contracting theory. Given the existence of efficient markets and the manager's wages linked to it there is no need for the shareholders to put any effort in seeking information on the management's performance, since it will be provided by the market itself. Because of the link between the reward and the market, the misalignment of interests finds a natural solution and neutralization. Therefore, the solution consists in creating contractual agreements with the company's managers promoting the use of stock based compensation in order to re align the managers' interests with the shareholder ones. This is the "Optimal Contract" that according to Fama will solve the issue related to Agency Costs. The contract, as anticipated, consists in linking the wage of the manager to the capital market that conveys all the information regarding a certain security. Fama believes that also the managerial labor market provides an incentive to managers not to behave opportunistically. First of all, because companies are constantly looking for better managers, which means that if the manager's performance is not satisfactory, he is likely to be replaced. Secondly, because there is an internal control mechanism within the company. Every manager is aware of the fact that his performance depends, among various factors, on the performance of lower-level managers and thus exerts control from top to bottom. But at the same time, lower-level managers are also incentivized to control the upper managers since they seek to step over less competent managers above them in the hierarchy.

We will now focus on the specific conditions under which such an Optimal Contract is set. Fama provides a full explanation of how such a contract works starting with the concept of "ex-post settling up" from contract deviations. The concept of "ex-post settling up" is to anticipate what possible consequences the manager faces were he to act opportunistically in pursuing his own interests causing Agency Costs to increase. But in a company where the shareholder is also the manager, it is impossible for him to avoid an ex-post settling up (bearing the consequences of his choices) if he does not adhere to the original contract by which he is employed. As both manager and shareholder, whatever decision he will make he cannot "escape from it" by obtaining a personal advantage since there is no clear separation between ownership and control and there will always be a form of full ex-post settling up for the manager-risk bearer and owner of the company's shares. The ex-post settling up mechanism could change with a separation of

ownership. With a traditional wage and a deviation from his original contract, the manager will not face a full ex-post settling up from risk bearers since he is still paid the rental rate and therefore not adversely affected by a negative performance of the firm. So, the solution proposed by Fama is to implement a mechanism by which an assessment of what could be an eventual deviation from the original contract and to embed that into it on an ex-ante basis. All of this should constitute a way by which the manager will be discouraged to deviate from the original contract, allowing a full ex-post settling up in case of a deviation adjusting the manager's wage. This should occur with the objective to transform the compensation contract into, as Fama states, "*(…) a marketable asset, (…) where its current value changes by (…) the wealth changes experienced by other factors, primarily the security holders, because of the current deviations from the contract*". The crucial point of the theory then is that the manager's wages are to be treated like a marketable asset and therefore linked to that same efficient capital market in which shareholders diversify their portfolios with the use of stock based compensation. In particular, the link must be related to the wealth changes of the bear holders by linking it with the stock of the company and thus subject to those same revaluations or loss of value to which the shares are subject. More precisely, wealth change (apart from representing the share price of the company) represents the difference between the manager's ex-post marginal product (his performance) and the marginal product contracted ex-ante. For Fama, this mechanism will completely disincentivize the manager unless he is a risk bearer from deviating since it constitutes a mechanism of full ex-post settling up that neutralizes the incentive.

However, Fama is aware of the fact that the wealth change of the risk bearers can also be influenced by factors that are not related to the manager's decision-making ability. These are "extraneous noise", that is exogenous factors that can influence the measurement of the manager's marginal product and consequently the variations in the shareholders' wealth. This noise is unfortunately inevitable and can impact the manager's wage both positively and negatively. But mechanism which allows the ex-post form of settling up renders the value of changes in future wages at least as great as the cost of deviating from the contract thereby eliminating the misalignment of interests.

The theory implies that the elimination of agency costs and the relative misalignment of interest between managers and shareholders can be achieved via an optimal contract that properly disciplines the manager's compensation. Such a contract must be drawn up so that the wage and its value is related to variations in the share price of the company, as we saw in the various forms of stock-based compensation described in the previous sections. These forms of compensation can provide the right level of incentives to executive and non-executive directors to act in the best interests of the company, making sure that they will preserve the long-term value creation and the prosperity of the company in the best interests for shareholders. This is highly relevant to the Optimal Contracting Theory since, as Fama thought, such mechanisms weas the optimal solutions to address these types of problems within an organization. In his view, even companies characterized by a high level of dispersion of ownership and separation between ownership and control can still prove to be an efficient form of economic organization. Moreover, most

importantly, this whole discussion leads to the conclusion that such "Optimal Contracts" are directly proportioned to the potential misalignment of interests and conflicts that might arise between managers and shareholders. Therefore, in Fama's view, it is clear that the more incentivized the conflicts between this two figures are and the higher the need to set such "Optimal Contracts" in order to make sure that such conflicts are mitigated. Therefore, the need to adopt Stock Based Compensation had to be strictly related to the manager's ability to deviate from the shareholder's interests.

Unfortunately, history has shown that his theory is only partially true. The optimal contracts Fama described were a valid starting point towards a solution of the agency costs, but cannot be considered a fully autonomous solution since his model does not take into account other factors linked to equity compensation such as the time length of the contracts the decades immediately after the definition of the optimal contracting theory have seen some of the most striking corporate scandals in modern history. Part of the cause was the excessive pursuit of the maximization of shareholder wealth that according to Fama's theory, was not something that could damage the company and therefore not condemned or, at least, not considered critical. The Optimal Contracting Theory clearly had to be "completed". This leads us to the theory of the Managerial Power Approach (Bebchuk and Fried, 2004).

2.1.5.2. The Managerial Power Approach Theory

The Managerial Power Approach theory arises from considerations of the limits of Fama's Optimal Contracting theory and does not have a single or precise author as many scholars have criticized the optimal contracting view and proposed other solutions. Among the most famous relevant publishing concerning the topic was *Pay Without Performance: Unfulfilled Promise of Executive Compensation*, written by Lucian Bebchuk and Jessie Fried in 2004 that describes the Managerial Power Approach theory. The theory argues that a contract that properly disciplines executive compensation is not sufficient to address agency costs, as it does not take into account other possible factors that can lead to a misalignment of interests between managers and shareholder. What could compromise such compensation contracts in large companies are the difficulties in the process by which compensation for top executives is established by the relative committee within the Board of Directors, the Compensation Committee. In fact, the compensation packages are not defined by the shareholders themselves, but by the Compensation Committee, which is part of the same Board of Directors where executive directors sit. Therefore, the Managerial Power Approach theory begins from the assumption that managerial power can shape and determine many aspects of the executive's compensation and so, despite an optimal contract, the company's executives can have such a strong influence that they can shape to their advantage how the compensation contract is established and thereby create the misalignment of interest situation between them and the shareholders of the company. The process of the compensation setting for corporate executives is seen as far from an ideal and, as already anticipated by Hirschleifer (1989), it is viewed as a

part of the agency problem itself. The major conclusion is therefore related to how compensation packages not only can reduce the incentives for executives to increase the long-term value of the firm, but, as also remarked by Rajan (2001), even create incentives to take actions that decrease such long-term value creation. Bebchuk and Fried also argued how such excessive influence was a problem that characterized the system as a whole, a structural problem within Corporate Governance, where the managerial influence over the board of directors is able to define many aspects of the compensation packages. In other words, the Optimal Contracting Theory, or the "classical view", is unable to avoid agency costs and, coherently to what was pointed by Zingales (1998), have been excessively followed by the relevant literature neglecting the role of the managerial power.

Bebchuk and Fried firstly analyzed the limits they saw of such non-optimal compensation packages to understand what caused them. An important first aspect of the Managerial Power Approach Theory is that, in the authors' view, the problem of the misalignment of interests between the managers and shareholders is not related only to executives. According to classical theory, the Board of Directors should automatically solve agency costs. Celentano (2020), remarks as well how such aspect is true as long as if the other members of the board, including non-executive directors, independent directors, and the members of the board's committees (especially the Compensation Committee), are "immune" or not involved in such misalignment of interests. In other words, who can guarantee that other members of the board of directors are not subject to those same conflicts of interest? As Bebchuk and Fried wrote, *"just as there is no reason to assume that managers will automatically seek to maximize shareholder value, there is no reason to expect that the remaining directors will either, (…) director behavior is also subject to an agency problem*". All the members of the board according to the authors are in many ways linked to the executive directors and so vulnerable to them.

These links are caused by several factors. First, is the inevitable desire of every board member to be reelected, as being a member of the Board of Directors of a large company carries with it prestige, social connections, and benefits other than the compensation. The decision of whether one is to be nominated is in the hands of shareholders, so the reputation of not acting in their best interest would certainly be a disadvantage. However, some key figures of the board and especially the CEO can strongly affect the nomination process by influencing the nomination committee. Therefore, opposing him or other top executives excessively or contradicting their compensation process could diminish the chances of being reelected. Concerning such aspect, Nasaw (2003), reminds moreover how a board member excessively critical towards the compensation packages for the executives might also face the risk of not being invited to serve on the boards of other companies. Another aspect is the ability of the CEO to grant benefits to individual directors within the company. The CEO has a strong influence in various aspects of the compensation process for other directors and can encourage or discourage increases in their payments (especially to independent directors). So, in return for cooperative behavior concerning his own compensation, the CEO can promote higher payments for other board members, a sort of "insider

cooperation" system. Thus, individual benefits can bias other board members in defining advantageous payment arrangements for the CEO and other executives.

Another significant point of the Managerial Power Approach on which the authors focus is on the "power-pay relationships". In fact, these mentioned ways by which the CEO and other executives can influence the other board members depend on certain preconditions and the presence of contextual factors related to the power they have within the company. Bebchuk and Fried identify in three indicators of such power. The first is related to some formal features of the board. The authors believe that the influence of executives and the CEO is higher the greater the number of members of the board, since as the number increases it will more difficult for them to organize a coordinated opposition to the CEO. The higher the number of independent directors whose nomination has been influenced by the CEO and other executives, the more loyal and dependent on the CEO they will be, making it difficult for them to oppose the compensation design. Core and Larcker (1999), came to the similar conclusion that such difficulty is greater if the independent directors serve on more than one board, as they will be less focused or involved in any individual company. A second factor concerning the board is the ownership structure, as the authors particularly referred to the US economy characterized by a strong dispersion of ownership compared to other counties. However, the eventual presence of a larger shareholder, who will be more dependent on that company and more interested in it, could generate a greater control towards the executives, making them less influential in the compensation design process. Finally, another indicator of the strength of the board is the presence of institutional shareholders, as they are more interested in monitoring the executives of the company and its CEO compared to other types of investors. This is not only, as anticipated by Jay and Starks (2003), because of the need to generate returns for thousands of investors, but also since they do not have business relations with the firm but only financial ones and are therefore are mainly interested in the economic performance of the company and its share price variations.

So far, we have seen how the executives of the company may be able to influence via their managerial power the compensation design process. But, as observed by Randall and Kenneth (1999), the extent to which other board members and the compensation committee are willing to passively accept such influence only extends as far as such compensation package is "defendable". If a compensation package is designed outrageously, whoever is responsible for it will inevitably face social or "outrage" costs (even including exclusion from business circles, denigration by the media, and so on). This highlights how the design of these packages can be influenced by the potential perception of external viewers, leading therefore to the "camouflage" phenomenon, a further risk in the case of an excessive level of managerial power. As is clear from the name, it consists of the act of obscuring or making less clear the compensation arrangements to avoid bearing outrage costs, which can be accomplished in many ways, including mechanisms to not disclose compensation costs fully in shareholder reports, shifting the tax liability to the firm instead of on the executives, and so on. This implies that managerial power can cause,

other than a setting non optimal contracts, a camouflage of them as those, enhancing practices that deviate from what would be expected under an optimal contract. Such deviation, in the authors' view, might take place in several ways.

First of all, the compensation agreement might be compromised first by non-equity compensation, the base salary. Every executive has a part of his compensation composed of cash. These cash payments are not, unlike the equity portion of the compensation, related to the performance of the company and represent an amount of money that is periodically received from the executives. The problem is when, according to the authors, the cash salary is too high to properly incentivize the managers to focus on the performance of the company. Moreover, as pointed out by Murphy (1999), in such scenario the incentive of the manager can still be compromised if the cash is excessively high even if it were to constitute a minority of the overall package. But the most important problems are related to the equity component of the compensation. That same equity component that was considered by Fama the automatic solution that should have neutralized the misalignment of interest and the opportunistic behavior of the company's executives. Bebchuk and Fried believe instead that there are multiple aspects of equity compensation that are not optimal and can still cause a potential conflict of interests. First of all, the structure of the stock option plan. In the previous sections, we have seen the main features of a Stock Option Plan and how the variation of the share price of the company is the critical component in determining the gains or losses for the executive. However, the authors believe that such a mechanism is not completely reliable, as it allows the executives to benefit from an appreciation of the stock price of the company which is not due to their personal or the company's performance. Meulbroek (2001), pointed out as well how such scenario might allow the executives to be rewarded even for a market-wide or industry-wide upward movement, in which the performance of the company might still lag behind that of their peers. A second feature that they criticize is the structure that allows executives to gain from what could be a temporary and short-term spike of the company's share price. If the option can be exercised immediately once the vesting period is over without any restriction, they could benefit from just such a temporary increase in the share price of the company, therefore obtaining gains not supported by an effective performance improvement. Moreover, executives and the CEO might be encouraged by manipulation of the earnings or other elements just to create that short-term spike that will allow them to obtain a profit.

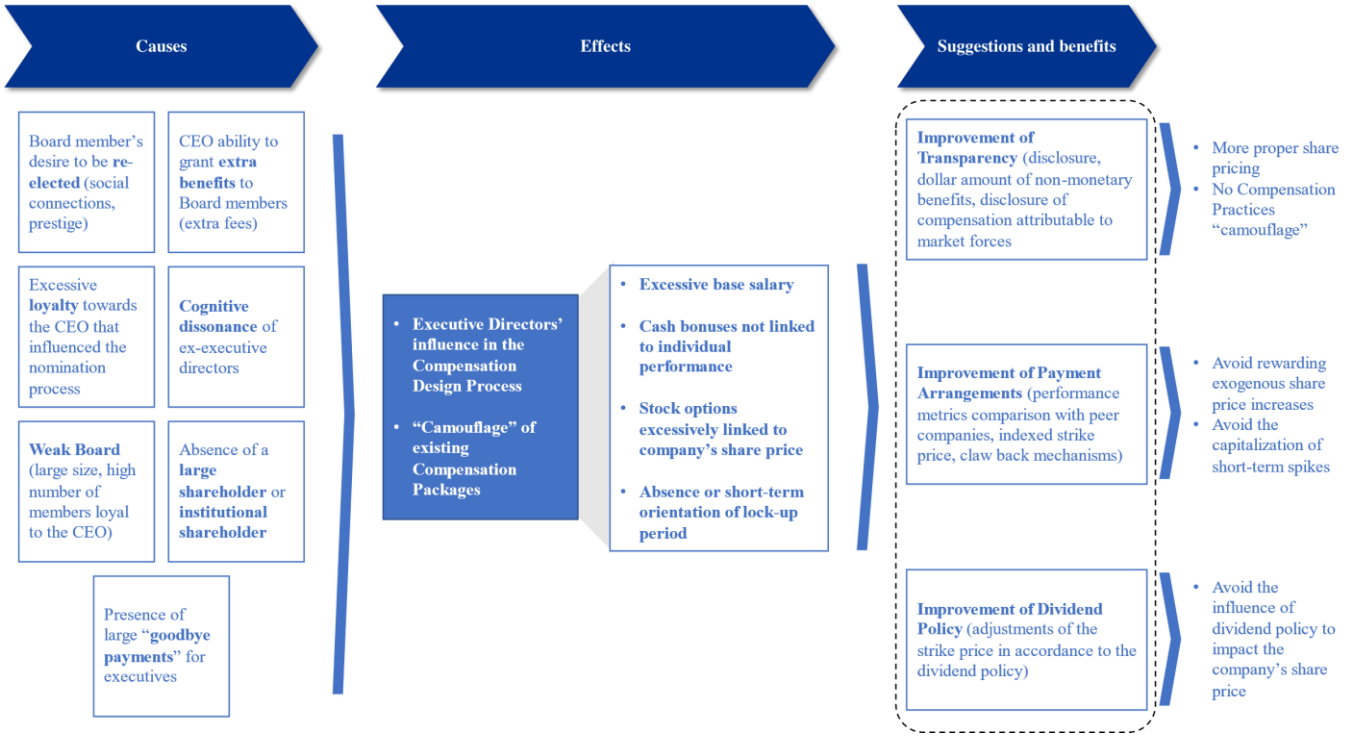
Having seen how aspects of the compensation can be manipulated by CEOs and executives with significant managerial power and that, despite the optimal contracts described by Fama, there still are possible ways to create agency costs, the authors realize that as good a tool as optimal contracts can be, it is not enough. Anyways, Bebchuck and Fried provide possible solutions to such problems as well as recommendations. Their solutions would reduce the managerial power and reestablish the equilibrium and the alignment of interests among shareholders and the executives of the company. The first recommendation is to raise the level of transparency. One of the problems concerning the compensation for executives is how certain information related to the compensation packages is disclosed. Raising

transparency would result not only in more proper pricing of the company's shares from the market (therefore better reflecting the executives' performance) but also in rendering the phenomenon of "camouflage" more unlikely. Some ways to improve transparency include calculating the dollar amount for all the benefits provided to the executives (consultancy, fringe benefits, post-retirement plans) and include the results in tables that must be provided to regulative authorities, disclose all the non-deductible components of the executive's compensation, and, most importantly, disclose how much of the equity compensation is attributable to market or industry factors and regularly disclose how much of the equity incentives executives periodically (e.g. yearly) unwind. The second suggestion proposed by the authors is related to the improvement of payment arrangements. Some adjustments to the payment arrangements can properly address the pay-for-performance issue and effectively stimulate the incentives for executives to perform better. Such objective can be achieved, in the authors' view, by reducing windfalls in both bonuses and equity compensation since part of the variation of the share price of the company or other factors might be influenced by other than the individual ability of the manager, such as industry or general market trends. Therefore, equity incentives and bonuses have to take into account that an executive might obtain a benefit from those even without having contributed to them. Relatively to bonuses (which are usually based on accounting rather than financial performance) the best way to implement an adjustment is, according to the authors, avoiding bonuses based on an absolute increase of company metrics (such as sales or earnings) but rather to observe their variation in relation to peer companies, and adjusting them according to the variation due to external forces. With respect to stock options, a way to adjust for external factors is to index, as already suggested by Meulbroek (2001) and Rappaport (1999), the exercise price of the option or linking it to variations of the worst performing company in the industry. Other recommendations include the following. First, there should be a limitation to the unwinding of equity incentives. This means that the compensation arrangements have to make sure that the executive will be constrained to hold the shares once the vesting has ended for a reasonable number of years (2 to 3) to make sure he will be incentivized to further contribute to the value creation of the company. As also remarked by Fried (1998), this should also reduce the risk of the manager capitalizing on a short-term spike of the company's share price caused by external factors. Another recommendation focuses on the connection of payments to the effective performance of the managers. As we saw, for many reasons, executives and CEOs might be induced to manipulate some accounting measures to boost short-term performance. Therefore, to reduce such a risk, compensation packages should include several "clawback" mechanisms, that would force the executive to pay back the company a certain amount of the earned compensation if some accounting measures are restated in the future, that is, a reverse payment mechanism in case the values prove to be erroneous. A further recommendation is related to dividends. We saw in the previous sections how dividends might negatively impact the share price of the company, inducing holders of equity-based payments to reduce them in favor of share buybacks (which have the opposite effects on the share price of the company). Therefore the authors,

similarly to other scholars including Jolls (1998), suggest how compensation packages have to adjust the exercise price of stock options accordingly to reestablish neutrality in the dividend policy. In the case of dividends, the exercise price should be reduced and vice versa for share repurchase.

We can therefore notice how such approach has a totally different view compared to the optimal contracting theory. As illustrated in this section, Bebchuck and Fried's main argue is that executive compensation arrangements can be considered an integral part of the agency problem, providing a specific description of both the causes and implications of such power. A power which conducts to the structuring of compensation arrangements which are not only considered inefficient or not optimal, but also potentially triggering of suboptimal incentives including the camouflage process to avoid outrage costs. This ultimately leads to the conclusion that, differently from Fama, Bebchuck and Fried did not believe that the use of stock based compensation was more accentuated as a reaction to higher agency costs within the company. Paradoxally, a higher usage of stock based compensation could, in the authors' view, produce the opposite effect: enhancing (or at least not eliminating) agency costs and therefore negatively impacting on the company's value and performance. The following figure is a synthesis of the main aspects of the Managerial Power Approach theory, including a synthetic scheme showing what, according to Bebchuk and Fried, are the causes that can lead to excessive managerial power and influence inside the Board as well as the outcome-effects of such causes on the compensation design process and, secondly, their suggestions to reduce such excessive influence.

Figure 7. Factors influencing the Compensation Design Process and suggestions to reduce Managers' influence
(Source: Personal elaboration from Bebchuck and Fried, 2004)



2.1.5.3. Other theories concerning Stock Based Compensation

Other than the Optimal Contracting Theory and the Managerial Approach Theory, it is interesting, to complete our understanding of the phenomenon, to briefly observe some other theories concerning Stock-Based Compensation, covering other aspects that the two previous theories don't focus on.

As we saw, the first one concerns the ways that optimal compensation contracts can neutralize the incentives for executives to deviate from the original compensation contract and so eliminate the misalignment of interests among managers and shareholders. The second instead focuses on describing how, despite such a contract, the company's executives and the CEO can still manage to influence and orchestrate those contracts in such a way to be beneficial to them at the expense of shareholders.

However, whenever we talk about Stock-Based Compensation we must never forget two critical implications it has for the company. First of all, whenever a company provides any form of equity-based compensation to one of its employees, it should take into account its opportunity cost, which means that it should be aware of what the consequences would be if that same equity instrument were attributed to an external marketplace participant instead of one of its employees. Secondly, whenever new equity instruments are issued, the company faces the inevitable consequence of a dilution among preexisting shareholders. It would be interesting, therefore, to briefly look at these two aspects to better comprehend this phenomenon.

Concerning the first aspect, many scholars including Muurling and Lenhert (2004), believe that it makes Stock-Based Compensation (in particular the use of Stock Options) a "value-destroying tool" for the company in which it is adopted. Such view is quite diverse from the theoretical classical theory, which includes the previously mentioned Fama (1980), that considered, as we have described, such form of compensation as an optimal tool for the company. That is why this theory and other theories that contemplate this value disruption aspect are also named "Gap Cost Value" theories. According to Muurling and Lehnert, the use of Stock Options as a compensation mechanism for its employees is not optimal for the company because the executive and the employees that are rewarded with this type of compensation are usually subject to several restrictions. As we have also seen in previous paragraphs, executives are usually unable to diversify their shareholdings, which means that they are prohibited from taking actions to hedge their risk position (such as buying competitor's stock or short selling their own company's stock) and they also have restrictions on the trading of those same options. Concerning such issue, Abowd and Kaplan (1999) pointed out how such inability of properly hedging risk is inevitable and it cannot be avoided, as it is the key in order to properly secure the potential arise of agency costs among the company's executives. Therefore, such issue is related to agency costs as well, given that not imposing such limitations (which constitutes a form of control) on the company's executives might induce them to enhance opportunistic behavior and to deviate from the shareholders' interests. This ultimately means that the use of such form of compensation (mainly stock options) is not seen by the

authors as an optimal tool to address agency costs as, in spite of imposing limitations on executive's behavior, generates such cost-value gap which can ultimately be harmful to the company itself. This means, as also remarked by Bulow and Shoven (2005), that whoever receives the stock receives less than the cost incurred by the company to grant them, rendering the stock option value to be below its market value resulting in an opportunity cost for the company. Comparing it with the result if, instead of attributing the stock option to one of its employees, the company had attributed that same option in the market to investors that could have properly diversified their positions (therefore receiving the full market value), the opportunity cost is then represented by the value loss of not having sold the option into the market and selling it instead to employees who could not diversify and hedge their positions. This means there is a resulting gap between the value attributed to the employee and the cost for the company. Therefore, from this point of view, stock options are seen as an expensive tool for the company, and not a fully optimal solution to address agency costs. The authors propose therefore the use, among other forms of equity compensation, of alternatives including the use of Restricted Stock. This since such form of compensation always provide the receiver with some sort of value, unless the company goes bankrupted. Therefore, such solution can properly still incentivize the executives (and therefore reduce the chances of agency costs to arise) regardless of the stock price (whereas the incentivizing power of a stock option which is not in the money is approximal to zero) and avoid the previously mentioned gap. Also, the use of such alternative solution can, according to the authors, affect the top executive's incentive to undertake excessively risky investments. For instance, an out of the money option might induce a company's top executive to undertake riskier decisions (hoping to lift the company's share price and make his option "in the money") which can negatively impact the overall company's value. Hence in case of an out of the money option, agency costs are more likely to arise compared to an equal level of compensation constituted of Restricted Stock.

Such topic is covered well by Hall and Murphy (2003). In their study, the authors try to answer the question if whether the use of stock options and other forms of stock based compensation are really the most efficient solution in order to attract and motivate top-managers. They argue, similarly to Muurling and Lenhert (2004), that traditional option pricing models such as the Black and Scholes model are not appropriate to value the options attributed to employees, as they are unable to diversify, are on average risk averse, and cannot hedge their positions. What they argue then is that whoever receives the stock option should be rewarded instead with a diversified portfolio of stocks or other forms of cash compensation rather than a stock option that is non-tradable and non-diversifiable. This renders the value attributed to the employee lower than the company's cost for the provision of such a stock option. In the authors' view, such concept is also remarked by the fact that, if the value of the stock options granted to the employees was really equal to the cost for the company in issuing them, employees should be solely paid in options instead of cash. Moreover, as anticipated, Hall and Murphy focus their attention on the use of stock based compensation relatively to the retention of the company's top management and employee

motivation as well. Concerning the retention, the authors argue that, even if a top executive might be incentivized to stay in the company whether if, for instance, the stock options he owns are in the money, the achievement of an efficient retention incentive might occur with other solutions. In their view, companies could offer retention bonuses, deferred compensation or retention incentives. In other words, the use of such forms of explicit cash long term bonuses could enhance a higher incentive to retention compared to traditional stock based compensation. This especially in the case of "bear market" periods, where stock prices can be underperforming and likely to be below the stock options' exercise prices (making them, therefore out of the money). In such scenario, without the presence of the mentioned explicit cash bonuses, a period of market downturn will, in the authors' view, inevitably generate a massive shift of the company's executives to companies offering other forms of non-equity compensation packages. Also, Hall and Murphy focus on the motivational aspect of stock based compensation. In fact, considering that only a small fraction of the company's employees are executives and that mid-lower level employees usually have a cap on their potential shareholding, other forms of compensation (including cash-based incentives) should be enhanced in order to properly motivating the company's employees and improve their performance. As a conclusive insight of their study, Hall and Murphy also provide an explanation for why, according to them, in spite of their above mentioned argues, the use of stock options was still highly utilized among US firms. The authors reached the conclusion that a possible explanation can be the "perceived-cost hypothesis", already theorized by Murphy (2002), according to which corporations would grant stock options basing themselves on their perceived rather than their economic cost. The issuing of stock options in fact, while making the company bear the economic opportunity cost mentioned above (also coherently to what was described by Muurling and Lenhert), does not generate the bearing of any accounting costs, as well as no cash outflows (other than a tax deduction if the option is exercised). Such aspects make the "perceived cost" of the stock option lower than its real economic cost, and the base on which stock options related decisions are made. Therefore the perception that granting options would not generate nearly any cost for the company in an efficient way is seen as an explanation for why such instruments were still granted despite their disadvantages.

This is the thinking behind the "Gap Cost Value" theory, in which the grant of stock options is not considered an optimal tool for the receiver, as he is legally unable to hedge his position or trade the stock, and for the company as well, as it could attribute that same instrument to diversified investors not subject to those restrictions (other than not being considered an optimal retention and motivational tool).

The second, briefer, aspect is related to the dilution effect tradeoff of issuing new stock via stock option plans (Gray, 2002). Whenever new shares are issued in fact, the value of the company's earnings per share declines, as the same level of earnings has to be divided into a larger number of shares and the cash value that the company receives is lower compared to the value the company would have otherwise received. This is due to the fact that when we have stock options or other typologies of equity incentives they are issued at a price below the market value (therefore the price at which the equity would have been

sold to external marketplace participants). This means that if the shares had been sold in the market at their full value, the company would have raised more cash that could have been reinvested inside the company to further increase and boost its earnings. At the same time, Grey remarks how such opportunity cost persists even if the company decides, in order to avoid having its earnings diluted, to purchase treasury shares to distribute to the beneficiary at the exercise of the option, as those same treasury shares would have to be inevitably bought at cash. Even in this case, we can see how there could be an opportunity cost for the company that is not represented in its financial statements but in the company's cash position. Such trade-off related to the dilution effect caused by the use of stock options have been similarly remarked as well by Bodie, Kaplan and Merton (2003). Regarding the dilution effect generated by the issuance of stock options and other forms of stock based compensation, another interesting insight is provided by Bens, Nagar and Wong (2001). As they argue in fact, the previously mentioned earnings per share dilution effect is often mitigated by companies throughout share buyback policies which are, according to their finding, mainly financed by cutting longer-term R&D, capital expenditures or divesting from profitable investment projects, causing therefore agency costs not to be eliminated. Thus in their view, an excessively high level of stock based compensation can negatively impact such long-term innovational aspect, due to the attempt of balancing the diluted earnings per share ultimately caused, in their view, by an average excessive concern on short-term EPS improvement by corporate executives.

These are briefly the last two considerations regarding stock-based compensation theories. As we have seen in the previous paragraphs, there are differing opinions concerning Stock-Based Compensation and its related tools. Beginning with Fama, who considered them an absolutely efficient solution on to Bebchuk and Fried, who described how such a mechanism is not quite as perfect as it seems. We have seen how difficult it is to understand whether there is a prevailing philosophy by major scholars who believe whether such mechanisms are effectively useful, as there are conflicting opinions in the literature over the years concerning not only how such mechanisms could permit an alignment of interest between managers and shareholders, but also whether they can be considered an efficient solution for the company as a whole.

2.1.6. Relationship between Stock Based Compensation and company's performance

In section 2.1, we have looked at the major aspects of stock-based compensation covering the structure of the various alternatives, the objectives, the design process, and two illustrious theories related to how such form of compensation can reduce the presence of agency costs within the company. However, to obtain a broader view of stock-based compensation, we need to ask ourselves whether a relationship exists between the level of stock-based compensation and the firm's performance or value.

I believe that such a question is appropriate following the previous overview and this chapter is to complete the picture of the stock-based compensation analysis. Several studies have tried to verify a

relationship between stock-based compensation and the firm's performance. On this final point, the relevant literature seems to be quite divided. On the one hand, many studies have found a relationship between aspects of stock-based compensation and performance, many other studies have failed. A cross border and systematic analysis of such studies show a lack of a robust conclusive relationship, as the results are quite diverse and there is no presence of a deep theory on the topic (Zattoni, 2020). Among the many studies that have failed to prove evidence of a positive relationship (Cordeiro and Veliyath, 2007; Jeppson and Smith, 2011; Ozkan, 2007, Kubo, 2005). In some other cases, the relationship that emerged was, surprisingly, actually a negative correlation between elements such as the company's overall stock returns and the CEOs or other executives' stock compensation. For instance, Cooper and Gulen (2013) have found evidence that an excessively high level of stock based compensation (especially an option-heavy one) for the company's CEO and other executives can contribute to an enhancement of his overconfidence, something which can ultimately lead to excessive risk policies and other shareholder value destroying activities, including overinvestments and unjustified mergers and acquisitions. Another significantly negative relationship between the firms ROA, the firm's market stock return and the executive stock based compensation was found by Duffhues and Kabir (2008), suggesting therefore the lack of a relationship between both accounting and market-based indicators and the company's Board stock based compensation. Other researches have even shown the absence of a link between some corporate governance indicators, especially regarding the independence of the Board of Directors and the company's performance (Erickson, Park, Reising and Shin, 2005; Main and O'Reilly, 1995). However, various other studies have instead shown the opposite, showing a positive relationship between stock-based compensation and the firm's performance. For instance, Mehran (1995) investigated in over 200 non-financial U.S. companies the relationship between the firm's performance and equity-based executive compensation showing a positive relationship between the compensation and both the Tobin's Q Ratio and the Return on Assets (ROA), indicating therefore how a more stock based compensation intensive policy in the company's Board corresponds and it is positively related to the enhancement of the company's performance and in the improvement of corporate efficiency. At the same time, it is interesting to observe how the author identifies several other relationships among the level of stock compensation inside the Board and some corporate governance indicators. In particular, it was found that higher the equity held by the company's outside blockholders (the company's largest shareholder) and lower the level of stock based compensation within the board, suggesting therefore that the presence of large blockholders in the shareholding structure, and their subsequent monitoring, can trigger a substitution of equity incentives for the company's executives. Other interesting facts were brought out by Jensen and Murphy (1990) who, analyzing the equity compensation of over two thousand U.S. company CEOs from 1974 to 1986, found a positive relationship between the firm's performance in terms

of firm values (both Equity Value and Enterprise Value[9]) and the equity compensation for the company's CEO. Also, a positive relationship was found between the changes in shareholder's wealth and the mentioned CEO compensation, where the shareholders' wealth was referred to the rate of return of common stock, therefore the company's ROE. Another study, carried out by Baysinger and Butler (1985), shows a positive relationship between the level of stock compensation of more independent Boards of Directors (characterized by factors such as a higher number of independent directors) and the firm's performance, especially in terms of Return on Equity, which was specifically chosen as a measure for shareholders' welfare. Such conclusion remarked the importance, in the authors' view of enhancing board independence in order to improve shareholder's wealth (defines as an "important performance variable") suggesting therefore how corporate performance might be influenced by board features. A similar conclusion was also reached by Rosenstein and Wyatt (1990). Concerning the relationship between corporate governance indicators and the firm's performance, several studies have shown a positive relationship between the independence of the Board of Directors (especially in the presence of independent directors) and the company's performance (Xie, Davidson and Dadalt, 2001, Byrd and Hickman, 1992, Weisbach, 1988).

We can therefore see how a major trend is absent in the past relevant literature with respect to both the relationship between the stock based compensation and performance and the relationship between some corporate governance indicators and the company's performance. While many scholars sustain a positive relationship that should prove the validity of stock based compensation, many others argue that such a relationship is difficult to demonstrate convincingly because of both theoretical and methodological problems consisting mainly of the firm's or of environmental-level variables and firm-specific governance practices (Zattoni, 2020). At the same time, we can notice how, in many cases, the relevant literature have focused on some specific figures, analyzing only, for instance, the CEO's equity compensation. In the following chapter, we will nonetheless carry out an analysis to verify the existence of a relationship between the level of stock based compensation for the whole company's board and several company performance indicators. This is mainly to verify which of the above works in the literature find confirmation in order to ultimately establish whether a relationship between stock based compensation and the performance can be proven or, as many scholars argue, if such a relationship does not exist.

2.2. The Corporate Governance

[9] The Equity Value of a company refers to the total market value of its outstanding shares, therefore its market capitalization (obtained by multiplying the company's share price times the number of outstanding shares) that is equal to the company's total assets minus its liabilities ("Net Assets"). The Enterprise Value instead is represented by the "Net Operative Assets", therefore the difference between the company's operative assets minus its operative liabilities (Source: Vulpiani, 2014)

In all of section 2.1, we have discussed, coherently to the relevant literature, the many aspects related to stock-based compensation. Apart from the description of the stock compensation itself (from the inputs that are considered in the design process to the various output alternatives), we have also described how such compensation is related to the company, to its objectives, and to some key figures (such as the executives, managers, the CEO, the Compensation Committee and so on).

To complete our picture of the context for stock-based compensation, it is important to provide an overview of Corporate Governance, to understand the role that stock-based compensation plays within the company's objectives as a whole. First, we need to define corporate governance. Defining the concept of corporate governance is important if we are to grasp its related models and mechanisms, especially since there is no universal definition of the concept of corporate governance but, rather, conflicting definitions which are strictly related to different ideologies concerning both the firm's purpose and its governance model. Therefore, by establishing a certain definition, we will be able to understand the relative ideology behind it.

2.2.1. The definition of Corporate Governance

To define corporate governance, we will begin by looking at the definitions provided by scholars and academics. The first definition which is interesting to note is the one provided by David F. Larcker, professor at Stanford University. In a 2007 paper, he defines the concept of corporate governance *as "the set of mechanisms that influence the decisions made by managers when there is a separation of ownership and control"*. As we can tell, in Larker's view, corporate governance is a mechanism, therefore something that has to be implemented within a company. And like any mechanisms, it can be implemented only with the aid of several tools. We can therefore intuit how such a mechanism must be implemented properly and is not something that automatically arises when companies are established. At the same time, it is worth noticing that such a mechanism, according to Larcker, has to be adopted with a precise scope, which is the influence and conditioning of the decisions taken by managers. This means that corporate governance specifically applies only to a certain group of people within the company, that is to say, the managers. What is most interesting is that this all has to be put in place in a specific context which is, in particular, the separation of ownership and control, which is Larcker's base scenario. Corporate Governance, in his view, is constituted by those mechanisms to protect shareholders and is enhanced whenever there is a separation between the ownership and the control sphere within the company, in other words, when the figures of the shareholders and of the managers are separate. For this reason, a series of mechanisms need to be enhanced to control those same managers, to make sure that they act in the interest of the shareholders that appoint them (Larcker, 2007).

A second and more detailed definition, but similar to Larker's, is provided by Zabihollah Rezaee, professor at Memphis University in his 2003 paper, where corporate governance is defined as *"the set of*

legal and institutional mechanisms having the aim to protect the shareholders' interests and to reduce the agency costs due to the separation between ownership and control". We can immediately notice how even Rezaee is very clear in stating how corporate governance, by him also defined as a series of mechanisms, is used within a specific context, again characterized by the separation between ownership and control, and the purpose of corporate governance is, therefore, to protect the shareholders from the management's potential misbehavior. Such similarity is not accidental. Both point to the same context of separation of ownership and control. This is the typical context found in Anglo-Saxon countries. These companies characteristically are found to clearly separate ownership and control with a subsequent dispersion of ownership (whose specific features will be covered in the following paragraphs).

Another important definition, but which looks at the concept of corporate governance from a different perspective, is provided by Robert Hanson and Moon Song, two professors from San Diego State and Michigan State universities. Their definition is based on a different rationale as compared to the one Larker's and Razaee's one. They define Corporate Governance as the *"bundle of internal and external mechanisms, aiming to reduce the misalignments among the firm and the different stakeholders who have relationships with the firm itself*". From their definition, we can immediately see that the focus is different from the one provided by Larker and Razaee. In this definition, the focus is not on a specific category of people, where corporate governance was to be used only to protect shareholders. Here the focus is on the generic misalignment of interest between the company itself and a series of other subjects which interact with it (the stakeholders). Therefore, from this perspective, the problem is not to protect shareholders from the company's management behavior, but the mitigation of potential conflicts that could arise between the company and its interacting subjects. In other words, this scenario does not explicitly refer to companies with a dispersion of ownership and separation of ownership and control but even applies to companies with a higher level of ownership concentration, which is more typical of the Latin countries (these specific features are also described in the following paragraphs).

In summary, universally defining Corporate Governance is not easy, as there are multiple definitions provided by different scholars each related to differing contexts characterized by a series of features that regard different ownership structures, governance objectives, and the final recipients. In particular, we note the contrast between two macro ideologies, and the definitions deriving from them, concerning the generic objective of each company. These ideologies are known as "Shareholder Theory" of companies to be found mainly in Anglo-Saxon countries, coherently to the definition of Larcker and Razaee and the "Stakeholder Theory", characterizes mainly the Latin countries are closer to the definition provided by Hanson and Song. The conclusion derived from all this is that the definition of Corporate Governance changes according to the context in which it is applied (Fiori, 2016), because, as we will see in the upcoming paragraphs, corporate governance itself, and its various aspects, change based on the different contexts and scenarios in which companies operate.

Understanding the fundamentals of such two distinct theories is extremely useful in comprehending the relative corporate governance aspects that characterize the various companies and ultimately the significance of the different definitions. We will now focus on the description of these two ideologies.

2.2.2. The "Shareholder Theory" and "Stakeholder Theory"

As mentioned above, there are two macro ideologies concerning the nature of extremely relevant companies and from which we can derive two different definitions (and therefore objectives) of Corporate Governance. The first one is known as "Shareholder Theory", proposed by the American economist Friedman in 1962. According to this theory, the main objective of each corporation is the maximization of shareholder's profits and value through operative and dynamic efficiency. Its major focus group is the equity holders who have to be properly satisfied by managers in terms of performance. In this theory then, managers have to run and manage companies with the objectives to maximize the level of profits, at least reaching the preexisting shareholders' expectations. This theory is therefore extremely shareholder-oriented and does not focus on other categories of stakeholders since equity holders have to be properly remunerated, as remarked by Alchian and Demsetz (1985), due to the residual basis of their income and the risk capital they provide to the company. In this scenario, the performance of the company (meaning the criteria by which we can state whether the performance can be considered positive or negative) can be measured simply in terms of the accounting and financial returns that the company generates for shareholders, including metrics such as the level of dividends, the return on equity, and so on. With such a straightforward definition, we can conclude that the management's role is to try to do everything possible to improve the company's performance, which will ultimately affect shareholder's returns and value. The rationale behind such shareholder-satisfaction pursuit is the fact that if managers are able to maximize shareholder profits and value it becomes beneficial not only for shareholders but for the managers as well, which are then likely to be reconfirmed in the company or even obtain promotions and other compensation benefits (Fiori, 2016). This theory finds its origin in the US at the beginning of the 20th century where, as pointed out by Maher and Andersson (2000), with the birth of the concept of "modern corporation", the increase of dimensions of companies resulted in a dispersion of the shareholding structure and a separation from its ownership (shareholders) and control (managers). This divergence is the critical issue of how Corporate Governance should act in this case. The moment in which the management sphere of the company is enhanced by figures (managers) who have no economic interest in it (as they are not owners), their interests might be different from that of the owners of the company (shareholders) and may be focused, for instance, on salary maximization instead of performance maximization. The role of Corporate Governance in this case (as outlined by Larcker, 2007 and Razaee, 2003) is therefore to address conflicts of interests that might arise between shareholders and managers,

providing a series of rules and improving varying mechanisms to properly discipline managers and align their interests with those of the shareholders, thus making sure they act in the shareholders' interests.

Then there is the stakeholder theory, proposed by Freeman in 1984, with a different rationale. As he argues in fact, the theory mainly arises from the major negative aspects of the shareholder theory, that is the fact that managers, in the context of pursuing the maximization of profit and shareholders' value, might be so shareholder oriented to shift negative externalities onto the company's stakeholders or its community. Therefore, as also suggested by Zattoni (2020), the maximization of profits have to be pursued, in the shareholder theory, at all costs, even going so far as to make decisions on sensitive topics such as disposing toxic waste, employing child labor, or harming the environment. In contrast to this view, the stakeholder theory proposes a new objective. The rationale behind value creation for shareholders is not discarded but, differently from the shareholder theory, this value creation is considered at the same level as the value creation process for all the counterparts that interact with the company, the stakeholders, which include all those entities which interact directly or indirectly with the company, such as employees or creditors or the overall community, and that can be potentially impacted (not only economically but also socially or environmentally) by it. Goodpaster (1991), remarked how, in such scenario, each company has to operate following the noble concepts of business ethics and moral principles which will lead the company to act as a socially responsible figure pursuing the interests of multiple categories of subjects. We will see how this theory, despite being less popular initially, became more relevant with the advent of the new millennium even in countries (like the US) in which it was traditionally largely ignored. Examining the rationale behind this theory, it seems difficult to find some potential disadvantages. However, Fiori (2016), points out that despite its being driven by noble purposes, it has a major problem in the contrasts among its objectives and the difficulty of measuring them reliably. Within the shareholder theory, given the objective of maximizing shareholder value, the KPIs to evaluate whether the firm's performance (represented by the share price and other accounting or financial measures) achieved its objectives or not are easier to measure. But in stakeholder theory, it is difficult to find an objective indicator to measure the value creation for subjects that include the community, creditors, and so on. At the same time, it can also be difficult for managers to address such intangible objectives in the context of prioritizing the optimal deployment of the company's resources (Cadbury, 2000). In any case, independently from the stakeholder theory's pros and cons, Corporate Governance has a totally different role which is more coherent with the definition provided by Hanson and Song (2006). From their point of view, the role of Corporate Governance is related to the definition of mechanisms and rules to allow managers to be compliant with this new "socially responsible objective". For instance, there could be operative decisions by the company that may be understandable from the shareholders perspective but that create significant damages to other stakeholders, such as an increase in investments in machinery to replace human labor (which, though increasing efficiency, leads to the reduction of employee welfare) or enhancing accounting decisions to reduce the company's tax position (which will

allow the company to pay fewer taxes and damaging the welfare of the government that receives less funding). Therefore, Corporate Governance has to implement mechanisms to reduce the misalignment of interests between those of the company, that might be induced to pursue its own interests, and those of all the stakeholders interacting with it and that passively bear the consequences of the company's decisions.
To conclude, these two are the major theories concerning the purpose of a company and its responsibilities. So far, we have seen how, according to the different company's objectives, corporate governance also changes depending on the problems addressed by them. We will now analyze how corporate governance changes according to different geographical scenarios.

2.2.3. Corporate Governance Models worldwide

The first cross-border analyses concerning different forms of corporate governance began in the early 1990s, as a result of various large scale global events. On the one hand, the reduction of competitiveness of the US economic system since the end of the 1980s raised the debate on the degree of effectiveness of corporate governance systems pursuing shareholder value generation. On the other hand, the increasing presence of institutional investors inside listed companies and the process of law harmonization among European countries were subjects of debate of both scholars and politicians regarding comparative corporate governance among different nations. Aguilera and Jackson (2003), remark how empirical researches on the topic suggest that each country is characterized by its own and peculiar corporate governance system, due to the specific characteristics of local institutions, legislation, and social norms, making it very difficult, therefore, to find two countries with the exact same corporate governance model. However, the relevant literature still identifies some general models which show common features shared by several countries, in spite of some specific differences at the individual level. These models are:

- The Anglo-Saxon Model (also known as Outsider System, typical of the US and UK)
- The German-Japanese Model (also known as Insider System, mainly present in Germany and Japan)
- The Latin Model: (a particular variant of the Insider System, diffused mainly in European countries including Italy, France, Spain, and Portugal)

Considering that the Latin Model is a variation of the Insider System, we can more generally simplify the distinction by generalizing two macro systems, the Outsider System and the Insider System. This macro binary distinction is not accidental, as it reflects the macro distinction between the Shareholder and Stakeholder theories described previously. These two theories are related to specific governance models.
We'll now describe the three models mentioned above and their relation to the various corporate governance models, focusing in particular on some common variables which include: the ownership

structure of companies operating in these models, the contractual relationship among corporations, the composition of the board of directors, the role of the capital markets, and the resolution methods for corporate crises.

The Anglo-Saxon Outsider system, which mainly emphasizes the shareholder value creation objective described in paragraph 2.2.2, is characterized by companies that exhibit, since the beginning of the 20th century, a strong dispersion of ownership within the shareholding structure of the company. As we have previously seen and as it is remarked by multiple scholars including, among others, Airoldi (1993) and De Jong (1997), such dispersion of ownership makes it, within such Corporate Governance System, more difficult for shareholders to directly manage the company. Because of this the control of the firm is transferred from shareholders to different figures appointed and paid by those same shareholders who are the managers with the subsequent separation of ownership and control. This leads to the major issue of corporate governance within the Outsider System and that is to find a way to ensure that managers are guided towards the objective of pursuing shareholder value maximization.

The Anglo-Saxon model is also characterized by a high presence of retail investors in the shareholding structure of the company. As we can see from the next page's table representing the shareholdings in US companies through time, the presence of retail investors is quite significant, despite having reduced their average shareholding presence inside the company (reduced, as shown in table 5, from 50.7% in the 1980s to 38,3% in 2000s). This does not mean that retail investors own a significant stake in the company, but simply that a higher number of shares is owned by families as compared to other models, where the percentage of retail investors is smaller. The control of large companies is usually in the hands of institutional investors. Their presence inside companies has, on average, increased over time (as shown in table 4) and they have been progressively increased their stakes in the companies in which they have invested. Unlike retail investors, who hold derisory stakes to be more diversified, institutional investors can have greater influence in the company through the appointment of trusted managers.

In this model therefore, the dispersion of ownership is high, the participation in the shareholding structure of retail investors is significant and the largest shareholders are usually institutional investors (Kaen, 2003). The contractual relationship among corporations, in the Outsider System, are characterized by a strong degree of vertical integration and the presence of short-term contracts with suppliers. These companies are, on average, larger compared to the ones of other systems which means that the companies have been able to internally design, develop, and produce the majority of the final components of their products. At the same time, contracts with suppliers are usually short-term oriented and very detailed and the supply contracts are drafted after long negotiations, contain lower-price mechanisms, and a minimal exchange of information (Zattoni, 2020).

Concerning the Board of Directors, the structure is influenced by the above mentioned dispersion of ownership typical of this system. The absence of a large controlling shareholder creates the difficulty for a single shareholder to have substantial influence over the company's corporate governance. This means

Table 4. U.S. Companies' Ownership Structure
(Source: Personal elaboration from Kaen, 2003)

Investors	1990	1995	2000
Institutional Investors	31.3%	36.6%	41.7%
Families	50.7%	47.9%	38.3%
Foreign Shareholders	6.9%	6.2%	10.0%
Banks and Insurance companies	10.0%	7.9%	8.3%
State and Public Administration	0.1%	0.3%	0.7%
Other Investors	1.0%	1.1%	1.0%
Total	100%	100%	100%

that in the Outsider System's Board of Directors, the company's top managers can influence the election of new board members, potentially making the overall board less focused on the objectives of maximizing the shareholders' value. Parrino and Starks (2001), reached the conclusion that such problem finds its confirmation in some aspects that had (and in many cases still have) characterized the board of directors of companies operating in the Outsider System. Some of them include excessive power of the CEO, who in many cases also acts as Chairman of the company (known as "Chairman-CEO Duality) or sits in board committees, the great number of board members (10.2 average in 2019[10]), and a higher number of executives over non-executive directors. Fortunately, such aspects have been mitigated since the advent significant increase of institutional investors inside the company, that are more incentivized as compared to retail investors to control the board, making adjustments in cases of poor performance or substituting board members who are not able to meet the shareholders' expectations. Furthermore, the development of governance codes and pressure from external authorities have led to changes in the composition of the board for Outsider Systems, including the increase of independent directors over non-independent, the creation of committees composed entirely of independent directors, and the appointment of some new figures, the "Lead Independent Directors" who coordinate independent directors inside the board and their interactions with the CEO. With respect to the structure of the board, boards in Outsider Systems are usually of the "One Tier" form or unitary board system (Fiori, 2016). This means that the board members are nominated directly by shareholders, and the board constitutes the only structure that assumes a managing function and controlling function (or by the various committees which are subordinated bodies within the board). This is a significant detail as in the Insider System, in general, we have a different

[10] Source: Bloomberg.com

structure, where there is a separate body from the board of directors which is appointed exclusively to monitor the board itself (Fiori, 2016), which is a structure that is more rarely present Outsider System. Relative to the role of financial markets, the Outsider System is characterized by strong participation in it, where companies use markets as a primary source to raise capital or issue bonds to fuel their expansion.

Table 5. Market Capitalization to GDP (%) in some countries
(Source: Personal elaboration from Van Den Berghe, 2019)

Nation	1980	1990	1999	2017
France	8	26	105	106
Italy	6	14	62	39
Spain	8	23	73	64
Germany	9	22	68	61
Japan	36	99	103	127
Netherlands	17	42	177	133
Switzerland	42	69	268	248
United States	50	56	181	165
United Kingdom	38	87	198	227

The above table, developed by Van Den Berghe (2019) shows the market capitalization to GDP ratio in various countries. We can see that in the US and UK, such percentage is higher meaning that the stock exchanges represent a crucial item in the Outsider System, and play a significant role in the transformation of investors' savings into financial resources at the disposal of companies. Because of such a high level of activity (also of retail investors), financial markets are highly regulated and monitored by authorities and the legal system ensures a higher degree of protection for investors to induce their participation in the marketplace and to create the conditions for a more efficient market. The final aspect of this corporate governance model is the resolution method for corporate crises where, without a single large shareholder due to the dispersion of ownership, the main mechanism which is adopted to substitute poor-managing managers is represented by the market for corporate control. This mechanism operates, as indicated by Mulherin and Poulsen (1998), in two ways. First, unsatisfied shareholders, in case of board members discontent, can present a new list of candidates and try to persuade other shareholders to vote in favor of the new list to replace the current management (process known as a proxy fight). The second mechanism is the one of a hostile takeover. This means that whenever the company's management is underperforming, and as a consequence, its shares are undervalued below the market average, external buyers might take the advantage of acquiring the company at an undervalued price and replace the current management to bring the share price back to performance at the normal level. These

are the major features, whose synthetic representation is reported below, of the Anglo-Saxon or Outsider Corporate Governance System.

Table 6. Outsider System summary
(Source: Personal elaboration)

Variable	Characteristic
Ownership Structure	Dispersion and fragmentation of ownership (higher presence of retail investors and institutional investors)
Contractual Relationship among Companies	Vertical integration and short-term contracts with suppliers
Board of Directors' Composition	"One Tier" Board structure
Role of Capital Markets	High liquidity and participation from companies and investors
Resolution Methods for Corporate Crisis	Market for corporate control

The second major corporate governance model is known as Insider System, which can be divided into the German-Japanese and the Latin variants. The Insider system has some substantial differences as compared to the outsider in all of the five dimensions used by scholars to define a corporate governance model. Starting with the German-Japanese model, if we analyze the ownership structure of companies we immediately note two significant differences as compared to the Outsider System. First, there is a higher

Table 7. Ownership Structure in different countries
(Source: Personal elaboration from Barca and Betch, 2001)

Nation	Largest shareholder's stake	Second largest shareholder	Third largest shareholder
Austria	52.0%	2.5%	n.a.
Belgium	56.0%	6.3%	4.7%
Germany	57.0%	n.a.	n.a.
Spain	34.5%	8.9%	1.8%
France	20.0%	5.9%	3.4%
Italy	54.5%	5.0%	2.7%
Netherlands	43.5%	7.7%	n.a.
Sweden	34.9%	8.7%	4.8.%
United Kingdom	9.9%	6.6%	5.2.%
United States (NYSE)	5.4%	n.a.	n.a.
United States (NASDAQ)	8.6%	n.a.	n.a.

ownership concentration than the Outsider System (as shown in table 7). The majority investor inside the company holds a significant stake within the company that can exceed 50% of the shareholding, which is something that does not exist in the Outsider System. The ownership structure of the German- Japanese Model is therefore characterized by the presence of a shareholder who holds a majority stake in the company (absolute or relative). This means that his influence in the company will be greater thus reducing the separation of ownership and control which characterized the Outsider System (Barca and Betch, 2001).

Secondly, another difference is the nature of the investor, as we can see in the following table how the presence of institutional investors and retail investors within the shareholding structure of the companies is lower compared to the Outsider System. Kaen (2003), remarks not only how the major role in the shareholding structure is played by firms (other companies that are the main shareholder), which are thus industrial or strategic rather than institutional investors, but also how such a high presence of industrial players can have a strong impact on the firm's objectives, as industrial groups might not be solely focused on shareholder value creation in terms of dividends and share price (which instead concerns institutional investors and retail investors), but rather on the exploitation of long-term synergies and the enhancement of the overall group value because of the business relationship with the company in which they own the stake. Moreover, we observe a stronger presence of banks within the shareholding structure as compared to the Anglo-Saxon Model.

Table 8. Ownership Structure in different countries
(Source: Personal elaboration from Barca and Kaen, 2003)

Investors	US	UK	Japan	Germany	France
Retail investors	47.9%	29.6%	22.2%	14.6%	19.4%
Companies	1.1%	4.1%	31.2%	42.1%	58%
State or Public Administration	0.3%	0.2%	0.5%	4.3%	3.4%
Banks	2.6%	2.3%	13.3%	10.3%	4.0%
Insurance, Pension Funds or other Institutional Investors	41.9%	50.1%	22.5%	20.0%	3.9%
Foreign Shareholders	6.2%	13.7%	10.3%	8.7%	11.2%
Total	100%	100%	100%	100%	100%

Concerning the contractual agreements among companies, the German-Japanese Model is characterized, unlike the Outsider system, by a higher cooperative spirit among companies. Corporations tend to

establish collaborative relationships where reciprocal shareholdings are put in place[11]. Moreover, the contractual relationships among companies are long-term oriented and characterized by shared social rules (Kester, 1992). The consequence of this cooperation is the potential growth of collusive behaviors by companies at the expense of the general market. At the same time, this model exhibits a strong relationship between companies and the banking system. Especially in Germany, there exists the system known as "Hausbank", a financial institution that has a stake in the company and also provides it with all kinds of financial services.

Regarding the structure of the board of directors, we note significant differences between the German-Japanese Model and the Outsider System. In Germany especially, the board of directors is made up of two distinct bodies (as opposed to the Outsider System with generally only one body). These two bodies are the Management Board and the Supervisory Board. The former is in charge of the business management of the company, therefore responsible for making operative decisions while the latter is concerned with monitoring as well as the appointment and supervision of the Management Board. The shareholders nominate the members of the Supervisory Board which then nominates and supervises the Management Board. Moreover, German law required the Supervisory Board to include a representation of the company's employees (up to half of the Supervisory Board). Because of the presence of these two separate bodies, the structure is defined as a "two tier" board system (Hopt, 1998).

Regarding the role of financial markets, within the German-Japanese model, its role is not seen as a primary tool for the transfer of resources from savings to future investments (as it is for the Outsider System instead). Companies do not typically address the financial markets to raise capital to fuel their growth. The financial resources to support investments either come from self-reinvesting or from the banking system. This is also because the larger shareholders, typical of the governance model, would be inevitably diluted in case of raising funds via equity in the financial markets and ultimately lose their influence and control of the company. So companies mainly look to the banking system or their own earnings to boost growth. As a result, the financial markets are less developed in the German-Japanese system as compared to the Outsider one and consequently the liquidity within the market is lower. This differs from the US and the UK where, on average, up to 70 or 80 percent of the company's shares are traded or floating (negotiated every day). In Germany and Japan, the financial markets are characterized by a free float which can even be lower than 50 percent of the company's shares, given the tendency of shareholders to hold securities over a longer period of time (Wenger and Kaserer, 1998). This lower dynamism of the financial markets compared to the Outsider System is inevitably related to the more concentrated ownership structure of companies and the lesser degree of separation among ownership and control.

[11] Especially in Japan, where the economy is traditionally dominated by large groups known as Conglomerates (horizontal groups where a holding company has stakes in multiple sub-companies operates in unrelated industries)

Analyzing the method for resolving a corporate crisis, the absence of a liquid financial market and the presence of large controlling shareholders inside companies makes the market for corporate control mechanism (typical of the Outsider System) almost nonexistent. Hostile takeovers are extremely rare and the most classical way to obtain control of a company is to purchase a small stake and increasing it over time and creating coalitions with other shareholders (Jenkinson and Ljungqviist, 2001). In this context, as suggested by Aoki and Patrick (1994), is the coalition of controlling shareholders that can implement a turnaround of the existing management in case it performs poorly. This may come about also with the help of the lending banks (which as previously mentioned play an important role in providing funds to the company) that can advise on the formulation of a recovery plan.

Table 9. Insider System summary
(Source: Personal elaboration)

Variable	Characteristic
Ownership Structure	Ownership concentration (companies are among the largest shareholders)
Contractual Relationship among Companies	Cooperation among firms (cross-holdings
Board of Directors' Composition	"Two Tier" Board structure
Role of Capital Markets	Lower liquidity and participation from companies (that tend to address the banking system to raise funds)
Resolution Methods for Corporate Crisis	Management substitution and recovery plans implemented by controlling shareholders and banks

To conclude this comparative analysis between the various corporate governance systems we will now focus our attention on the Latin Model. This model is a variant of the Insider System differing somewhat from the German-Japanese Model. Concerning the ownership structure, the Latin Model has the same general features as the German-Japanese Model with a concentration of ownership and the controlling shareholder that owns a significant stake within the company. The difference then is found in the typology of the first shareholder. While for the German-Japanese Model this first shareholder is represented by other companies, in the Latin Model the first shareholder is usually an entrepreneurial family who exercises control over the company itself, either directly or indirectly via a holding company. These families often take advantage of local legislation which allows the use of Control Enhancing Mechanisms which include such tools as double voting shares or particular shareholder agreements, that can contribute to further increase the influence of this controlling shareholder into the company (Zattoni, 2020). The Latin model has also been characterized by the presence of the state as a controlling shareholder in major companies operating in strategic sectors of the economy. This feature has been however significantly reduced since the advent of the European Union, followed by a period of numerous

privatizations during the 90s (especially in France and Italy). Institutional shareholders do not own significant stakes in the companies and their presence is less diffused than in the Outsider Systems. Therefore, in the Latin Model, the first shareholders of each company exercise strong control over it, almost neutralizing the separation of ownership and control (and its related issues) typical of the Outsider System.

For the relationship among companies, the Latin System is almost identical to the German-Japanese in all of its aspects (reciprocal shareholdings, long-term agreements, and universal banks). The major difference is the lower presence of Conglomerates which are substituted by the form called "Group" (Airoldi, 1993; Fiori, 2016). The "Group" is a chain of multiple legal entities on top of which sits a financial holding company controlled by the entrepreneurial family. Below the holding company, the other companies of the group are the ones that carry out the operative activity of the group, which is usually a coordinated activity (by companies in the same sector) rather than diversified.

The structure of the board of directors follows the "two tier" board system of the German-Japanese model. The difference, however, is represented by the fact that shareholders nominate both the members of the supervisory and the management board and that the supervisory board does not include the employee's representatives within it. Therefore, in the nomination process, the controlling shareholder exercises a strong influence in nominating the various components of the board members and the supervisory board. This aspect is mitigated however in several European countries, including Italy, as minority shareholders can appoint only a minimum number of members of the supervisory board (a mechanism known as the list vote). Moreover, in some countries including France and Italy, it is possible, as of 2003, to choose between this two tier structure and the one tier structure typical of the Outsider System.

The Latin model, following the Cadbury Code of 1992, is also characterized by the presence of national Corporate Governance Codes, which are self-regulatory codes that promote the evolution and application (especially within the board) of good corporate governance practices. Despite these codes, the influence of the controlling family-shareholder remains difficult to challenge. The introduction of mechanisms such as the Italian list vote have partially mitigated their influence, but the boards of the Latin Model still remain strongly characterized by those features, as pointed out by Brunello and Parigi (2003). The last two aspects of the Latin Model, the role of the financial markets and the mechanism for resolving corporate crises are very similar to the ones in the German-Japanese Model. As for the role of the financial markets, even the Latin Model exhibits lower activity and the use of bank debt and re-investments to fuel growth as compared to the issuing of new equity. The number of listed companies is relatively low, which implies that the level of liquidity of the market itself is low as well. The same similarities can also be found in the corporate crisis resolution mechanisms, where a central role is played by the controlling shareholder in implementing changes in the current management with the help of lending banks. One difference, however, is represented by the role of the State in a crisis that can

intervene to avoid the failure of the company in distress and implement a turnaround through certain specific procedures. The market for corporate control is, therefore, even in this case, almost absent, due to the higher ownership concentration and strong presence and influence of the controlling shareholder within the company and because of the eventual intervention of the state in case of critical situations (Fiori, 2016).

We have looked at the main features of the Anglo-Saxon (Outsider System), German-Japanese (Insider System), and Latin (variant of the Insider System) Models, highlighting their similarities and differences. In the table below are reported in synthesis the major aspects of the three models.

Table 10. Summary of the three Governance Models
(Source: Personal elaboration)

Variable	Outsider System	Insider System	Latin System
Ownership Structure	Low concentration (high presence of retail and institutional investors)	High concentration (main shareholders are other companies and banks)	High concentration (main shareholders are families via a holding company)
Contractual Relationship among Companies	Vertical integration and short-term contracts with suppliers	Cross-holdings and cooperation; long-term contracts with suppliers	Cooperation via the "group" structure and long-term contracts
Board of Directors' Composition	One Tier structure	Two Tier structure (shareholders nominate supervisory board which nominates the management board)	Two Tier structure (shareholders nominate both supervisory and management board)
Role of Capital Markets	Highly addressed by companies to raise funds; high transparency and liquidity	Less listed companies and lower liquidity and efficiency	Less listed companies and lower liquidity and efficiency
Resolution Methods for Corporate Crisis	Market for corporate control	Management substitution and recovery plans implemented by controlling shareholders and banks	Management substitution and recovery plans implemented by controlling shareholders and banks; state intervention

2.2.4. Corporate Governance Mechanisms

After having analyzed the main corporate governance models worldwide, we will now focus our attention on the main and most important mechanisms that are practiced ensuring that good corporate governance practices are implemented and that agency costs are minimized within the company. Such corporate governance mechanisms, according to the relevant literature, can be divided into two categories. The first is related to the "external" governance mechanisms, which include all those mechanisms that are, as the name implies, external to the company and exercised by subjects that are not dependent on it. Such mechanisms include the "market for corporate control", the "managerial labor market" and external auditors. The second is the "internal" corporate governance mechanisms which are instead related to those mechanisms internal to the company, therefore applied by subjects who are dependent on it. These include the Board of Directors, the presence of a large shareholder, and the use of incentive plans.

Starting with the external mechanisms, the first of which is the market for corporate control. We have partially introduced this concept in the previous paragraphs when we discussed the corporate crisis resolution mechanisms in the Outsider System (paragraph 2.2.3). The rationale behind this governance mechanism is related to the intent, by value creation concerned investors, to acquire the control of those companies where, due to a lack of managerial ability, the value creation is not achieved and the performance is unsatisfactory. In this case, the share price of the badly managed company will be inevitably reduced. With the reduction comes an opportunity comes for value creation concerned

Table 11. Internal and External Corporate Governance Mechanisms
(Source: Personal elaboration)

	Internal			External		
Mechanism	Board of Directors	Incentive Plans	Large Shareholder	Market for Corporate Control	Managerial Labor Market	External Auditors
Rationale	Monitoring over management activities; independence to assure objectivity	Align the interest of top management with the shareholders' ones	Higher pressure on managers and ability to replace bad performing management	Pressure on existing management that will be replaced in case of poor performance	Managers' incentive to have a positive track-record for future employments	Objectivity and independence as it is an external third party not related to the company

investors to acquire the control of the badly managed company, replace its management and improve the performance as they will be more confident of proper management of the firm compared to its previous management. This is why this mechanism can be considered a corporate governance mechanism. According to Grossman and Hart (1980) in fact, managers are aware of the fact that if they don't properly manage the company, the company itself is likely to be taken over from outside investors due to the poor share price performance and, in such circumstance, the management will be inevitably replaced and the existing managers will lose their job.

Bebchuck and Hart (2001), point out how the process by which the company's management exhibiting poor performance is replaced can mainly occur in two ways. The first way is what is known as "proxy fight", which consists of the act of a dissatisfied shareholder to present a list of Board members differing from the one proposed by the Board and to persuade other shareholders to vote for this alternative list. This mechanisms however is not very common due to possible complications that can arise in this process. One is the fact that the dissatisfied shareholder has to bear the costs of launching the proxy fight, which includes the identification of "performance deficits" and, in case of a successful change in management and performance improvement, all the other company shareholders will receive the economic benefit from the fight launched by the dissident investor as "free riders". Also, minority shareholders might not be interested in participating in the vote, due to their limited shareholding (especially in the Outsider System). The second and most common form under which the market for

corporate control takes place is the hostile takeover. In this case, there is an external investor that acquires the company's shares should the performance prove to be unsatisfactory. This investor usually launches a public takeover bid on all or a vast majority of the company's shares at a fixed price. If the operation is successful, the control acquired will permit the new investor to appoint new managers and the CEO. The external bidder however has to overcome several obstacles in this process. First of all, minority investors might not accept the takeover bid, making it more difficult for the investor to obtain control. Secondly, in case of a public announcement of the takeover bid, a battle for corporate control might be initiated between the initial investors and new potential buyers, driving the price upwards making the operation costlier. Finally, the bidder might face opposition from the current management that could enact "anti-takeover provisions", which include fair price provisions (minimum price to pay for obtaining the control of the company), poison pills (issuing new shares to the existing shareholders at a discounted price to make the takeover more costly), poison puts (issuing bonds that can be "called back" in case of a change in corporate control) or "golden parachutes" (multi-millionaire payments or retirement bonuses to the current top management in case of a change in corporate control). These then are the main features of the market for corporate control, which is a mechanism that is more fitted to the Outsider System rather than the Insider since the concentration of ownership typical of the latter implies that the majority of the shares (and subsequent voting rights) are in the hands of one figure rather than being dispersed, making it more difficult for an external buyer to acquire them (Bebchuk and Hart, 2001).

A second external corporate governance mechanism is represented by the managerial labor market from which companies choose and select their managers while appointing them. Like every market, the "price" for each manager is not only based on the existing level of demand and supply in the market but also on the results that those same managers have achieved in the past. Whenever companies hire new managers they are likely to look at the track record of the manager, evaluating his performance as well as that of the company in which he worked or the division he led, and so on. The compensation for the manager will be adjusted accordingly. That's why the labor market can be considered as another external corporate governance mechanism. Since managers are aware of the fact that their performance will determine their future employability and future salary in a new company, they will be more prompted to increase the performance of their team and firm. Obviously, the managerial labor market mechanism is strongly influenced by the quality and the availability of the information that not only is disclosed by the companies but that is also available to the stock market, especially the share price of the company which is ultimately related to the top management ability and quality (Efendi and Files, 2013).

Finally, the last external corporate governance mechanism is represented by external auditors whose role is to analyze the company's financial statements and to verify whether all the correct accounting principles and estimates have been properly applied. This is to provide the company's shareholders and other stakeholders that rely on the company's financial statements to make their business decisions the most accurate, reliable, and transparent information possible. During the audit procedure, should they

happen to note any potential issues in the accounting practices of the firm, they can write letters to the company's Board presenting the issues and offering suggestions on how to mitigate them. Moreover, external auditors can enhance other services different from financial auditing, which include risk assessment, analysis, and mitigation of the company's risks. The fact that such auditors are external to the company favors their independence from it which ultimately favors their objectivity and impartiality in the evaluation process (Aguilera and Desender, 2015).

In the internal corporate governance mechanisms, instead, the first and most intuitive that we can assume is the Board of Directors. The board is always (either directly or indirectly and whether in the Outsider or Insider System) nominated by shareholders that appoint specific figures (members of the board) with the objective to monitor the other top managers and the company itself to make sure that value creation is achieved. The Board of Directors is involved, other than monitoring the ordinary business activity, in the decisions of the extraordinary events during the life of the company including the formulation of strategic plans, implementing M&As, and so on. Therefore, the board is a tool that can be used to monitor the ordinary activities and the most relevant company decisions (Fiori, 2016). Independently from the structure of the Board, every board of directors is composed of two categories of directors. In the first category are the "executive" directors, who are members of the company's top management and have other managing roles within the company. In the second category are the "non-executive" directors who, instead, do not belong to the company's management team but are appointed for their knowledge of the industry or their experience in corporate governance. Such directors can be consultants, lawyers, academics, or retired board members. And their major role, apart from giving their advice on company decisions, is to monitor the executive directors (Pass, 2004). Since these non-executive directors have other careers and jobs, they are less dependent on the company and therefore this should guarantee a certain level of objectivity in their advice and judgment. Among non-executive directors, we can have the presence of the "independent" directors, that respect additional independence requisites[12]and that should therefore be even more independent from the company and its executive directors. Moreover, in some cases, the figure of the "lead independent director" can be appointed. This is an independent director that represents all the other independent directors on the board and manages their relationships with the CEO. The presence of non-executives and independent directors within the board is associated, according to the most relevant literature, with good corporate governance as, being more independent, they can more properly act in the interest of shareholders and eventually oppose executive directors in case of excessively risky practices or decisions that do not pursue shareholder value creation. This distinction

[12] According to the NYSE Corporate Governance Guide (2014), such requisites are that a board member is independent if he has not been:
•employed as an executive within the past 3 years
•earned a direct compensation higher than 120.000$ from the company in the past 3 years
•employed as an internal or external auditor in the past 3 years
•employed as an executive officer in a different company whose business with the listed company generated over 2% of its revenues

between types of board members is the main aspect that makes the board of directors a corporate governance mechanism, as its composition is characterized by the presence of these independent subjects that should act to avoid agency costs (Zattoni, 2020). At the same time, to more properly improve its monitoring function into specific sub-areas, the board of directors is divided into sub-groups or committees. The most common committees are the nomination, compensation, and audit committee. The audit committee is the one in charge of controlling the financial reporting, disclosure procedures, and risk management policies. The compensation committee is the one in charge of the design of the best compensation packages for the company's executives including the CEO and, finally, the nomination committee is the one that identifies new potential candidates for the Board to be presented to a vote by the shareholders. Best corporate governance practices aim to constitute committees with the majority or totality of independent directors that are experts of the relative committee's field, ensuring the application of the best, independent, and industry-aligned decisions. We can see how these aspects as well can help us understand how the board can be considered a corporate governance mechanism. Unfortunately, however, despite these practices, it might still be difficult for the board to fulfill its corporate governance duties. In this thesis, especially in the analysis of the "Managerial Power Approach Theory" (Bebchuk and Fried, 2004), we have seen how some powerful managers, executives, or CEOs can still overcome these independence practices by influencing various processes and decisions to their advantage causing agency costs to arise. What modern corporate governance codes, best practices, and regulations suggest is to structure the board so that the independence of the board is assured and an excessive level of power is not left in the hands of the executive directors, which can be accomplished by adopting practices which include, for instance, increasing the number of independent directors, adding the figure of the lead independent director, avoiding the CEO duality, constituting committees composed only of independent directors (Charan and Caray, 2013).

Concerning the incentive plans, we have described and analyzed the relevant literature concerning the use of Stock-Based Compensation as a corporate governance mechanism, especially regarding the executive directors' compensation packages, where we have seen the rationale, the objectives, and the structure of these incentive plans. Here, suffice it to say that this incentive mechanism links the wealth of executives and the CEO of the company to the company's performance and can, therefore, be considered a corporate governance mechanism to reduce excessive risk-taking practices and the rise of agency costs, allowing executive and other board members to act in pursuit of long-term stability and prosperity of the firm. Even in this case, we have seen how such a mechanism might still be overcome by powerful executives and CEOs, however, the use of such incentive plans is seen, not only by the relevant literature but also by corporate governance codes, as a good corporate governance practice (Baker and Jensen, 1988).

Finally, and concluding the internal corporate governance mechanism, it is important to mention the presence of a large shareholder within the shareholding structure. Whenever a shareholder owns a substantial stake in the company, not only will he have a greater economic interest within it, therefore

more interested in monitoring the board, but also a higher stake implies a higher number of voting rights that will allow the shareholder to eventually replace a poorly managed board (Jensen and Meckling, 1976). Therefore, the presence of a controlling shareholder can be considered as a corporate governance mechanism, as it can allow more proper control on the company's managers.

2.3. The Relationship between Stock Based Compensation and Corporate Governance: Hypothesis Development

As we have observed throughout this thesis, scholars have developed different views regarding the use of Stock Based Compensation and there is no single theory that is able to explain all possible Stock Based Compensation patterns empirically evident. However, the emergence of Corporate Governance and its reinforcement as a response to several corporate scandals in these past years, have shed a new light on the Agency Theory as a way to explain why some companies tend to have a higher level of Stock Based Compensation than others, other things being equal. In particular, as we have observed in multiple paragraphs, companies have started to adopt Stock Based Compensation mechanisms and alternatives not only to properly motivate managers, but also to mitigate and to prevent possible conflicts that could arise between managers and shareholders, which might occur whenever the company's Governance doesn't sufficiently act in their interests. Therefore, the level of Stock Based Compensation can be a function of several Corporate Governance variables that are ultimately related to the eventual presence of Agency Costs within the firm. Such variables can be related to multiple factors. A first one, is undoubtedly the Board of Directors. Many researchers have in fact shifted their attention towards the composition of the Board and its relative level of "independence" from the company's executives and CEO, a factor which is considered by the relevant literature as a metric of its ability to properly act in the shareholders' interests. Therefore, the structure of the Board is a first aspect under which we will analyze the relationship with Stock Based Compensation, as Boards with a more independent structure are considered by the relevant literature more efficient in both preserving shareholder's value and in the evaluation of the company's policies and practices, which ultimately means that more independent boards should record a lower level of Agency Costs. If this is the case, many scholars believe that the use of Stock Based Compensation is less necessary to assure the reduction of Agency Costs, whereas such use should be incentivized and would be more appropriate whenever there are some signals that might suggest that the Board is not independent enough.

A second aspect that several researchers have observed is related to the ownership structure of the company. We have seen how the ownership structure, in particular the level of ownership concentration, is a critical aspect that characterizes the Governance Model of each company. In particular, the ownership concentration is strictly related to the power, influence and monitoring that such shareholder can have on the company's Board of Directors and overall management, as a controlling stake implies a higher level

of voting rights and economic interest inside the company. Therefore, many scholars have argued that the level of Stock Based Compensation can be related to such presence, as the pressure from a large blockholder might be considered as a motivating tool, other than a control mechanism, for the current management. This is the opposite scenario of the one in which the ownership is more fragmentated, where the single shareholders' stake is too small in order to influence a certain level of control over the company. At the same time, some scholars are also convinced that the nature and identity of such shareholder might influence his interest in the company. In fact, a large shareholder represented by a family or another firm might have different objectives and approaches in the relationship with the companies in which they invest compared to the ones of an institutional investor (Shleifer and Vishny, 1996).

Finally, the last part of the analysis is related to the verification of whether Stock Based Compensation is somehow related to the company's performance, testing therefore its "effectiveness" in being a tool to address Agency Costs. We have observed in the previous paragraphs how the current and past literature are quite divided on such topic. While several scholars are convinced that no relationship exists, many others believe that the most well performing and highly market valued companies are the ones where the level of Stock Based Compensation is higher, as they believe that a better performance and higher market evaluations are synonyms of an overall healthier conditions of the relationship between top managers and shareholders, of the overall business and preference of investors. All factors that should correspond to a higher level of stock based compensation inside the Board.

Hence, the following Hypothesis in the upcoming paragraphs have two major objectives. On one hand, I want to verify whether a relationship exists or not between the level of Stock Based Compensation in the company's Board of Directors and some Corporate Governance indicators, particularly related to the Board's composition and the ownership structure of the company itself, that might suggest the presence of Agency Costs. Therefore, I aim to investigate on the potential Determinants of Stock Based Compensation. On the other hand, I'll test the presence of a relationship the company's Performance and Market Evaluation and its Stock Based Compensation within its Board, in order to verify the effectiveness of such compensation to properly address the company's Agency Costs.

2.3.1. Stock Based Compensation and Board Composition

As we have seen in multiple sections of this thesis, the Board of Directors is a critical part of each company, as it is involved in the most crucial business decisions. Moreover, we have also seen how and why it can be considered an internal Corporate Governance mechanism. We have also seen how Boards that are more "independent" are less likely to be subject to the pressure from the company's CEO and executive directors and most of nowadays corporate governance codes, best practices and suggestions proposed by scholars to improve Corporate Governance and reduce Agency Costs are related to the

enhancement of a series of mechanisms to make the Board more Independent. In particular, there are several aspects under which several scholars tend to evaluate the independence of Boards.

The first one is related to the number of Independent Directors who sit in it. In fact, shareholders, especially the minority ones, could take advantage of the independent directors (which have certain independence characteristics that we have observed in the previous sections) to mitigate the risk of predominance of the Executive Directors' (in primis the CEO) decisions within the Board that could potentially benefit the Board itself and the eventual larger/controlling shareholders to the expense and harm of the minority ones. This leads to the conclusion and the prediction that, if the number of independent directors increases, there should be a higher control over managers, reducing the chance of them acting in an opportunistic way and to deviate from shareholders' interests. If such chance is reduced, there should be less needed to adopt a higher level of Stock Based Compensation to control the Board of Directors and vice versa. As a result, Agency Costs are more likely to arise if the number of independent directors is low, as Board members are subject to a lower level of control. Therefore, the Hypothesis that I predict is the following:

Hypothesis 1: Companies with a lower number of Independent Directors are associated with a higher level of Stock Based Compensation within the Board.

Another aspect which can impact the Board's independence is the influence of the CEO figure over the Board itself. The CEO in fact is one of the most important figures of the Board. Not only he is responsible for the most of the Board's decisions, but he can have a crucial role in the nomination process of other Board members. This means that his influence is already high on a normal basis. However, such power and influence can be enhanced in the case of the so called "CEO-Chairman Duality", which means that the company's CEO is also the Chairman of it. In many cases in fact, the Chairman and the CEO of the firms are represented by the same person. If this is the case, more power would be concentrated in the hands of a single person thereby leading to potentially higher chances of conflicts (especially considering that the Chairman according to Corporate Governance best practices should be appointed by minority shareholders, while CEOs usually represent controlling shareholders) and subsequent Agency Costs to arise, as the figure of the CEO can more easily influence other Board members to deviate from the shareholders' interests. For this reason, I have also decided to test the following hypothesis:

Hypothesis 2: Companies characterized by the presence of CEO-Chairman Duality are expected to record a higher level of Stock Based Compensation within the Board.

The last aspect related to the Board's independence is the eventual presence of the so known "Lead Independent Director". We have observed that the presence of such figure is not compulsory, but his

presence can strength the Board's independence. This since this figure is the representative of the Board's Independent Directors and coordinator of the relationship and information exchange between them and the company's CEO. That's why such presence is considered as an additional tool for shareholders to properly monitor the behavior of board members and hence reduce the arise of Agency Costs. Not all companies have LIDs, and I would expect that should it be present within the board, the level of control exercised on the Board members would be higher and as a consequence there is less need to motivate the board members by offering them a higher level of Stock Based Compensation. All of this leads to the next Hypothesis:

Hypothesis 3: Companies have the presence of the Lead Independent Director in the Board of Directors show a lower level of Stock Based Compensation.

2.3.2. Stock Based Compensation and Ownership Structure

As anticipated before, the level of control which is enhanced by shareholders on the company's Board of Directors is strictly related to the Ownership Structure of the company, in particular to the level of ownership concentration in the shareholding structure (the percentage of shareholding of the largest shareholder of the company). The reason for why a higher concentration is related to a higher level of pressure and control against the company's Board is quite intuitive. In fact, as the percentage of the controlling shareholder of the company increases, such shareholder can increase its level of control over the Board (as his voting rights increase as well), making sure that the Directors will not act in an opportunistic way causing therefore Agency Costs to arise. Vice versa, as the shareholding of the controlling shareholder of the company diminishes, it will be always more difficult for him to enhance a certain level of control over the Board, making the Board itself less subject to control and therefore increasing the probability of Agency Costs to arise. As this probability arises, I would expect that the board members have to me more motivated with the use of additional Stock Based Compensation to reduce the risk of principal (shareholder) - agency (manager) issues to arise. Therefore, considering such aspect, I predict that:

Hypothesis 4: Lower the percentage of the largest shareholder and the higher it will be the level of Stock Based Compensation granted to Board members.

Also, I would like to test whether if, other than the stake owned by the controlling shareholder, the typology[13] of the shareholder itself can be somehow related to the level of Stock Based Compensation within the Board. As we have discussed in the previous sections in fact, whenever the shareholder is represented by a family or another firm (therefore a "strategic investor") rather than a "financial investor" (a pension fund, mutual fund or insurance company and so on), the interest of such shareholder might not be solely focused on the shareholder value creation. Therefore, the focus might be different from traditional metrics such as the share price of the target company, but the exploitation of long-term synergies or the enhancement of the overall group or conglomerate value (considering also the business relationships that might exist between the strategic investor and the target company). Such difference in the long-term objectives should be reflected, among the various factors, even in the level of Stock Based Compensation within the Board, according to several scholars. Therefore, in order to test whether if a difference exists between the typology of the first shareholders and the Boards' Stock Based Compensation, the following Hypothesis is predicted:

Hypothesis 5: The typology of the first shareholder impacts the level of Stock Based Compensation inside the Board, other things being equal.

2.3.3. Stock Based Compensation and Company's Performance

As anticipated before, multiple scholars believe that a relationship exists between the company's performance and its level of Stock Based Compensation. In particular, as we have seen in the previous sections, several studies have shown that companies with a higher level of performance are the ones that were applying compensation policies based on a higher use of Stock Based Compensation. At the same time, the Agency Theory framework as well tends to be somehow favorable to the hypothesis that Stock Based Compensation could be related to the company's performance. This should imply that companies characterized by higher performance indicators should be the ones where the level of Stock Based Compensation is higher. This since companies that are characterized by higher and better performances are also the ones that are more properly able to operate their business free of conflicts of interests, with better risk management policies, more efficient asset-utilization practices and healthier long-term objectives. All factors that should indicate the presence of a higher stock based compensation within the company's board Therefore, the next Hypothesis is as follows:

[13] I have divided the typology of shareholder into two categories: Financial Shareholders (which include investors such pension funds, mutual funds, financial advisors, insurance companies and Strategic Shareholders (including holding companies controlled by families, company's competitors, holding company of a conglomerate and so on)

Hypothesis 6: Companies with higher levels of Return on Equity (ROE) and Return on Assets (ROA) are the ones characterized by a higher level of Stock Based Compensation within the Board of Directors.

Finally, as a corollary to this final Hypothesis and as a conclusive Hypothesis, I would like to test the relationship between the overall market evaluation of the company and its Stock Based Compensation. In particular, a metric used by multiple scholars (and some studies concerning such relationship as well) in order to synthetically measure the market value of a company is the so known "Tobin's Q Ratio"[14]. Such ratio can allow us to say whether if the company is under or overvalued. A Tobin's Q bigger than one suggests that the market value of the company is higher than the book value of its assets and liabilities, remarking an overall high market evaluation. On the other hand, if this ratio is smaller than one the company is undervalued by the market, as the book value of its assets and liabilities is lower than the market value. This means that higher the Tobin's Q ratio and higher the overall market evaluation of the company itself. Therefore, also in relationship to Hypothesis number 6, if it is true that the most performing companies (in terms of ROA and ROE) are the ones where the level of stock based compensation is higher, I also expect that companies with a higher overall market evaluation should be the ones where the Board's stock based compensation is higher, as a higher Tobin's Q is a synonym of a general preference and appetite from market investors towards that same company. Such preference should indicate that, among others, the company is enhancing a stronger stock based compensation policy within its Board. Hence, the objective of this hypothesis is to verify whether if a higher market evaluation effectively corresponds, as some scholars argue, to higher stock based compensation levels inside the Board.

Hypothesis 7: Companies with higher levels of Tobin's Q Ratio are associated with higher levels of Stock Based Compensation inside the Board.

Therefore, to conclude these Hypothesis Development section I would like to briefly summarize the objectives of such Hypothesis, in order to provide an explanation of what I would like to test and analytically verify. The objective of such analysis is, in fact twofold. On one hand, I am trying to figure out if there is an existing relationship between some Corporate Governance indicators that might suggest the presence of Agency Costs within the company and the level of Stock Based Compensation within the Board of Directors of that same company. Therefore, the question that I would like to answer can be synthetized as follows: what are the determinants of Stock Based Compensation? Such objective will be tested throughout Hypothesis 1, 2, 3, 4 and 5 where the indicators that will be considered, following the

[14] Such ratio is obtained by dividing the company's Market Value of its Equity and Liabilities over the Book value of its Equity and Liabilities, also called "Replacement Cost" (therefore Tobin's Q Ratio $= \frac{Market\ Value\ of\ Company's\ Equity\ and\ Liabilities}{Book\ value\ of\ Equity\ and\ Liabilities}$)

related literature, in relation to the eventual presence of Agency Costs within the company are the following:

- The number of Independent Directors inside the Board
- The presence of the "CEO-Chairman Duality"
- The presence of the Lead Independent director
- The level of ownership concentration
- The typology of the first shareholder

As anticipated, for the reasons explained above, I expect companies to have a higher level of Agency Costs (and therefore a subsequent higher level of Stock Based Compensation) if they are characterized by a lower number of independent directors, the presence of the "CEO-Chairman Duality", the absence of the Lead Independent Director and a diluted ownership concentration. Therefore, all a series of factors related to what could be the determinants (as a consequence of Agency Costs) of Stock Based Compensation.

Subsequently, with Hypothesis 6 and 7 (hypothesis 6 will be divided into two sub parts as I'll firstly analyze the relationship with ROE and later with ROA), I will try to provide an answer to the next logic question that might arise once the determinants of Stock Based compensation have been tested. Such question is: is there a relationship between the performance of the company and the level of Board's Stock based Compensation? The relationship will be analyzed, as anticipated, taking into account the performance of the company based on two sub factors. Hypothesis 6 considers the performance under an accounting perspective whereas Hypothesis 7 is mainly related to the performance under a "market-based" perspective where the performance concerns in the overall evaluation of the company provided by the market. Therefore, in Chapter number 4, I will try to provide an answer to these questions with the help of R Studio Statistical Software in order to conduct such analysis. However, prior to that, we will observe the sample which is object of this analysis and the related research method, in order to have a clear understanding of how the outcome will be obtained and subsequently commented.

3.1. Sample and Data Collection Procedure

The sample object of this study is drawn from a single database which is provided by LUISS University's Library computers: Bloomberg. Bloomberg is a leading global database platform containing information on millions of both public and private companies operating in more than 160 different countries. Such database is used by both students and financial professionals in order to analyze and monitor market data, analytics, company's financials and so on. In particular, Bloomberg offers a wide range of information, other than the traditional financial indicators, related to more qualitative measures including Corporate Governance indicators and other ESG (Environmental, Social and Corporate Governance) measures and variables. Therefore, such feature makes this database particularly suitable for our study in order to analyze the previously described relationship between Stock Based Compensation and Corporate Governance indicators.

In order to collect my data, I started searching on Bloomberg for companies operating in some target countries which included the US, the UK, Germany, Italy, France and Spain. As a result, I have obtained an initial population of over twenty thousand companies. Later, in order to reduce the sample size, I started, other than eliminating private companies and companies that lacked data about Stock Based Compensation, to introduce a series of requisites that would have allowed me to obtain a lower sample size. I tried to introduce some requisites that did not only aim to reduce the sample size, but that were somehow related, among the various factors, to the availability of the information for the companies themselves, to the overall business capacity of the companies and to their relative leverage. In fact, I started sorting the original sample by eliminating all the companies other than the ones recording:

- A Market Capitalization higher than 5bn $: such initial requisite is related to the fact that most of the Stock Indexes worldwide (such as the S&P 500, FTSE 100 and other European Indexes) impose such requisite in order to include companies within the index itself. Therefore, companies with a market capitalization higher than 5bn $ are the ones included in the world's most famous indexes, meaning that are companies characterized by a certain business size, operative structure, disclosure and liquidity requirements and so on. Therefore, companies whose available data are likely to be quite reliable for our analysis.

- Over 250 Employees: this since both in Europe and in the US, companies are legally a "Small-Medium Enterprise" when the number of employees is less than 250. As SMEs, these companies, have less disclosure requirements, which means that the available data regarding those companies might be less reliable. Therefore, since our analysis focuses on large companies, I excluded from

the sample those companies that had less than 250 employees, in order to make sure that only "large" companies were present.

- Over 500 million $ in Annual Revenues: such aspect is related to the previous one, as the object of this analysis aims to analyze companies which have a larger size not only in terms of market capitalization and number of employees but also in terms of the overall business capacity and its revenue generation capability. Therefore, the aim of such requisite was to include companies whose business is large enough to have a significant level of revenues.

- Less than 10 billion $ of Debt: the rationale behind such requisite is that, for our analysis, companies do not have to be excessively indebted. In fact, when the level of debt in a company is excessively high, banks or creditors might impose covenants to the company and therefore limitations on its business activities (including the compensation to its managers). Therefore, I wanted to focus the attention on companies in a "normal" condition, that conduct their business in an ordinary way that therefore do not have limitations on their operative activity caused by an excessive level of debt.

After the introduction of such requisites and the elimination of various outliers[15] in order to have more homogeneous sample of observations, I managed to obtain a final sample made up of a total of 487 companies, mainly coming from the US and the UK. Such sample of companies is quite diversified in terms of business activity. In fact, I have voluntarily not imposed any restriction of the industry in which the companies operate, in order to have an all-around view of this Stock Compensation analysis which is not limited only to a specific industry. The classification of the various companies in different industries[16] is as follows: 5% of companies operate in the Communication Services, 19% in Consumer Goods, 5% in the Energy, 13% within the Financials, 12% in the Healthcare, 14% in the Industrials, 15% relatively to the Information Technology, 6% within the Real Estate and 11% in Utilities and Materials. A graphical representation of such division is reported below, in a graph that shows in its vertical axis the number of observations and in the horizontal one the classification by industry. The orange line represents the total cumulative observations (in percentage) as we move from one category to the other one. As represented

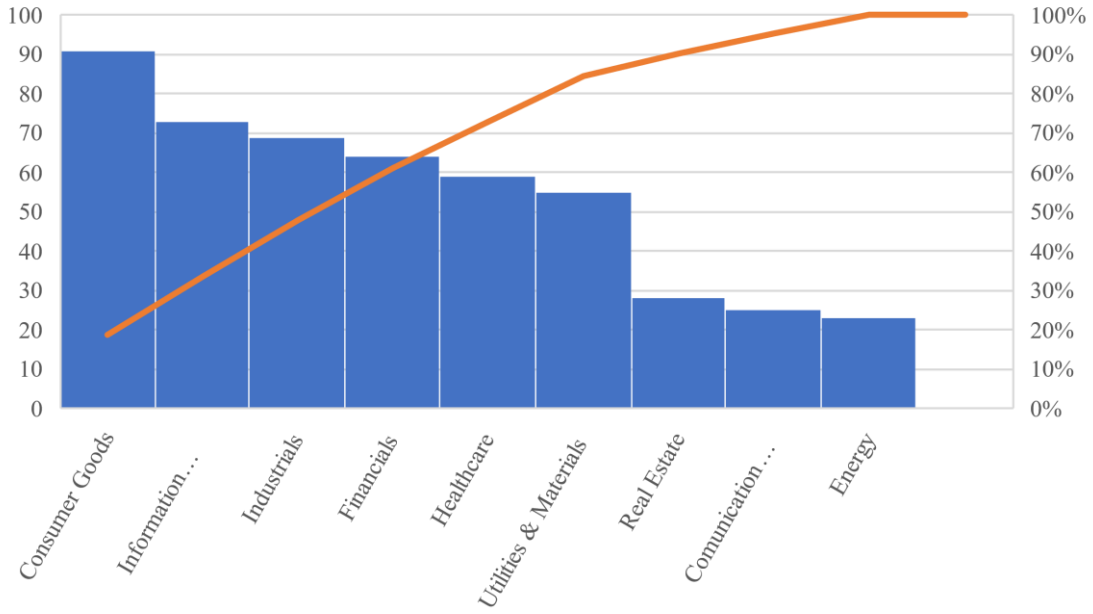
[15] In order to obtain a more homogeneous cluster of observations I have imposed the following upper bounds in order to exclude some excessively high-level outliers, meaning that I have excluded those companies for which it was recorded a level higher than:

- 90bn $ for the Total Revenues
- 500 thousand for the number of employees
- 500bn $ for the Market Capitalization

[16] The Industry Classification have been made following the Global Industry Classification Standards (GICS) classification, an Industry Taxonomy developed in 199 by MSCI and S&P for the usage of the financial community. The GICS division consists in 9 macro sectors, divided in 24 industry groups ulteriorly divided into 158 sub industries. In this particular study, I have divided the companies of the sample only for the 9 macro sectors.

by the graph, we can observe how the various observations are divided in a quite heterogeneous way among the various industries.

Figure 8. Observations distribution based on the Industry
(Source: Personal elaboration)



The sample includes a large number of companies whose Total Revenues range from 500 million $ (the minimum threshold imposed as a requisite) and 10bn $ (248 observations corresponding to about 51% of the sample). Subsequently, another large part of the sample (116 companies corresponding to 24% of the sample) records a level of Total Revenues ranging from 10bn $ to 20bn $. Only 8% of the sample shows a level of Total Revenues between 20bn $ and 30bn $. Finally, a level of revenues between 30bn $ and 50bn $ is recorded by roughly 6% of the observations and, interestingly, a higher number of companies (56 companies corresponding to roughly 11% of the sample) show a level of Total Revenues higher than 50bn $. We can therefore observe how the division is less homogeneous in this case, as the majority of the sample's observations fall into the first category that reports Total Revenues ranging from 500m $ to 10bn$. Such classification by level of Total Revenues can be observed in the following figure where, as in the previous one, the vertical axis represents the number of observations and the horizontal a classification by the level of Total Revenues. Even in this case the orange line represents the cumulative percentage of observations.

In order to provide another insight concerning the size of the various companies of the sample, I provide the following figure (that follows the same graphical criteria of the two previous ones) concerning the number of their employees. As we can observe, there is an almost equal number of observations (248 companies which correspond to almost 60% of the sample) with a total level of employees ranging both from 250 (as it was the minimum threshold imposed as a requisite) to 10 thousand employees and over 50 thousand employees. A lower level of observations are recorded among the ranges 10-20 thousand, 20-30

thousand (42 companies), 30-40 thousand (31 companies) and 40-50 thousand employees (34 companies). These four out of 6 categories constitute the combined value of 44% of the sample's size. Overall, we can see how the majority of the observations (almost 80% of the sample) is constituted by companies with 250 to 20 thousand employees and with over 50 thousand employees, showing therefore a higher homogeneity compared to the classification by level of Total Revenues.

Figure 9. Number of observations based on the level of Total Revenues (bn $)
(Source: Personal elaboration)

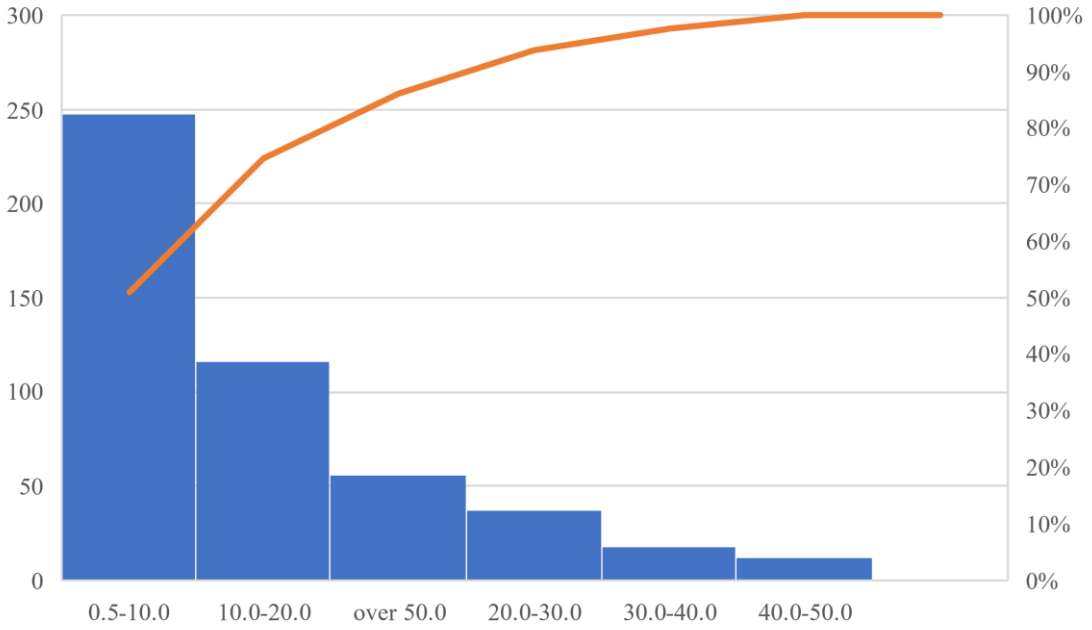
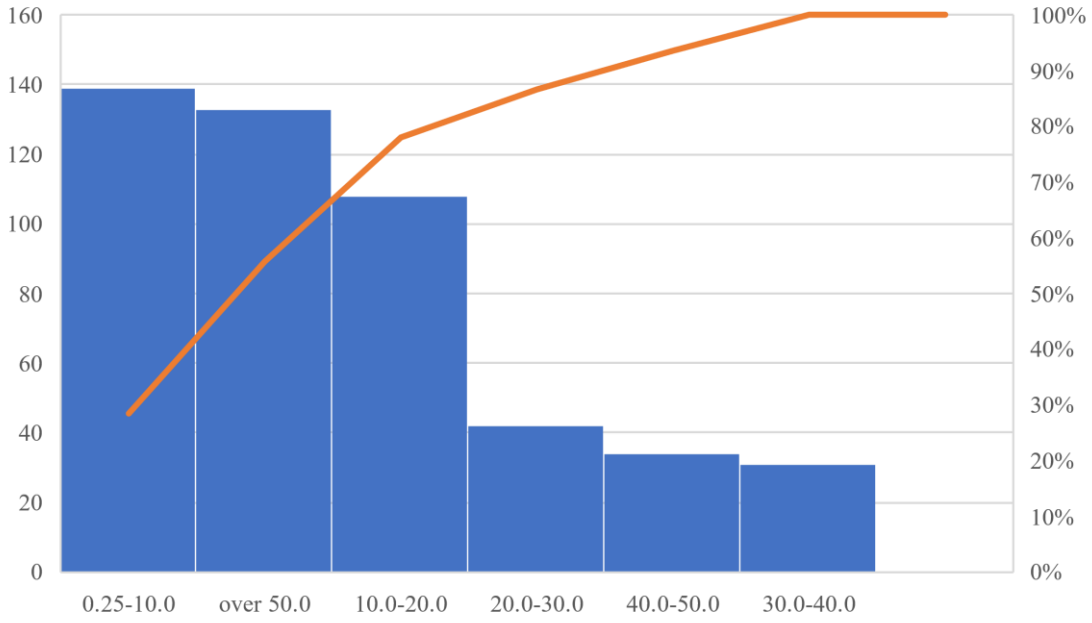
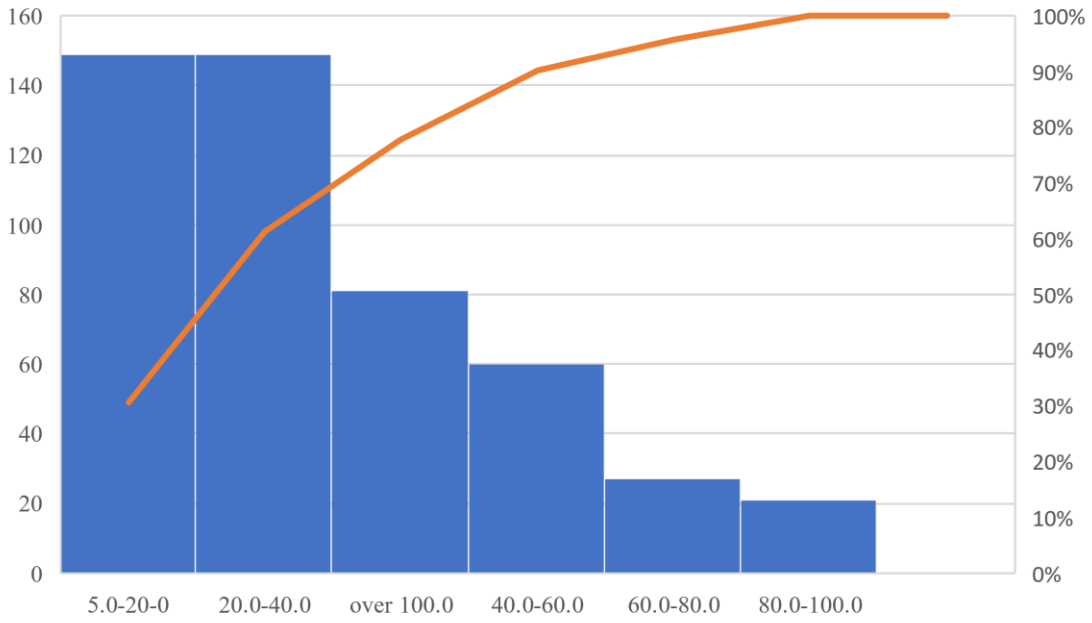


Figure 10. Number of observation based on the number of employees (thousand)
(Source: Personal elaboration)



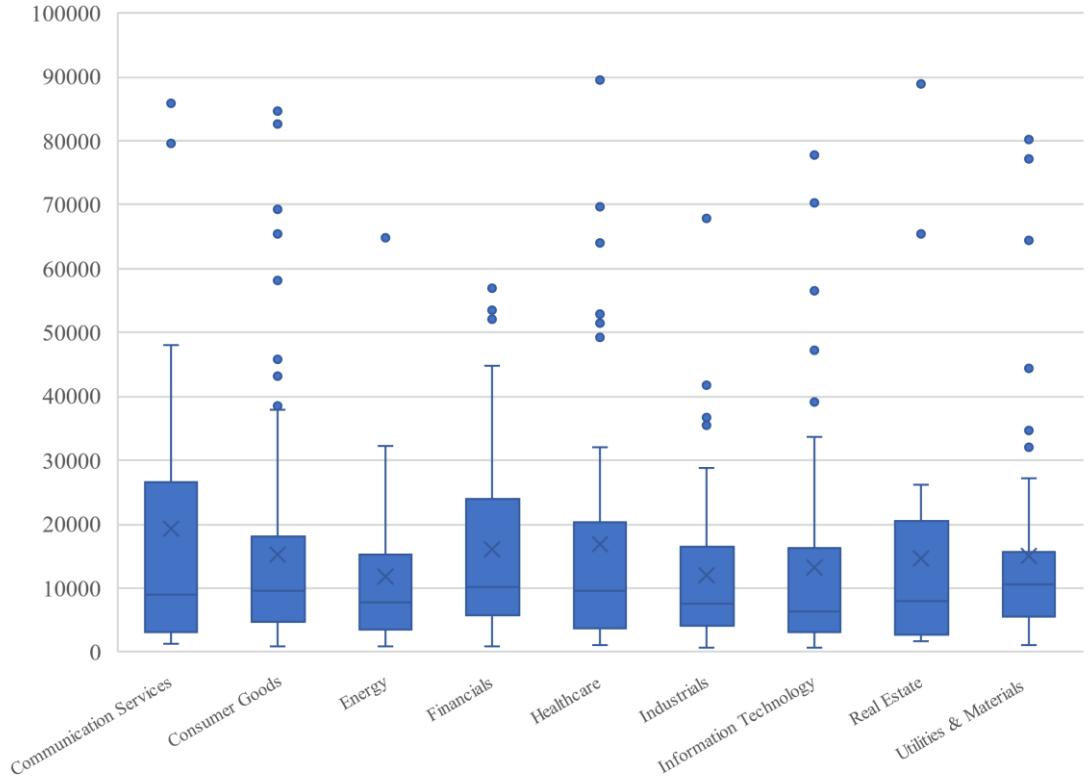
Ultimately, I would like to represent the same classification based on another criterion that I have introduced in order to seize my sample which is the market capitalization. As we can see in the following figure in fact (where the difference with the previous ones is that horizontal axes is a classification by clusters of market capitalization), the majority of the sample's companies (298 companies representing around 60% of the sample) report a market capitalization from 5bn $ to 40bn $ and another significant part of the sample (108 companies) shows a level of market capitalization ranging from 40bn $ to 100bn $. Even in this case, there is a moderate level of companies in the highest cluster of classification, which in this case is represented by those companies having a market capitalization of over 100bn $ (81 companies representing around 17% of the sample.

Figure 11. Number of observations based on the Market Capitalization (bn $)
(Source: Personal elaboration)



To conclude the description of the sample, it would be interesting to represent the same sample with a different perspective compared to the one adopted so far (in which the number of observations was divided by clusters of Industry, Total Revenues, Number of Employees and Market Capitalization). Now, I'll divide the observations per Industry and observe how these same metrics (Total Revenues, Number of Employees and Market Capitalization in the vertical axes) change from one industry to another. In order to do so, I'll adopt the Boxplot representation, where the "x" within each box represents the average value of the distribution, the horizontal line the median value, the upper and lower bounds the 25th and 75th percentile values. In the following boxplots, reported below, I represent the level of Total Revenues (thousand $), the Number of Employees (thousand) and the Market Capitalization (bn $) on the vertical axes divided among the various Industries.

Figure 12. Level of Total Revenues (thousand) divided by Industry
(Source: Personal elaboration)



As we can notice, the boxplot representing the level of Total Revenues shows a quite high homogeneity among the reported average and median values. In fact, the average level of Revenues among the various Industries of the sample is quite similar, ranging from 12.000 thousand $ to 19.000 thousand $ (12 to 19bn $) and the median value of the level of Revenues ranges has even a lower level of variance, ranging from about 7.000 $ to 10.300 thousand $ (9 to 10.3bn $). The Industries reporting a higher average level in their Total Revenues are the Utilities & Materials (19.8bn $) and the Communication Services (19.4bn $), followed by Financials and Consumer Goods, which respectively report 15.97 and 15.27 bn $. The lowest average is shown by the Energy Industry (11.85bn $).

Table 12. Average and Median level of Total Revenues per Industry
(Source: Personal elaboration)

Total Revenues (bn $)	Communication Services	Consumer Goods	Energy	Financials	Healthcare	Industrials	I.T.	Real Estate	Utilities & Materials
Average	19.35	15.27	11.85	15.97	16.86	12.13	13.15	14.76	19.78
Median	9.0	9.67	9.64	10.39	9.6	7.19	6.9	7.98	10.83

Such homogeneity in the average and median values is less present in the second boxplot, reported below, representing the number of employees per Industry. Even in this case the variance of the median level of employees per Industry, which ranges from 6 thousand to 34 thousand employees, is lower compared to the variance of the average level of employees per industry which instead varies from 10 thousand to

roughly 64 thousand employees. Companies operating in the Communication Services and the ones in the Consumer Goods record a higher average level of employees compared to the other Industries (respectively 63 thousand and 86 thousand), followed by the Financials (37 thousand employees on average). The lowest average is shown by the Real Estate (10.8 thousand).

Figure 13. Number of Employees (thousand) divided by Industry
(Source: Personal elaboration)

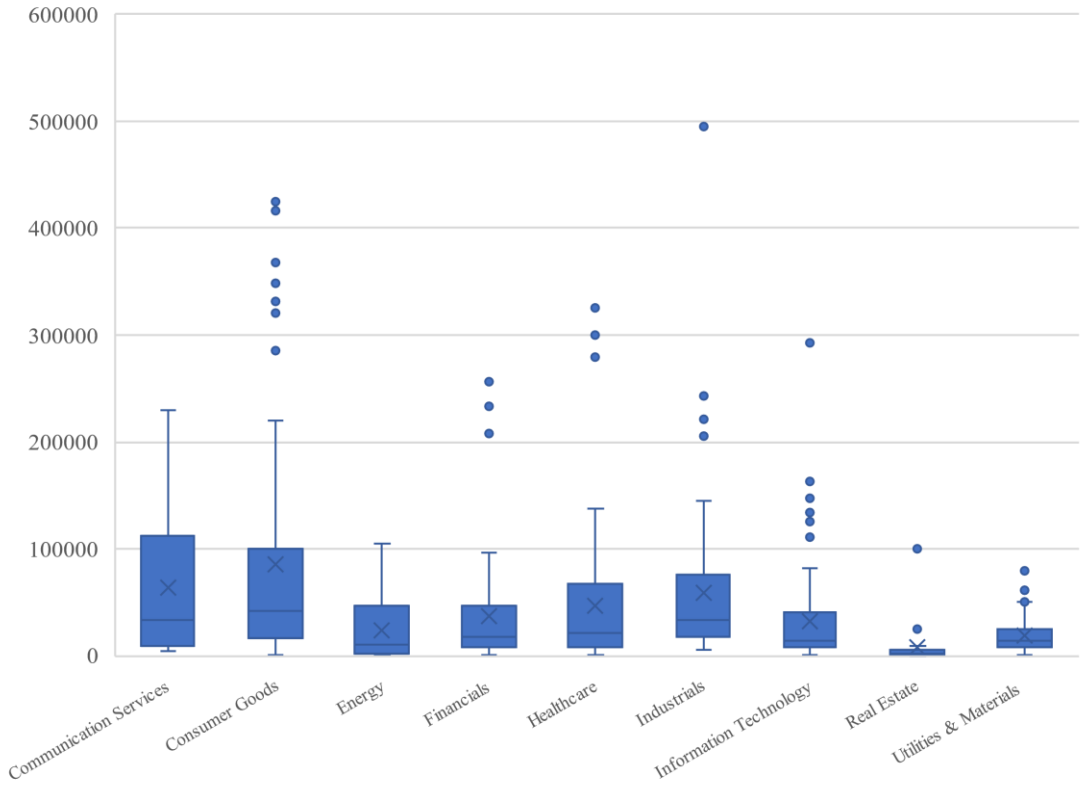


Table 13. Average and Median level of Employees per Industry
(Source: Personal elaboration)

N. of Employees (thousand)	Communication Services	Consumer Goods	Energy	Financials	Healthcare	Industrials	I.T.	Real Estate	Utilities & Materials
Average	63.86	86.03	23.90	37.32	47.14	58.7	32.29	10.8	19..25
Median	34.2	41.68	10.31	17.68	22.0	34.0	13.77	5.7	14.69

The last figure of this section represents the level of Market Capitalization. Here, the average level of Market Capitalization varies from 37bn $ to 65bn $ and the median value shows a lower range of values going from roughly 28bn $ to 37bn $. With respect to the most highly capitalized Industries, the Communication Services shows a higher average level compared to the other Industries (roughly 65bn $ in average capitalization) followed by the Energy and the Utilities & Materials Industries, whose average Market Capitalizations are respectively 64 and 63.9bn $. The Industry which reports the lowest average capitalization is the Financials (37bn $).

Figure 14. Market Capitalization (bn) divided by Industry
(Source: Personal elaboration)

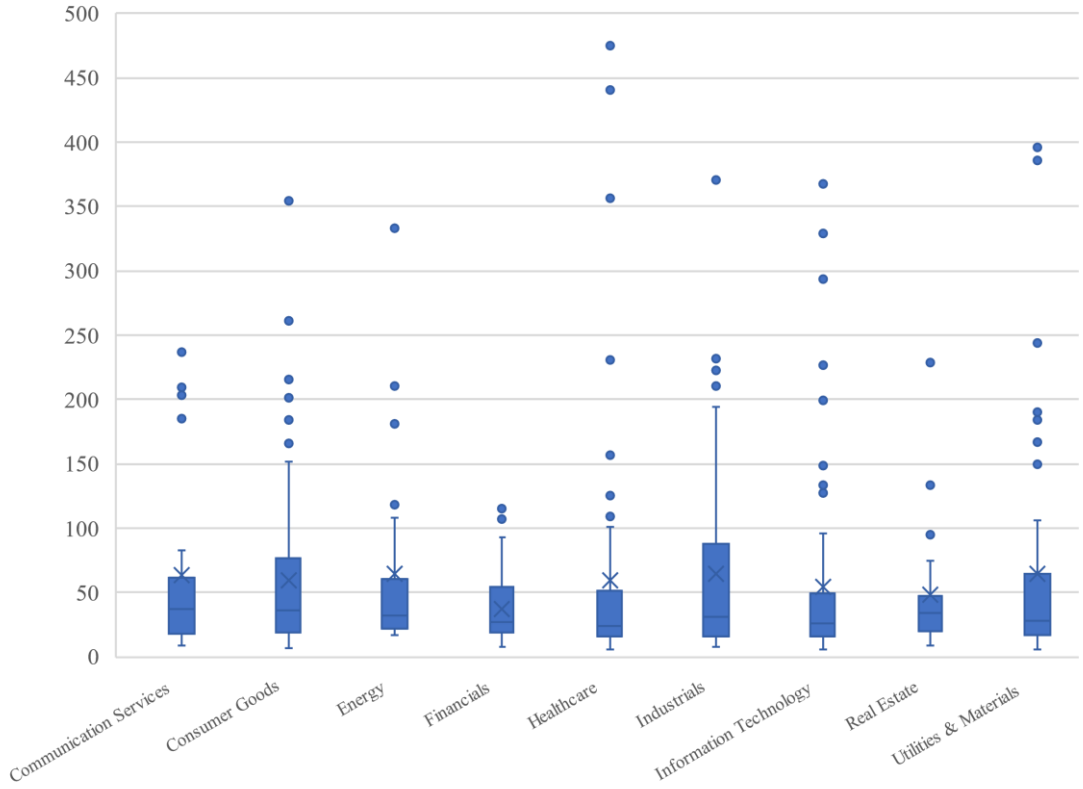


Table 14. Average and Median level of Market Capitalization per Industry
(Source: Personal elaboration)

Market Capitalization (bn $)	Communication Services	Consumer Goods	Energy	Financials	Healthcare	Industrials	I.T.	Real Estate	Utilities & Materials
Average	65.52	59.94	64.34	37.07	59.38	64.28	54.56	47.92	63.97
Median	37.67	35.67	32.16	26.66	23.67	31.40	26.25	34.34	28.34

3.2. Variables

The Dependent or Responsive Variable of this analysis is the level of Stock Based Compensation within the Board of Directors. Such Variable is related to all the forms of equity compensation provided to the members of the Board during the past annual fiscal year.

In fact, according to the definition provided by Bloomberg Database itself, the variable is defined as the "*Aggregated amount of all non-cash portion of compensation paid to the Board of Directors' members; including Stock Awards, Stock Options and all other equity- related forms of compensation"* (Source: Bloomberg Database).

Such level of Stock Based Compensation will be seized via a logarithm transformation of the variable itself. This since the seizing of the variable is required in order to obtain a more reliable and readable

outcome of the regression analysis (whose main aspects will be described in the upcoming sections). Therefore, given the large magnitude of the variable itself, the following seizing will be enhanced in order to increase the "normality" of the distribution and the anticipated readability of the regression's output. Therefore, the final outcome will be a logarithm of the Board's Stock based Compensation. Independently from the seizing such variable, considering also Bloomberg Database definition, includes all the forms of equity incentives that we have analyzed in the first part of this thesis. Data regarding the level of Stock Based Compensation for the sample which is object of this analysis have been downloaded from Bloomberg in April 2021, therefore such level refers to the amount of Stock Based Compensation during Fiscal Year 2020. All the various hypothesis described in sections 2.3. have been tested on this Dependent Variable.

With respect to the Independent Variables (or Predictors), every variable is related to a different Hypothesis. All the Dependent Variables have been obtained, as in the case of the Independent Variable, from Bloomberg Database and they relate to the past Fiscal Year. Among the first section of Hypothesis (that aim to find a relationship between Corporate Governance Indicators suggesting the presence of Agency Costs and the level of Stock Based Compensation within the Board, thus the determinants of Stock Based Compensation), the independent variables are as follows.

For Hypothesis 1, the Independent Variable related to it is represented by the number of Independent Directors within the Board of Directors. In the second Hypothesis, the Independent Variable is a so-called "Dummy Variable" (which means that it only assumes the values of 0 and 1) equal to 0 in case the CEO Chairman Duality is absent and equal to 1 if such Duality is present within the Board. For Hypothesis 3, its Independent Variable is the presence of the Lead Independent Director, represented with another Dummy Variable that changes from 0 to 1 whether such figure is present or not within the board. In Hypothesis 4, the Independent Variable is represented by the controlling stake of the first shareholder (represented as a percentage on the total amount of the company's outstanding shares) and, for Hypothesis 5, its Independent Variable is represented by another Dummy, assuming value 0 if the company's largest shareholder is a non-Financial one and 1 if it is a Financial Shareholder. The following table illustrates the distribution of the various Dummy Variables that will be used for Hypothesis 2 and 3 and 5.

Table 15. Distribution of the three Dummy Variables
(Source: Personal elaboration)

	CEO Duality	Lead Independent Director	Financial Investor
Yes (1)	210	282	383
No (0)	277	202	104

Relatively to the second set of Hypothesis (that aim to find a relationship between the company's Performance and the level of Stock Based Compensation) the independent variables are the following.
For Hypothesis 6, such variables are the company's Return on Equity (ROE) and the Return on Assets (ROA). As I will further explain in the upcoming paragraph, such Hypothesis will be divided in two sub-parts, as I will verify the presence of the relationship with Stock Based Compensation both with respect to ROE and ROA separately. Anyway, below is reported the formula of both the Return on Equity and the Return on Assets, in order to have an understanding of how such ratios are obtained.

$$ROE = \frac{Net\ Income}{Shareholders'Equity}$$

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

.

Finally, the last Hypothesis (number 7) has as its related Independent Variable the Tobin's Q Ratio, whose formula is reported below.

$$Tobin's\ Q = \frac{Market\ Value\ of\ Equity\ and\ Liabilities}{Book\ Value\ of\ Equity\ and\ Liabilities}$$

Other than these variables, which are related to the various Hypothesis, the Model includes three other variables that are not related to any Hypothesis. The first two variables relate to the Financial Position of the company and include the company's Liquidity (measured as the ratio between the company's Free Cash Flow divided by its Total Assets) and the company's Leverage, expressed by the ratio of the company's outstanding Debt divided by the company's Total Assets. The formulas of such two ratios are reported below.

$$Leverage = \frac{Total\ Outstanding\ Debt}{Book\ value\ of\ Total\ Assets}$$

$$Liquidity = \frac{Free\ Cash\ Flow}{Book\ Value\ of\ Total\ Assets}$$

Finally, the last variable of the Model concerns the Industry Classification for the company, following the previously mentioned Global Industry Classification Standards (GICS) classification of 9 macro sectors. Such qualitative variable will be transformed by R in 9 Dummy Variables according to the industry in

which the company itself operates. Such industries are: Communication Services, Consumer Goods, Energy, Financials, Healthcare, Industrials, Information Technology, Real Estate and Utilities&Materials.

Table 16. Model's Variables
(Source: Personal elaboration)

Variable	Description	Hypothesis	Expected Impact on the Response
Number of Independent Directors	Number of Independent Directors serving within the Board of Directors	1	Negative
CEO-Chairman Duality	The presence of the same person serving as both Chairman and CEO of the company	2	Positive
Independent Lead Director	The presence of such figure within the Board of Directors	3	Negative
First Shareholder Stake	The percentage (over the company's total outstanding shares) of the company's largest shareholder stake in the company	4	Negative
Typology of First Shareholder	Nature of the company's largest shareholder (divided into four categories)	5	Positive
Liquidity	Free Cash Flow/Book Value of Total Assets	n.a.	n.a.
Leverage	Total Outstanding Debt/Book Value of Total Assets	n.a.	n.a.
ROE	Net Income/Shareholder's Equity	6	Positive
ROA	Net Income/Book Value of Total Assets	6	Positive
Tobin's Q Ratio	Market Value of Equity and Liabilities/ Book Value of Equity and Liabilities	7	Positive
Industry Classification	Classification of the company in one out of 9 industries following the GICS classification	n.a.	n.a.

To conclude, I provide a table (represented above) which synthetically describes all the independent variables that I'll utilize in my study. For every variable is reported a brief description of the variable itself, the Hypothesis to which the variable corresponds and, most importantly, what is the expected impact on Stock Based Compensation (in light of the various Hypothesis described in section 2.3.). All the mentioned variables will be included in the regression model.

3.3. Research Models and Expected Result

In order to test the various Hypotheses, I have implemented a regression model based on multi-variate linear regression (multiple linear regression model), which is a regression based on more than one independent variable. Therefore, I have run a model that will be used to analyze each of the 7 Hypothesis. As anticipated before, every model's variable refers to a specific Hypothesis (with the exception of

Hypothesis 6 which will be analyzed based on two different variables). The term "linear" refers to the fact that I will present a model that assumes a linear relationship between the various variables of the models (dependent -y- and independent -x-). This undoubtedly represents a strong simplification assumption, as the complexity of real world data (especially the ones in the economic-financial sector) are far from being "linear". Anyway, such approximation can provide us with an approach that, in spite of being simplified, can result extremely powerful for making predictions and reach subsequent conclusions.

In order to predict the level of Stock Based Compensation within the Board of Directors (expressed as a logarithm transformed variable) in every single Hypothesis, as anticipated in the previous chapters, I will use 11 Independent Variables. The reason for why I have decided to adopt not one (or a small group) but eleven Independent Variables is related to my willingness of implementing a model that, in spite of the simplifying assumption above mentioned, is more specific as possible in order to obtain a clearer and more relying prediction of the outcome. In fact, independently from the prediction that we want to implement through Regression models, it is quite unusual that a single factor or variable is able to provide a full explanation of the final outcome, as there are typically plenty of different determinants related to the outcome of a certain Dependent Variable.

The basic equation of the multi-variate (multiple) linear regression (MLR) model is as follows:

$$y = \beta_0 + \beta_1 \cdot x_1 + \beta_2 \cdot x_2 + \cdots + \beta_p \cdot x_p + \varepsilon$$

Such equation can be divided into two parts which are:

- the structural part of the model ($\beta_0 + \beta_1 \cdot x_1 + \beta_2 \cdot x_2 + \cdots + \beta_p \cdot x_p$);
- the error part of the model (ε)

The structural part of the model represents, as the name says, the "structure" of the entire models as it contains the various Independent Variables (also called Predictors), which are all the various factor which I believe are relevant in affecting the observed values of the Dependent (or Response) Variable (y). The error part represents instead the part of information related to the Responsive Variable that is not taken into account in the model which means that cannot be explained by the existing Predictors that are present in the model. In other words, the error term relates to all the other factors different from x_1, x_2, ... and x_p that could influence y but are not included into the model. Moreover, the equation also comes with beta coefficients (β_j) which represent the partial slopes of the Response Variable with respect to the j-th predictor, ultimately referring to the sensibility of the Response Variable outcome for each unitary change in the coefficient's predictor (x_j).

The basic MLR (multiple linear regression) equation described above represents what is also known (in Statistical terms) as the Population Regression Line, which provides the relationship between the Dependent or Responsive Variable (in this study is the level of Stock Based Compensation within the Board of Directors) and the Predictors within the population of interest. Unfortunately, I did not have at my disposal the data regarding the entire population of all existing companies, therefore I had to solve an "inferential problem" which means that I had to estimate both the beta coefficients as well as the error term. In order to do so, as described in the previous sections, I have collected a random sample of 487 companies in order to obtain their data concerning both the Dependent and the various Independent Variables. The randomness of the sample was crucial in order to avoid any potential bias in the analysis. The estimation of the various coefficients has been performed with the so known "least square method", according to which among all the possible lines going through the points in the scatterplot representing the values of the Dependent Variable, the most accurate line is the one that minimized the sum of the squared residuals (which ultimately represent a measure of the prediction of the error). Therefore, the equation estimated using the sample data and not the whole population is called the "Estimated" Regression Line, whose formula is as follows:

$$\hat{y} = E(y) = b_0 + b_1 \cdot x_1 + b_2 \cdot x_2 + \cdots + b_p \cdot x_p$$

It is worth noticing that the Greek letters β_0, β_1, β_2 and β_p have been replaced with the corresponding Roman ones b_0, b_1, b_2 and b_p. The symbol $\hat{y}$ as well as the operator $E(y)$ are used to represent the expected or predicted value of the Response (Dependent) Variable. The values of the Response Variables which are obtained through the estimated regression line are called "predicted values". Such values, in general, tend to differ from the actual observed values, and the difference between the two are the so called "residuals" (or "prediction errors") which are defined in the following way: $e_i = y_i - \hat{y}_i$. As we will see later on, residuals play an important role in the assessing of the overall goodness of the model.

As anticipated before, every Hypothesis will be tested in the same regression model, whose variables have been described in the previous sections. Each variable relates (with the exception of Hypothesis 6) to a single Hypothesis, and each variable's data shown in the regression Output will be analyzed in order to accept or reject the Hypothesis itself.

For the model built, I have uploaded the related data on R Statistical Software, a free software environment for statistical computing and graphics. Such software provides access to a series of different statistical and graphical techniques.

Moreover, for the model's analysis I have used some graphical tools provided by R in order to better and more properly analyze it (including Correlation Matrix, Diagnostic Plots). At the same time, the statistical software provided for the model an output window reporting a series of information. Such series of

information are crucial, as they represented the base on which the Hypothesis were accepted or rejected. In particular, among R output's information, what was most important for the evaluation of the model, and therefore for the ultimate evaluation of the Hypothesis, was constituted by:

- measure of overall significance: information concerning the overall goodness of the model (including the Multiple R-Square and Adjusted Multiple R-Square, which relates to the portion of the response variability explained by the model)
- coefficients: a table which included as many rows as the number of coefficients and four additional columns indicating:
  - the coefficient estimates;
  - the coefficient standard errors (which provide a measure of the estimate uncertainty related to the sampling);
  - t-values, which represent the coefficient test statistics;
  - p-values, which can evaluate the reliability of the estimates;

What was actually relevant as well was represented by the slopes (sign) of the intercepts (coefficients) of the various Dependent Variables. In fact, the slopes can measure the average changes of the Response (y) to unitary changes in the Predictor (assuming that the other Predictors of the model are fixed), as it can indicate a positive or negative proportionality between the predictor and the response. In order to decide whether a coefficient (and its related Predictor) was significant or not, therefore in order to ultimately confirm or reject the Hypothesis, I have observed the p-values which are ultimately related to such estimates. Usually, as a rule of thumb, lower the level of the p-value and higher the statistical relevance of the Predictor in explaining variations of the Response. Therefore, the lower the p-value and the higher the impact of the relative Independent Variable on the Dependent one. I have adopted the standard threshold of a 95% confidence interval ($\alpha = 0{,}05$) in order to confirm or reject the "null hypothesis". In fact, in every MLR, the "null hypothesis" is represented by the fact that the beta of a specific Predictor is equal to zero, meaning that the Independent Variable whose p-value is under examination is not related or not significant in explaining variations of the Dependent Variable. For the Independent Variables object of the various Hypothesis whose p-values were lower than 0,05, the null hypothesis that beta is equal to zero has been rejected in favor of the "alternative hypothesis", which instead meant that the variable in question had an impact and a significant relationship with the Dependent Variable.
Also, as anticipated in the previous sections, I have introduced multiple Nominal (or Dummy) Variables into the model, in particular the presence of the "CEO-Chairman Duality" and the presence of the Independent Lead Director. The introduction of such qualitative variables would have not been possible if it was not for R, as the software is compatible with the treatment of such Nominal variables.

Relatively to the Model, I have explored ex ante all the data with some graphical representations. Moreover, I have introduced several other plots in order to more properly and in a more depth way comment on the appropriateness of the model itself before analyzing the regression output. Such plots are the so called "Diagnostic Plots", a series of four different plots representing:

- Residuals vs. Fitted Values Plot: it can allow us to verify both the appropriateness of the model and the overall linearity of the distribution, which is achieved if the data expand in the plot following a roughly horizontal line;
- Normal Q-Q Plot: it can test the "Normality" relationship between the Predictor and the Response. This means that, briefly, for every value of x, the Residuals have to be normally distributed and such relationship can be graphically verified in this plot if it shows observations lying on a roughly 45-degree oriented line;
- Scale-Location Plot: it verifies whether if the Standardized Residuals (the residuals' square roots) are spread equally along the range of Predictors. If the points are not randomly spread and their distance increases as we move to the right side of the graph, it means that the variance of the Residuals is not constant for every value of the Predictors, therefore violating the "Homoscedasticity" assumption, that assumes that the Residuals should have an equal level of variance for every x;
- Residuals Versus Leverage Plot: it to find the eventual presence of "Influential Cases", which are observations characterized by an excessive value of the Residuals that can therefore impact the regression results.

In particular, to check the appropriateness of the Model, I looked, among the various, at the mentioned "Residuals Versus Fitted Values Plot" (RvFV). The residuals are the prediction errors of the model and are computed as follows:

$$e = y - \hat{y}$$

Where y is the actual value observed and $\hat{y}$ is the Response value predicted. The mentioned RvFV is a scatterplot which reports for each observation of the sample the residuals (e) in the vertical axis and the fitted values ($\hat{y}$) in the horizontal axis. This plot is useful as it provides information on the Response after that it has been tested against the Predictors including in the model. This means that if this plot does not show a linear-kind distribution of values (roughly distributed on a horizontal line) there are other significant information that have not been taken into account for the prediction of the Response.

Also, in relation to what I have described in the previous paragraph (where I skimmed the sample from multiple outliers by introducing some criteria in order to have a more homogeneous set of observations), I took advantage of some tools provided by R, especially the previously described "Residuals Versus Leverage Plot" in order to identify if there still was the presence of some anomalous values (influential observations). In particular, I looked for observations with an excessively high residual and with an unusual value of one or more predictors that could therefore excessively influence the regression line (so called "hat values").

Finally, as a last step before comment the Model's Output, I checked whether the Model was characterized by an excessive relation between the Predictors (multicollinearity) or by an excessive heterogeneity (the previously mentioned heteroscedasticity). The first issue, related to multicollinearity, might arise whenever two or more Predictors are excessively correlated (positively or negatively). Such presence might affect the single p-values of the Output, making them less reliable. Therefore, in order to detect the presence of such multicollinearity among the Predictors, I have utilized the so called "Variance Inflation Factor" which is a tool that can allow to understand if such issue is present or not. On the other hand, the methodology to test whether homoscedasticity is present is to implement the so called "Breusch-Pagan Test" which tests the null hypothesis that the error variance is constant (in such case we have homoscedasticity) against the alternative hypothesis that the error variance is not constant (suggesting therefore Heteroscedasticity).

As a conclusion to this chapter, I'll briefly illustrate the expected results of my various hypothesis that I have formulated. In section 2.3. I have provided a more in-depth description of the expected results of my various hypothesis highlighting the rationale behind each single one. As mentioned in that section in fact, following that part of the literature that tend to believe that Stock Based Compensation are related to Agency Costs and able to positively impact the company's Performance and Market Evaluation, I expect two phenomena to occur. These are that whenever some indicators that might suggest the presence of Agency Costs within the company arise and when companies are characterized by higher values of certain Performance indicators, the level of Stock Based Compensation within the Board should be higher. Therefore, I expect the following:

- corporations recording a lower level of Independent Directors, the presence of the CEO-Chairman Duality or the absence of the Lead Independent Director should pay more Stock Based Compensation to its Board members;
- corporations characterized by a lower concentration of ownership and by the presence of a Financial Institution as its largest shareholder should provide a higher level of Stock Based Compensation to the Board;
- corporations characterized by low Leverage and higher Liquidity constraints should record higher values of the Board's Stock Based Compensation;

- corporations characterized by higher values of ROE, ROA and Tobin's Q Ratio are characterized by a higher level of Stock Based Compensation within their Board.

4.1. Model Overview

As described in the previous section, I have developed a Model on R Statistical Software in order to test every Hypothesis of this study. For stake of clarity, I remind (as illustrated in Chapter 3), that the Model is constituted of 11 Independent Variables which include: the number of Independent Directors, the presence of the "CEO-Chairman Duality", the presence of the Independent Lead Director, the largest shareholder's stake within the company, the presence of a Financial Investor as the company's largest shareholder, the company's ROE, the company's ROA, the company's Tobin's Q Ratio and (even if they are not related to any Hypothesis) the company's Liquidity, Leverage and Industry classification. The Dependent Variable is the Board Stock Based Compensation (seized via the logarithm transformation).
Before analyzing the Model's Output (whose information will allow us to accept or reject the various Hypothesis), I will provide several additional information extrapolated from R Statistical Software in order to enhance a more in-depth analysis of it, analyzing and verifying the respect of the major Regression conditions and checking the absence of phenomena that could negatively impact its predictability and reliability, such as are Multicollinearity and Heteroskedasticity. I will firstly, for stake of clarity, report a table displaying a Descriptive Statistic for the various variables, in order to better understand how they are distributed. Subsequently, I'll illustrate a correlation matrix that provides the relationship between all the Model's variables. After, I'll provide the Model's general equation for the study which will lead to the evaluation of the model's Diagnostic Plots (extrapolated from R), in order to verify the respect of the major Regression conditions. Finally, before analyzing the Output, I'll enhance two different tests to check the absence of Multicollinearity and Heteroskedasticity.
With Respect to the Descriptive Statistics, I provide the following table which represents, for the model's variables the minimum, first quartile, median, mean, third quartile and maximum values of the distribution.

Table 17. Model's Descriptive Statistics
(Source: Personal elaboration from R)

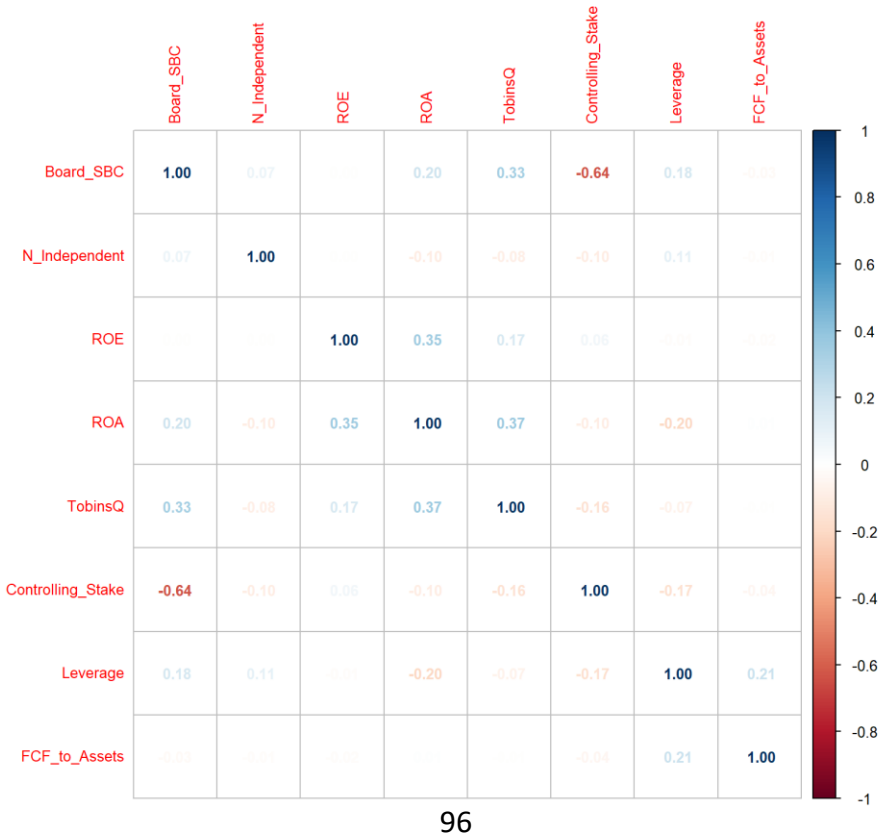
Model's Descriptive Statistics						
	Minimum	*1st Quartile*	*Median*	*Mean*	*Third Quartile*	*Maximum*
Independent Directos	0,00	8,00	10,00	9,35	11	20
First Shareholder's Stake	6,57	8,90	10,75	11,65	11,91	40,47
ROE	-0,66	0,02	0,11	0,19	0,23	0,68
ROA	-0,32	0,01	0,04	0,05	0,11	0,48
Tobin's Q	0,7	1,27	1,85	2,75	3,12	19,45
Liquidity	-0,25	0,02	0,06	0,07	0,11	0,39
Leverage	0,01	0,09	0,29	1,06	0,99	20,79

The binary categorical variables (such as the presence of the "CEO-Chairman Duality") are not included in the table, as their whole distributions are only made up of two values (0 and 1). Therefore, the descriptive statistics will be reported for the Model's numerical and continuous variables.

As we can observe from the table, all the variables show a certain level of homogeneity within their distributions. We can notice that in most cases the median values are higher than the average ones, suggesting a right-sided orientation and prevalence of the distributions themselves. With respect to the First Shareholder's Stake, the exceedance of a 10% value of both the median and mean values suggest that many of the sample's companies are characterized by the presence of a potentially influent shareholder within the company as well as a relatively low dispersion of ownership. The low Leverage Ratio's average value (0,29%) also indicates that most of the companies are characterized by a reasonable level of debt and therefore relatively lowly leveraged. At the same time, the higher than one median and mean values of the Tobin's Q Ratio indicate a positive market evaluation for most of the sample's companies which report as well high mean and median values of both the ROE and ROA (respectively 19,17% and 11,35%; 5,12% and 4,31%). The Liquidity however is, in most cases, relatively low, as it is indicated by its median and mean values.

After such initial representation, we can now proceed with the illustration of the Correlation Matrix. The matrix shows the relationship between all the model's variables via correlation indexes for each couples of variables. Such Matrix is useful in order to understand, other than giving us a suggestion of the relationship between each Independent Variable and the Dependent one, how the Independent Variables

Figure 15. Model's Correlation Matrix
(Source: Personal elaboration from R)



are related between each other, potentially indicating the presence of Multicollinearity in the Model (even though its eventual presence will be eventually confirmed in a separate and specific test). A graphical illustration of such matrix is reported in the previous page's figure. As we can notice from the image, it seems that there aren't two Independent Variables which seem excessively correlated between each other. In only a couple of circumstances we can notice correlation indexes between Independent Variables[17] which are above 30% (however still lower than 40%), such as for the relationship between the ROA and ROE or for the one among Tobin's Q and ROA. Anyway, an index below 0.40 is still reassuring therefore suggesting that no Multicollinearity is present in the Model (different scenario would have been whether of correlation indexes of over 0.6 between two Independent Variables were present in the matrix). Anyway, as it will be illustrated in the upcoming pages, we'll still empirically verify the eventual presence of Multicollinearity with a specific test provided by R Statistical Software. At this point we can illustrate the Model's MLR general equation on the base of which the Output will be generated. The equation is set according to the Multi-Variate linear regression features described in Chapter Three. Therefore, the equation is as follows:

$$Board\ Stock\ Based\ Compensation^{18} = \beta_0 + \beta_1 \cdot Independent\ Directors + \beta_2 \cdot CEO\ Duality + \beta_3 \cdot Independent\ Lead\ Director + \beta_4 \cdot Largest\ Shareholder's\ Stake + \beta_5 \cdot Insttutional\ Investor + \beta_6 \cdot ROE + \beta_7 \cdot ROA + \beta_8 \cdot Tobin's\ Q + \beta_9 \cdot Liquidity + \beta_{10} \cdot Leverage + \beta_{11} \cdot Industry\ Classification$$

Given the model's Structure we can now analyze the Model's Diagnostic Plots in order to verify if the major MLR Regression assumptions are verified. In order to do so, I report in the following figure the four Diagnostic Plots extrapolated from R.

By looking at the four graphs, which include the Residuals vs Fitted Plot, the Scale-Location Plot, the Normal Q-Q Plot and the Residuals vs Leverage Plot described in Chapter 3, we can see how overall the model is correctly specified. In fact, the Residuals Versus Fitted Values Plot shows a roughly straight horizontal pattern. This means that, after associating the Board's Stock Based Compensation with the previously mentioned Independent Variables, the overall outcome is reliable,

between each other. In case two of them should result excessively highly correlated, it might be an indicator of the presence indicating that there are no other major significant factors that have been

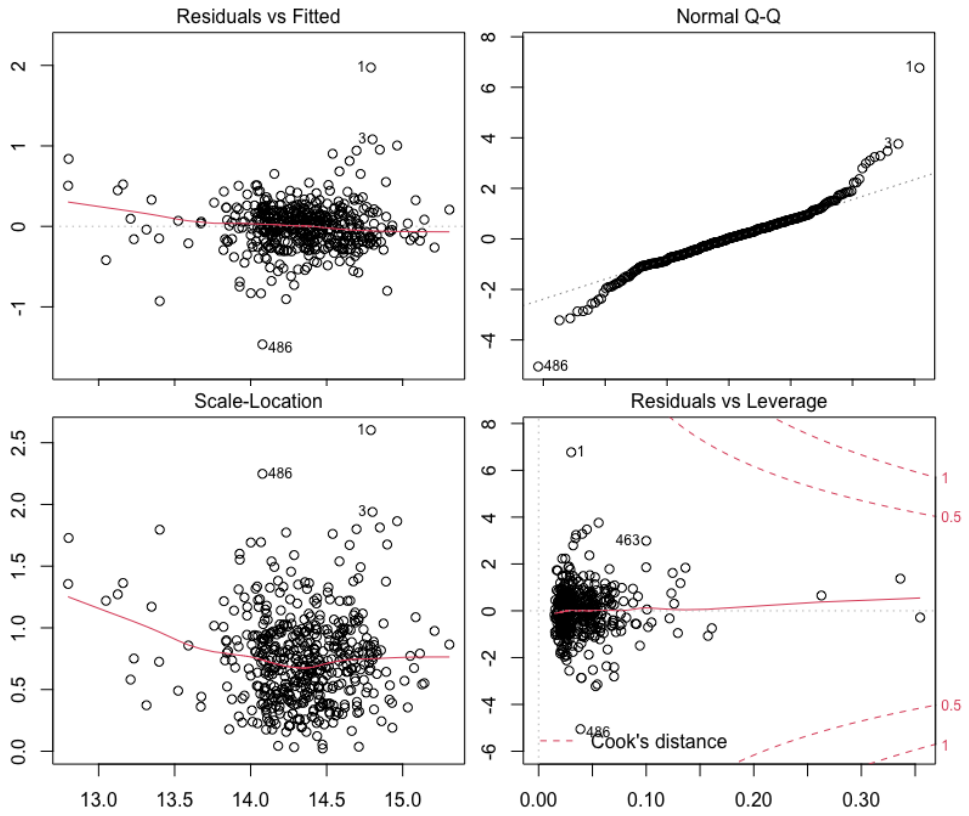
[17] Because of a character limit imposed by R in its software, I had to rename (as shown in the image) some variables into the following:

- Stock Based Compensation: "Board_SBC"
- Number of Independent Directors: "N_Independent"
- Presence of the Independent Lead Director: "Independent_Lead"
- Largest Shareholder's Stake: "Controlling_Stake"
- Presence of Institutional Investors "Institutional"
- Liqudity: "FCF_to_Assets"

[18] It will be always referred, also for future citations, to its seizing via the mentioned logarithm transformation.

excluded from the model and analysis. Also, the Normal Q-Q plot shows that the residuals are distributed on a diagonal oriented line, meaning that the "Normality" condition is respected.

Figure 16. Model's Diagnostic Plots
(Source: Personal elaboration from R)



At the same time, the Scale-Location plot shows a roughly linear pattern and, most importantly, a variance of the residuals that does not increase as we move to the right part of the graph, suggesting the non-violation of the "Homoscedasticity" condition. Finally, observing the Residuals vs Leverage Plot, we can see how the majority of the data is clustered in the bottom-left part of the graph. There are no particular problems in terms of influential observations, since there are no observations outside the red delimitations.

Overall, by observing and analyzing the Diagnostic Plots, it seems that the model is correctly specified and that it respects the major MLR assumptions. To further investigate on the overall reliability of the model, I check that no Multicollinearity is present among the variables. In order to do so, I briefly illustrate the "Variance Inflation Factor" (VIF) Test, which is provided by R Software. The VIF is an index calculated for every Independent Variable which is present in the model and allows us to measure the reduction in the precision of a coefficient estimate. In the number is close to 1, it means that the predictor is not affected by a Multicollinearity problem. Instead, if the VIF for a certain Independent Variable is roughly around 5, it means that the Predictor is affected by multicollinearity, which means that it could impact the overall significance and reliability of the model itself. From the table Reported In

the following page, we can notice how all the VIF values for all the Model's Independent Variables navigate around 1, which means that no Multicollinearity is present in the Model.

Subsequently, still to verify whether if the Model is correctly specified, I proceed with the testing for Heteroscedasticity. In order to do so, as anticipated in the previous chapter, I'll adopt the "Breusch-Pagan Test" (or "BP Test") where the null hypothesis of the error's variance being constant is tested against the alternative hypothesis of error's variance being not constant (suggesting therefore Heteroscedasticity). If the p value of the test is lower than $\alpha = 0{,}05$, the null hypothesis is rejected and we can conclude that the model is affected by Heteroscedasticity and vice versa.

Table 18. Model's VIF Test Results
(Source: Personal elaboration from R)

VIF Test Summary	
Variable	*VIF*
Independent Directors	1,058
CEO Duality	1,036
Independent Lead Director	1,138
First Shareholder's Stake	1,153
Institutional Investor	1,058
ROE	1,176
ROA	1,335
Tobin's Q	1,246
Liquidity	1,084
Leverage	1,084
Industry	1,192

In the following table I report the results of the "Breusch-Pagan Test". The test's result, illustrated in the following table, show that the test's p-value is higher than $\alpha = 0{,}05$. This means that we reject the alternative hypothesis by which the error's variance is not constant and accept the null one by which the error's variance is constant, meaning that we can state that the Model is not affected by Heteroscedasticity.

Table 19. Model's BP Test Results
(Source: Personal elaboration from R)

Breusch-Pagan Test Summary
BP = 15.712, df = 11, p-value = 0,1082

Such preliminary analysis, which included, other than the representation of the Correlation Matrix and the Descriptive Statistics, the Diagnostic Plots analysis and the enhancement of the "VIF" and "BP Test",

was dutiful in order to evaluate the overall significance and correctness of the model. In fact, the eventual presence of either Multicollinearity of Heteroscedasticity as well as, for instance, influential observations or the non-respect of the Normality condition, would have negatively affected the model itself, making it less predictable and reliable. After such analysis, we can state that the model is correctly specified, meaning that we are now ready to evaluate and comment its Output in order to accept or reject the various Hypothesis of this study.

4.2. Model Output

After the preliminary analysis conducted in the previous section, this section will be focused on the comment and analysis of the Model's Output. Such Output is crucial in order to ultimately accept or

Table 20. Model Output
(Source: Personal elaboration from R)

Model Output				
	Estimate	*Std. Error*	*t value*	*Pr(>|t|)*
(Intercept)	14,6150	0,1057	138,2080	< 2e-16 ***
Independent Directors	0,0186	0,0061	2,3840	0,0167 *
CEO Duality	0,1956	0,0273	7,1650	3,03e-12 ***
Independent Lead Director	-0,2741	0,0290	-9,4430	< 2e-16 ***
First Shareholder's Stake	-0,0388	0,0029	-13,5580	< 2e-16 ***
Intitutional Investor	-0,0079	0,0439	-0,1800	0,8573
ROE	-0,0003	0,0003	-1,2270	0,2261
ROA	0,0057	0,0017	3,3120	0,0030**
Tobn's Q	0,0300	0,0059	5,0930	5,11e-07***
Liquidity	-0,2259	0,1811	-1,2480	0,2129
Leverage	0,0130	0,0057	2,2870	0,0226*
Industry 1	0,0467	0,0682	0,6860	0,4933
Industry 2	-0,0310	0,0858	-0,3620	0,7178
Industry 3	0,0513	0,0712	0,7200	0,4716
Industry 4	0,1425	0,0721	1,9770	0,0486*
Industry 5	0,0482	0,0711	0,6770	0,4986
Industry 6	0,0932	0,0700	1,3310	0,1839
Industry 7	0,0360	0,0838	0,4300	0,6673
Industry 8	0,0815	0,0726	1,1230	0,2621
Industry 9	0,0842	0,0614	0,8430	0,3769
Signif. codes: 0 '***' 0,001 '**' 0,01 '*' 0,05 '.' 0,1 ' ' 1				
Residual standard error: 0,2959 on 482 degrees of freedom				
Multiple R-squared: 0,427, Adjusted R-squared: 0,412				
F-statistic: 34,05 on 19 and 482 DF, p-value: < 2,2e-16				

reject all the various Hypothesis of this study. Before going into the analysis of every Independent Variable[19]'s estimates and level of p-value, it is important to briefly comment on the measures of overall significance of the model (which are reported in the lower part of the Output shown in the previous page's table). This since such measures can allow us to draw conclusions concerning the overall Model as a whole and relatively to its reliability and predictability.

Looking at the output in fact, we can observe how approximately 42 percent (Multiple R-Squared) of the variability in the level of the Stock Based Compensation is explained by the multiple linear regression model having the Model's variables as Independent Variables. In particular, adjusting for the complexity of the model (the fact that we have 11 Independent Variables) and the randomness of the real-world data we obtain an Adjusted R-Square slightly higher than 40 percent. At the same time, the F-Statistic with a p-value of < 2,2e-16, therefore significantly less than $\alpha = 0{,}05$, suggests us that a significant relationship exists between the Response (Board's Stock Based Compensation) and the set of Independent Variables that are included in the Model. Hence, such values indicate us that the Model, other than being correctly specified, is overall significant and suggest a good level of reliability and consistency as well. Such measures of overall significance are to be considered quite satisfactory, given the randomness of the sample's data.

At this point I'll proceed with the analysis of the coefficient's estimates and p-values for the various Hypothesis, which will ultimately lead to the acceptance or rejection of the Hypothesis themselves.

4.2.1. Hypothesis 1

Hypothesis 1 aims to verify whether if the number of Independent Directors within the Board of Directors is associated to the level of Stock Based Compensation for its members. What I predict is that the higher the number of Independent Directors in the Board (therefore as the number of Independent Directors Increase), higher will be the control and monitoring over the remaining Board members. Such higher level of control should act as a motivating tool for the remaining Board members, and therefore be "substitutive" of the use of Stock Based Compensation to properly motivate them. Therefore, the more Independent Directors are present and I predict the less use of Stock based Compensation will be made inside the Board.

The Independent Variable of the Model which relates to such Hypothesis is the Number of Independent Directors within the Board, a numerical and continuous variable.

The Output shows a positive relationship between the number of Independent Directors and the Board's Stock Based Compensation. This is suggested by the positive sign of the Estimate (0,0186). At the same time, the low level of p-value (0,0167) shows that the Independent Variable is a significant factor for the

[19] I Remind that the 9 Industry numbers relate to the following order: Communication Services Consumer Goods, Energy, Financials, Healthcare, Industrials, Information Technology, Real Estate and Utilities&Materials

Response. However, in spite of the recorded significance of the Independent Variable with respect to the Dependent one, the Output provides us with enough evidence to state that the number of Independent Directors and the level of Stock Based Compensation in the Board are positively related. We can thus conclude that the relationship shown by the Model's Output is not a negative one, which was the one that I predicted, but positive. Therefore, all else being equal, the number of Independent Directors positively influences the level of Stock Based Compensation within the Board of Directors. All of this leads to the rejection of Hypothesis 1 as the relationship between these two variables is not negative as the one I have predicted. The Independent variable's estimate and p-value level present in the Model's Output are reported in the following focus table.

Table 21. Focus Model Output
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
Independent Directors	0,0186	0,0167 *

4.2.2. Hypothesis 2

In the second Hypothesis of my study, I predict that the eventual presence of the "CEO-Chairman Duality" should be associated with higher levels of Stock Based Compensation within the Board, to mitigate the increase in power, and subsequent higher influence over the Board itself, that the CEO could exercise once he also sits as the Chairman of the company. In this case the Model's Independent Variable related to Hypothesis 2 is the "CEO-Chairman Duality", a binary categorical variable, defined as I, whose value acts as follows:

$$I = \begin{cases} 0 & if\ the\ "CEO - Chairman\ Duality"\ is\ absent\ in\ the\ Board \\ 1 & if\ the\ "CEO - Chairman\ Duality"\ is\ present\ in\ the\ Board \end{cases}$$

In this case, contrarily to Hypothesis one, the results seem to confirm the predicted Hypothesis. In fact, the positive coefficient (0,1956) expresses a positive relationship between the Independent Variable and the Response. Moreover, its low p-value level (3,03e-12) is significantly lower than $\alpha = 0{,}05$, suggesting a significant relationship with the Model's Dependent Variable. All of this leads to the acceptance of Hypothesis 2, as we have demonstrated that the presence of the "CEO-Chairman Duality" is positively correlated and is significant enough to explain variations for the level of Stock Based Compensation inside the Board. In particular, the Model tells us that companies with the "CEO-Chairman

Duality" report, on average, a level of Board's Stock Based Compensation roughly 19% higher compared to companies where such duality is absent. Once again, I report a focus table from the Model's Output showing the Independent Variable's Coefficient and p-value level.

Table 22. Focus Table for Hypothesis 2
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
CEO Duality	0,1956	3,03e-12 ***

4.2.3. Hypothesis 3

Within Hypothesis 3, I try to verify whether if the presence of the Lead Independent Director within the Board of Directors is associated to higher or lower levels of Stock Based Compensation for its members. With a similar logic to Hypothesis 1, I predict that the introduction of this additional feature in the board (the presence of such Lead Independent Director) should increase not only the monitoring over the remaining Board members, but also the overall independence of the Board itself. Therefore, I assume that the eventual presence of such figure should reduce the need to motivate the remaining Board members with additional Stock Based Compensation, therefore reducing it.
Similarly to Hypothesis 2, the presence of the Lead Independent Director is captured through a binary categorical variable, which I named I_D, that assumes the values of 0 and 1 in the following way:

$$I_D = \begin{cases} 0 & if\ the\ \ Lead\ Independent\ Director\ is\ absent\ in\ the\ Board \\ 1 & if\ the\ \ Lead\ independent\ Director\ is\ present\ in\ the\ Board \end{cases}$$

Looking at the Model's Output, the Hypothesis Outcome seems to be confirmed. In fact, the coefficient's Estimate indicates not only a negative relationship with the Response (-0,2741) but also, due to the level of p-value (< 2e-16), a statistically significant one. This ultimately means that the presence of such figure inside the Board generates an average reduction in the level of Stock Based Compensation for its members. Therefore, such statistically significant negative relationship can allow us to confirm Hypothesis 3, as the presence of the Lead Independent Director in the Board shows, as seen in the Model's Output, an average decrease in the Stock Based Compensation for its members of roughly 27% compared to the sample's companies in which such figure is absent.

Table 23. Focus Table for Hypothesis 3
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
Independent Lead Director	-0,2741	< 2e-16 ***

4.2.4. Hypothesis 4

In the fourth Hypothesis of my study, I verify the incidence of the largest shareholder's shareholding on the level of Stock Based Compensation for its Board members. This since as the shareholding of the first shareholder increases, his power and influence within the company will increase as well (as his voting rights and economic interest inside the company are higher compared to the ones of a smaller shareholder). Therefore, a higher shareholding should correspond, as a consequence, to a higher level of monitoring over the Board's activity and higher ability from the controlling shareholder of replacing the Board members in case of poor performance. Because of this, I predict that companies characterized by a larger shareholding of their first shareholder should pay less Stock Based Compensation to its Board members, as the presence of such large shareholding should act as a monitoring and motivating tool for the existing Board members, making more difficult for them to deviate from the shareholder's interests. In this case the Independent Variable related to the Hypothesis is not, as it was for Model 2 and Model 3, a binary and categorical variable but, instead, a numerical and continuous variable which, in percentage, expresses the shareholding (in percentage over the total outstanding company's shares) of its largest shareholder. The following table reports the coefficient's estimate and p-value obtained from the Model's Output.

Table 24. Focus Table for Hypothesis 4
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
First Shareholder's Stake	-0,0388	< 2e-16 ***

By looking at the coefficient's estimate we can see how it is statistically significant at the 95 percent confidence interval. In fact, looking level of p-value, we can see how its low level (2e-16) suggests us a high significance and impact between the Independent Variable and the Response, as the value is considerably lower than $\alpha = 0{,}05$. The negative sign of the intercept (-0,0388) also suggests that we have an inverse proportionality relationship among the two, meaning that as the percentage of the largest

shareholder increases (for every decimal unit), the value of the Board Stock Based Compensation diminishes (of roughly 0,3 percent). All of this leads to the conclusion that Hypothesis 4 is accepted, as the original prediction by which the level of Stock Based Compensation within the Board of Directors diminishes as the largest shareholder's shareholding progressively increases was confirmed by the Model's Output.

4.2.5. Hypothesis 5

As a development of the previous Hypothesis, I also wanted to test whether if, other than the stake of the first shareholder, its nature can have an influence over the level of Stock Based Compensation within the Board. In order to do so, I have divided the largest shareholder of each company in the sample in two categories: Financial or Institutional Shareholders and Industrial or Non-Institutional Shareholders. The first category is made up of Financial Institutions (including Pension Funds, Mutual Funds, Insurance Companies and so on) which, due to the need of providing returns for their clients and the lack of business relationship with the company in which they invest, tend to be more focused on the monitoring of the company itself, paying particular attention to the implementation of good corporate governance practices and short-term performance. On the other hand, Strategic or Non-Institutional Investors might be less concerned in this type of issues, as they usually have business relationships with the company in which they invest, meaning that the objective of the investment is related to the enhancement of the overall group's value or the exploitation of long-term industrial synergies. Therefore, I predict that Institutional Shareholders will exercise a higher control over the target company compared to an Industrial Shareholder. Such higher level of monitoring over the target company's Board should, according to my prediction, reduce the need of adopting more Stock Based Compensation to properly motivate and monitor the Board of the target company and should instead be more present whenever the largest investor is not a Financial one, due to the lower level of control which it usually exercised in this second circumstance. What I therefore predict is that the nature of the fist shareholder of the company can have an impact over the Board's level of Stock Based Compensation.
In order to describe the nature of the company's largest shareholder, I have introduced a binary categorical variable which I named I_S, whose values are either 0 or 1 based on the following:

$$I_S = \begin{cases} 0 & if\ the\ company's largest\ shareholder\ is\ Non-Institutional \\ 1 & if\ the\ company's largest\ shareholder\ is\ Institutional \end{cases}$$

Unfortunately, in spite of my prediction, the Model's Output seems to show an opposite result. In fact, the high level of the coefficient's p-value is significantly higher than $\alpha = 0{,}05$ indicating that variable in

question is not influent on the Response and, therefore, the lack of a statistically significant relationship between the two variables. This leads to the rejection of Hypothesis 5, as we have found, contrarily to my initial prediction, no evidence of a relationship between the nature of the company's largest shareholders and the Board's Stock Based Compensation.

Table 25. Focus Table for Hypothesis 5
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
Institutional Investor	-0,0388	0,8573

4.2.6. Hypothesis 6

Hypothesis 6 is concerns the relationship between the company's Performance and the level of Stock Based Compensation within the Board of Directors in order to verify the effectiveness of such compensation mechanism to properly address Agency Costs. Such performance will be analyzed under two different perspectives, utilizing multiple performance ratios. The first perspective (Hypothesis 6) is an accounting-based performance, which is based on accounting indicators and metrics. In particular, I relate the company's Return on Assets (ROA) and Return on Equity (ROE) with the level of Stock Based Compensation within the Board. Following that part of the literature that believes that Stock Based Compensation can properly address the eventual arise of Agency Costs within the company, I predict that if such performance indicators are higher, a relationship should be visible in the company's level of stock based compensation. In particular, companies that are characterized by a low level or absence of Agency Costs are companies that are on average characterized by the absence of conflicts of interests, excessive risk-taking policies, an overall healthier and constructive dialogue among the Board members. I believe that such premise should lead to an overall healthier business characterized by a long-term view, sustainable objectives and, therefore, a higher attention on the asset management and investment policies of the company itself. What I therefore predict is that higher levels of ROA should be related with higher levels of Stock Based Compensation, as the reduction of Agency Costs should impact the efficiency not only in the deployment of financial resources into the company's assets, but also in the use and management of those same assets in a more efficient way, impacting therefore the profit that the company can generate from them (as the Return on Asset is a measure of the capacity of the company's management to generate profits from its assets).

At the same time, always following the same previously mentioned assumption regarding the literature, Boards that are characterized by a low level of Agency Costs and conflicts of interests should be

inevitably characterized by a constructive and healthy relationship with the company's shareholders. Therefore, as a metric that measures the efficiency of the business to generate income from the shareholder's equity, I predict that companies characterized by higher levels of ROE (Return on Equity) are characterized by higher levels of Stock Based Compensation. This since, in case of absence or low levels of Agency Costs, a higher emphasis on long-term shareholder value creation should be placed by the companies' Boards which will therefore adjust and properly set the investing and re-investing decisions of the company itself in order to achieve such ultimate goal. The Independent Variables that relate to this Hypothesis are therefore the company's ROE and ROA, whose formulas are reported below:

$$ROE = \frac{Net\ Income}{Shareholders'Equity}$$

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

.

Surprisingly, the result of such Hypothesis is controversial. In fact, as reported in the following page's focus table from the Model's Output, we record a positive and statistically significant relationship between the Board's Stock Based Compensation and the company's ROA, expressed by the low level of p-value (0,0030), but not with the company's ROE, whose level of the p-value is significantly higher than $\alpha = 0{,}05$, suggesting therefore the lack of a statistically significant relationship among the two variables. We can therefore conclude after such two analyses how the Stock Based Compensation seems positively related to the company's ROA but not to its ROE, which makes it difficult to clearly state whether if a strong relationship with the accounting performance is present or not. As stated before, what emerges from the Model's Output is an uncertain and controversial result, originated by the opposite outcomes, compared to my original predictions, for the two variables related to such Hypothesis.

Table 26. Focus Table for Hypothesis 6
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
ROE	-0,0003	0,2261
ROA	0,0057	0,0030**

4.2.7. Hypothesis 7

Hypothesis 7 is the final Hypothesis of this study and it is a conceptually complementary model compared to Hypothesis 6. In fact, as anticipated in the previous section, Hypothesis 7 is still related to

the company's performance (similarly to Model 6). However, the company's performance will be analyzed under a different perspective compared to Hypothesis 6. While we previously focused our attention on the "accounting" performance (based on accounting ratios and metrics such as the ROE and the ROA), now the focus will be shifted on the "market" performance, meaning that we will deal with a ratio that measures the market evaluation of the company. Because of this, the ratio that will be tested against the Board Stock Based Compensation is the Tobin's Q Ratio. As anticipated in the Hypothesis Development Section, the rationale of utilizing such ratio is, briefly, that, always with the assumption concerning the literature mentioned in the description of Model 6 in the previous sections, whenever investors (institutional or not) decide where to invest their money, they'll try to monitor, among others, the Corporate Governance condition of the target company itself. Companies that are characterized by healthier businesses, less conflicts of interests and excessive risk-taking policies should be preferred and prioritized by investors compared to companies in which Agency Costs are stronger. Therefore, if we follow the relevant literature that believes that the use of Stock Based Compensation can mitigate the arise of Agency Costs, I expect that the market should grant a reward for companies characterized by healthier corporate governance practices compared to the ones characterized by higher internal conflicts of interests. Such "reward" should occur with a prioritization of the investor's decisions, that will invest their money in such healthier companies. Such preference should inevitably inflate and drive up the market evaluation of such companies and therefore ultimately, considering that the Tobin's Q Ratio is given by the market value of the company's assets and liabilities over the book value of those, their Tobin's Q Ratio. What I therefore predict is that companies characterized by higher values of Tobin's Q Ratio are the ones where the level of Stock Based Compensation is higher as well, as they are those mentioned companies "rewarded" by investors who prioritize them in their investment decisions.
Therefore, Hypothesis 7 has as its reference variable the Tobin's Q Ratio, a numerical and continuous variable whose formula is reported below:

$$Tobin's\ Q = \frac{Market\ Value\ of\ Equity\ and\ Liabilities}{Book\ Value\ of\ Equity\ and\ Liabilities}$$

Concerning this final Hypothesis, the Model's Output (whose focus regarding the Tobin's Q is shown once again in the following table) shows a clear positive and statistically significant relationship between the Tobin's Q and the Board Stock Based Compensation. Such relationship is suggested by the positive sign of the estimate (0,030) and by the low level of p-value (5,11e-07), which is significantly below $\alpha = 0{,}05$, indicating a strong relationship between the two mentioned variables. Such values lead to the conclusion that Hypothesis 7 will be accepted, as the Model's Output have demonstrated the presence of a statistically relevant relationship between the level of Tobin's Q and the Board's Stock Based Compensation, coherently to my initial prediction.

Table 27. Focus Table for Hypothesis 7
(Source: Personal elaboration from R)

Model Output		
Variable	*Estimate*	*Pr(>|t|)*
Tobin's Q	0,0300	5,11e-07***

4.3. Analysis of the results

As anticipated throughout these previous sections of Chapter 4, the results of my study fully demonstrate 4 out of the 7-predicted hypothesis described in section 2.3 (Hypothesis 2,3,4,7). Concerning the remaining three Hypothesis (1,5,6), two have been fully rejected (1 and 5) and Hypothesis 6 have shown a controversial result by which the Hypothesis could have not been confirmed nor rejected. As a conclusive and brief summary of the Model's Output I provide the following list of synthetic conclusions that can be drawn from the previous analysis. In particular what have emerged from the various models is that on average and holding other variables constant we can state that:

- as the number of Independent Director unitarily increases in the Board, the level of Stock Based Compensation increases by 0,02 units;
- companies with the presence of the "CEO-Chairman Duality" record a level of Board's Stock Based Compensation approximately 20 percent higher compared to the companies in which such duality does not take place;
- companies whose Board is characterized by the presence of the Lead Independent Director record a level of Board's Stock Based Compensation approximately 27 percent lower compared to the companies in which such figure is absent;
- for every decimal increase in the controlling stake of the largest shareholder, the level of Board's Stock based compensation reduces itself for roughly 0,03 units;
- there is not enough evidence to conclude that the nature of the company's largest shareholder can influence the level of Stock Based Compensation within the Board;
- the relationship between Stock Based Compensation and the accounting performance of the company (measured under the ROE and ROA) is controversial, as it lacked for the first and was confirmed for the latter;
- the Tobin's Q ratio and the level of Stock Based Compensation are positively correlated.

At this point, the following sub sections will discuss the conclusions emerging from my empirical research and my interpretation to those same conclusions. I will firstly analyze the conclusions concerning the Determinants of Stock Based Compensation (which relate to the Board Composition and Ownership Structure) and, subsequently, on the relationship between Stock Based Compensation and the company's performance (Accounting and Market Performance).

4.3.1. Stock Based Compensation and Board Composition

Several studies conducted by multiple scholars documented differences in the Stock Based Compensation practices and the Board Composition. In particular, what mainly concerned the existing literature, was the degree of "Independence" of the Board, meaning its level of impartiality and objectivity in conducting the business operations acting in the best interests of she shareholders. Because of this, I have decided to take inspiration from some of the Corporate Governance best practices in order to test if Boards characterized by a higher degree of independence are actually the ones with a lower level of Stock Based Compensation. In other words, the objective was to understand if Stock Based Compensation is higher whenever Boards are less independent, coherently to that part of the literature that found evidence of such relationship (including Weisbach, 1988; Byrd and Hickman, 1992). Because of this, Hypothesis 1,2 and 3 tested what are the most commonly accepted indicators related to the independence of the Board, which include, respectively the number of Independent Directors, the absence of the "CEO-Chairman Duality" and the presence of the Lead Independent Director. What have emerged, is a confirmation that the more independent the Board is and the less use of Stock Based Compensation is enhanced (as Hypothesis 2 and 3 have been confirmed). Therefore, the absence of the Independent Lead Director and the presence of the "CEO-Chairman Duality" are two preconditions that are, all else being equal, mitigated with a higher level of Stock Based Compensation. This could tell us that the Compensation Committee (as well as the company's shareholders) is aware that a higher chance of executive deviation from the shareholders interest (causing therefore Agency Costs to arise) might take place in case those two preconditions occur, therefore increasing Stock Based Compensation as a preventive measure to avoid such misalignments and deviations from the shareholders' interest. With respect to Hypothesis 1, the positive relationship between the number of Independent Directors and the use of Stock Based Compensation seem to be closer to what was described by Bebchuck and Fried (2004), as they argued that Independent Directors as well could have been, due to an excessive influence from executive directors, subject to their influence and therefore potentially involved, as the executive directors, in misalignments of interest from the shareholders 'ones. Therefore, such positive relationship confirmed in Hypothesis 1 might suggest that, still as a preemptive measure, Stock Based Compensation is voluntarily not reduced as the number of Independent Directors Increase. This to make sure that Independent directors as well are subject to those same incentive and motivational mechanisms (generated by Stock Based Compensation) that executive directors are subject

to, in order to reduce the chances that (as described by Bebchuck and Fried) their level of independence might be breached.

4.3.2. Stock Based Compensation and Ownership Structure

The hypothesis (4 and 5) developed in relation to the ownership structure had, among others, the aim to verify some among the cornerstones concerning Agency Costs, in particular the commonly accepted theory that a higher dispersion of ownership (hence the lack of a strong controlling shareholder) can trigger a higher top management deviation from the shareholder's interests. Because of this, I have developed Hypothesis 4 and 5, which allowed me to conclude that there is a significant relationship between the largest shareholder's stake and the Board's Stock Based Compensation. In particular Hypothesis 4 (which was related to the relationship between the Board's Stock Based Compensation and the largest shareholders' stake in the company), confirmed the fact the higher economic interest and power that the largest shareholder progressively gains as he increases his stake in the company and higher level of monitoring over the Board itself. Moreover, higher the controlling stake and higher the ability of the largest shareholders to replace the management in case of poor performance or conflicts of interests. Considering also that the Board Members are directly appointed by the shareholders in both the Outsider and the Latin System, it is clear how the lower is the need of using Stock Based Compensation as the stake of the largest shareholder increases (since he can, progressively with the increase in his stake, more easily directly appoint trusted members and replace them). Such result is coherent with multiple studies concerning this topic, including Ryan and Wiggins (2001) and Mehran (1995).
Talking instead about Hypothesis 5, concerning the nature of the largest shareholder, the result went against my prediction and against the theory by which some typologies of investors, given their nature, should be less concerning compared to other in terms of monitoring over the Board (causing therefore an increase in the Board's Stock Based Compensation to mitigate such lower level of control). Therefore, the result shows that there is no distinction in the nature of the largest shareholders, all of them (independently from their nature) seem to adopt a higher monitoring in case of an increase in their stake. The result can tell us that, for Industrial or non-financial investors, the enhancement of long term synergies or of the overall group's value does not directly impact or transit solely through the Board's Stock Based Compensation policies and practices of the target company.

4.3.3. Stock Based Compensation and Company's Performance

The relationship between the level of Stock Based Compensation and the company's performance have certainly been an extremely debated topic among scholars. Multiple ideologies and opinions have been developed, making therefore difficult for a unitary view to emerge. In fact, while many scholars have

found evidence of a positive relationship, many others have argued that there is no evidence to support a relationship between Stock Based Compensation and the company's performance. Such division among scholars was actually what drove my curiosity in developing some hypothesis concerning this topic, in order to verify which part of the literature would have been confirmed from my study. Because of this, I have developed Hypothesis 6 and 7 in order to verify what could be the Consequence of Stock Based Compensation from a performance perspective. The results confirmed the last hypothesis of my study (Hypothesis 7) concerning the Tobin's Q Ratio. As a measure of the overall market evaluation of the company in fact, the positive and significant correlation between the Tobin's Q and the Stock Based Compensation seem to confirm that companies with higher Stock Based Compensation are positively rewarded by the market. This should be a signal that whenever investors (either institutional or retail) choose in which companies they want to invest they'll analyze, among others, the Stock based Compensation policies and practices of the target company itself. In fact, a company characterized by higher levels of Stock Based Compensation should certainly represent a more reassuring company compared to ones where the Compensation Committee develops compensation contracts where the Stock Compensation is lower. Investors know that the lower the Stock Based Compensation and higher the chance of Agency Costs (and therefore subsequent conflicts of interests, excessive risk-taking policies and so on) to arise. Therefore, the investor's preference of companies with higher Stock Based Compensation practices can certainly explain why the market evaluation for these typology of companies is higher compared to others. Such positive relation was, moreover, found by a substantial part of the literature (including, among others, Jensen and Murphy, 1990; Baysinger and Butler, 1985; Rosenstein and Wyatt, 1990). With respect to the accounting performance, the result of Hypothesis 6 was controversial, as I found evidence of a relationship between Stock Based Compensation and the Return on Assets (ROA) but not with the Return on Equity (ROE). With respect to the first (ROA), such relationship was anticipated by multiple scholars as well (such as Erickson, Park, Reising and Shin, 2005; Mehran, 1995; Main and O'Reilly, 1995). The cause of such relationship could be related to the fact that, as described in this thesis, Stock Based Compensation is long-term oriented. Therefore, higher levels of it should impact, among others, not only how financial resources are transferred into the company's assets, but also the asset management policies themselves of companies in which they are implemented (including the assets' life cycle, their acquisitions and disposals and so on). A sustainable and efficient long-term use of the company's assets will contribute to an increase of the Net Income generated by those same assets, causing therefore the enhancement of shareholders' value and, ultimately of the equity components of the Board members' compensation. All factors that positively impact, as well, on the company's ROA, and that could therefore be an explanation of the positive relationship between such performance ratio and the Board's Stock based Compensation. At the same time, the lack of a positive relationship with the ROE could be traced, among others, in the dilution effect that Stock Based Compensation can inevitably generate in the shareholding structure of the company, as anticipated by

several scholars (Grey, 2002; Kubo, 2005; Veliyath, 2007). This since as the number of the newly issued shares which are part of Stock Compensation plans increase, the level of the Shareholder's Equity will inevitably increase as well. Therefore, all else being equal (including the level of Net Income), an increase in the Shareholder's Equity account in the balance sheet of the company will reduce the ROE, as the ratio is obtained by dividing the Net Income by the level of Shareholders' Equity. At the same time, we have previously observed that a higher level of Stock Based Compensation could, by increasing the efficiency by which assets are utilized to generate income, increase the company's Net Income. Therefore, the reduction of the ROE generated by the increase in the Shareholders' Equity could be offset by the increase in the Net Income generated by a higher efficiency in the asset management policies of the company. Such increase of both the Roe's numerator and denominator could explain the lack of relationship between the ROE and the Stock Based Compensation.

Chapter 5. Conclusions

This paper represents a small step towards understanding whether, and how, Stock Based Compensation plays a role in both the reduction of Agency Costs arising in large-sized public companies and in the relationship with the company's performance.

This study offers a number of contributions. I mainly tried to provide an answer to the questions: "is Stock Based Compensation related to Corporate Governance indicators that might suggest the presence of Agency Costs in the company?" and "is there a relationship between the company's performance and its level of Stock Based Compensation?". Therefore, in other words, I tried to figure out what can be considered, all else being equal, the determinants of Stock Based Compensation and its relationship with corporate performance. The results proved that under certain potential Agency Costs conditions, companies react by increasing their level of Stock Based Compensation and that companies with overall higher market evaluations are characterized by a higher usage of Stock Base Compensation in their Boards. This means that my findings empirically support the belief that Corporate Governance variables are essential to explain differences in the various Stock Based Compensation policies enhanced by large firms.

More precisely, as anticipated above, this study demonstrates that Stock Based Compensation can be considered a tool to prevent and address Agency Costs and all the associated problems that such costs might imply for the company's shareholders. In fact, the paper suggests that Stock Based Compensation is significantly higher in those corporations where several Corporate Governance indicators suggest the presence of more accentuated Agency Costs such as: the presence of the "CEO-Chairman Duality", whose excessive power might negatively influence the other Board members and breach their independence; the absence of the Lead Independent Director, whose role is crucial in mitigating the relationship between the Independent Directors and the executive ones; a higher dispersion of ownership and therefore the lack of a large shareholder who might be more incentivized in properly monitoring the Board's activities, making sure that no deviation from the shareholder's interest takes place. Such conclusion seems to be closer to the concept of "Optimal Contract" described by Fama (1980), as we have seen that whenever the issues between shareholders and top managers are more likely to arise, the Boards tend to respond with a higher use of Stock Based Compensation in order to prevent those issues.

This study demonstrates as well how the use of Stock Based compensation can, other than being positively related to the company's income capacity generation through the efficient utilization of the its assets, be properly rewarded by the market. What emerged from the study was, in fact, that companies characterized by higher levels of both the Return on Assets (which measures, as anticipated, the degree of efficiency in the asset utilization practices in order to generate income) and the Tobin's Q ratio (an indicator of the market under or over evaluation of a company) are the ones where the use of Stock Based Compensation is more emphasized. Such conclusion remarks not only the importance of Stock Based

Compensation in the performance measurement process, but also its role in the overall improvement of the company's transparency and reliability in front of the financial markets' investors who periodically decide where to invest their funds or savings. In particular, it has been statistically proven that the level of Stock Based Compensation can significantly influence, other that the company's asset management practices, the investors' appetite and attraction towards the company itself and thus its overall market evaluation. The results have shown that investors tend to prefer, while enhancing their investment decisions, companies where Stock Based levels are, on average, higher. This not on only as a higher use of Stock Compensation is considered as a reassuring signal that Agency Costs are less likely to arise, meaning that investors tend to trust the top managers' commitment to create value ant to act in the best interests for equity holders, but also since, as emerged from the results, companies whose Stock Based Compensation is higher seemed to demonstrate a more adequate and efficient asset utilization practices in order to generate income. All a series of factors that inevitably drive the investor's sentiment, explaining therefore the mentioned higher market evaluations. Therefore, under this perspective, the analysis' conclusion seem to deviate from what many scholars have argued (including Bebchuck and Fried, 2004). This since a part of the existing literature was not convinced that the enhancement of a stronger Stock Based Compensation policy could have been positively related to the company's performance, due to the top managers' potential ability to overcome the compensation contracts and set them at their advantage (re-creating therefore a misalignment of interest situation inside the Board). Also, such higher market evaluation seems to completely deviate as well from those scholars believing that the use of Stock Based Compensation was a "value destroying" item for companies.

Such aspects lead to the conclusion that if top managers seem to get less interested in acting in the shareholders' interests pursuing, instead, personal or individual benefits investors are likely to disinvest their money from the company, causing therefore its market evaluation (including the shares on which Stock Based Compensation is set) to decline. Alternatively, managers who seem to deviate from the value enhancement objective for the company's investors are likely to be replaced with more shareholder-focused ones. Therefore, in order to avoid being replaced or to suffer losses themselves, top managers have to constantly demonstrate that they'll try to do everything they can to generate value and act in the best interest of the company's shareholders. In light of this consideration, it is therefore advisable for a company that wants to keep, for whatever reason, a low level of Stock Based Compensation within its Board, that it demonstrates its compliance to the best Corporate Governance practices thereby leaving no room for what could be potential presumption of behaviors that could be in conflict with the shareholders' interest.

Therefore, this represents the ultimate trigger that large corporations (especially the listed ones) have to adopt proper Corporate Governance mechanisms in order to protect their investors and to make sure that their interests are preserved. The achieved results of the previously mentioned analytical analysis seems to be, under such perspective, reassuring. In fact, the various Hypothesis developed in this study have

demonstrated that whenever the independence of the board might be violated, companies tend to increase, on average, the level of Stock Based Compensation in their Boards to re-align the top managers' interests with the shareholders ones. Hence the eventual arise of Agency Costs can be considered a justified determinant in order to explain the Stock Based Compensation policies and practices in large firms. Moreover, if it is true that a higher usage of Stock Based Compensation is enhanced whenever Agency Costs are more likely to arise, it is also reasonable to argue that such higher use of equity compensation can is related to a more efficient asset utilization and higher credibility for the company itself towards the capital markets. Under this perspective, an improvement of the asset utilization practices and overall higher market evaluation of the company can be considered valid related aspects concerning the adoption of a certain high Stock Based Compensation policy within the Board.

This paper has attempted to find evidence of the relationship between the level of Stock Based Compensation within the Board and both some Corporate Governance indicators (therefore what could be the determinants of such compensation) and the company's performance. Nevertheless, in spite of the quality and the depth of the analysis, it is worth pointing out the following limitations.

The first one is related to the fact that there hasn't been a rigorous distinction between the "First Type" and "Second Type" of Agency Costs. As extensively covered in Chapter 2, the first typology relates to conflicts between top managers and shareholders whereas the second typology arises due to misalignment of interests between the large block-holders and the minority investors. My analysis mainly took inspiration from the "classical" theory (as proposed by scholars including Bearl and Means, 1932; Meckling, 1976) and have therefore focused on the relationship between shareholders and the Board members, studying how such "external" subjects (shareholders) feel more or less assured, according to certain conditions, by the work of the "internal" Board members (mainly executives). This means that the focus was mainly oriented towards the "First Type" of Agency Cost. However, as anticipated, another typology of Agency Cost could arise in the moment in which the ownership structure of the company comprises one or multiple large shareholders who, exercising an excessive control over the company, can pursue their personal interests at the expense of the minority shareholders. Such aspect, and all its related issues and consequences, related to the "Second Type" of Agency Costs have not been explored.

Secondly, no distinction has been made when analyzing Stock Based Compensation between firms operating in different industries or in different phases of their life cycle. Although I have extensively covered, in Chapter 3, the sample's companies division into 9 different industries and although I have inserted in the Model an Industry classification for the sample's companies, the analytical analysis was not set in a way that would have allowed me to obtain industry-adjusted or life-cycle stage related results for the level of Stock Based Compensation. The reason for why I have not enhanced such data transformation resides in the fact that, after having introduced a specific dummy variable (in Hypothesis 5) to enhance a distinction between the company's Largest Shareholders, it resulted that there was not enough evidence to potentially believe that the level of Stock Based Compensation might significantly

vary from industry to industry. Therefore, I tested all the various Hypothesis regardless of the industry in which the firm operates.

To conclude, further research could be enhanced in order to examine the impact of multiple other elements on the Board's Stock Based Compensation including: this studies' Corporate Governance variables taking into account the difference between several industries in order to be able to examine industry-adjusted levels of Stock Based Compensation; other Corporate Governance variable including the typology of Board structure (one-tier or two-tier), the presence of a given Committee within the Board; variables taking into account the life-cycle's stage in which the company currently is. In addition, it would be interesting to find out whether the conclusions that have emerged with this study still holds changing the Dependent Variable in a variable that could enhance a distinction into the various forms of Stock Based Compensation (for instance only of Stock Options or Stock Grants and so on). Such suggestions might provide interesting developments in the research field of Corporate Governance and the always current and debated issue of Agency Costs.

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Summary

This study mainly concerns two research questions: is there a relationship between Corporate Governance indicators suggesting the presence of Agency Costs and the Board's Stock Based Compensation, and is there a relationship between the company's Stock Based Compensation and its performance? The results of the study provide empirical evidence that: companies with a less "independent" Board (characterized by the presence of the "CEO-Chairman Duality," the absence of the Independent Lead Director, and a strong dispersion of ownership) are characterized, on average, by stronger levels of Stock Based Compensation within their Boards; companies characterized by higher market evaluations and higher Return on Assets are associated with higher levels of Stock Based Compensation.

Literature Review

Stock Based Compensation is a constantly debated topic in the world of Corporate Governance due to the complexity of the phenomenon and its role in numerous recent corporate scandals and crises. The use of Stock Based Compensation has been widely analyzed and commented on by economists and scholars even if most of the attention has been focused on the "Governance level" (the hierarchical level related to the company's Board of Directors and its top managers) of each organization. Stock Based Compensation, however, is also extremely popular among middle to lower-level employees, employed at the so-called "Firm Level" of the organization. Concerning Stock Based Compensation at the Firm Level, the most generally accepted and diffused forms of Stock Based Compensation include Stock Options, Restricted Stock, Restricted Stock Units, Stock Appreciation Rights, Phantom Stock, and Employee Stock Purchase Plans.

With respect to Stock-Option Compensation, it is a mechanism by which the employee of the company obtains the future option (therefore not an obligation) to acquire, at a future time, a certain predetermined number of shares of the company at an established price. Restricted Stock or Restricted Stock Plans instead allows the employee to buy shares of the company in the future, not at a previously fixed price, but at a discount from the current market price. Slightly different from the Restricted Stock are Restricted Stock Units. This form of compensation is a simple grant achieved through a distribution schedule and is given to the employee as a reward for having either remained with the company for a certain period or having achieved certain performance targets. Stock Appreciation Rights are slightly more complex than the previous alternatives, as they can be considered as a bonus for the employee which corresponds to the appreciation of the equity of the company within a predetermined period. The mechanism can be compared to a call option, as the employee obtains a profit from the Stock Appreciation Right if the stock price of the company rises. In such a scenario, the employee is exempt from the payment of the exercise price, and instead of obtaining the company's stock (with the possibility of obtaining a profit by reselling it), the employee is given cash periodically corresponding to the amount by which the stock's value has

risen. The penultimate form among those most common of Stock Based Compensation at a Firm Level is known as the Phantom Stock. Phantom Stock plans work the same way as Stock Appreciation Rights with a small difference. In this case, the employee is involved in a plan where he receives the benefits resulting from the appreciation of the stock without owning the stock and by never receiving it. However, in the case of Phantom Stock, there is no application for a specific number of the company's shares, as is the case with Stock Appreciation Rights. Phantom Stock relates to the totality of the company's stock. Lastly, Employee Stock Purchase Plans, are company-run programs in which the employees are given the opportunity to purchase shares of the company at a discounted price. Among these alternatives, a recent survey conducted by Deloitte has shown that the most common Stock Based Compensation alternative used among Firm Level Employees are Restricted Stock Units.

The most relevant literature has focused its attention on the Governance Level of organizations instead of Firm Level organization. Among Governance Level employees, a main distinction must be made between Executive and Non-Executive Directors within the company's Board. Executive Directors both serve on the board and have managerial duties in the company. Non-executive directors have no managerial role and are therefore not involved in the daily operations. Non-Executive compensation packages are usually made up of a fixed salary plus additional fees in case certain circumstances occur such as serving in other committees (Zattoni, 2020). Additionally, these employees are often entitled to receive Stock Based Compensation. However, this aspect is debated among scholars, as many of them argue that it could create an obstacle and destabilize the employee's independence and objectivity in his role, thus increasing the probability of a rise in agency costs (Dalton, 2011). Executive compensation is more complex and is made up of four major parts, the first being a basic salary consisting of a cash payment repeated monthly. The second part is in the form of short-term incentives consisting of an additional portion (either extra cash or stock) that is linked to a short-term parameter indicating the performance of the company. The third component of the compensation contains long-term incentives and, finally, the fourth part consists of fringe benefits (a series of benefits and items purchased by the company and freely used by the executive).

Of the four components of executive compensation, scholars are most concerned with short and long-term incentive plans. The former is usually set via a mechanism by which the incentive (both under the form of cash and equity) can vary between a "Hurdle Level," in case a minimum performance metric is achieved and a "Cap," in case a certain performance threshold is exceeded (Allock, 2017). For such forms of compensation, the relevant literature debates on the potential inducement for the executive in maximizing short-term performance therefore destabilizing long-term growth and stability of the entire firm, or the executive's incentive to manipulate the performance metrics on which they are reviewed (Zattoni, 2020). Long-term incentive plans, unlike short-term ones, are rarely made up of additional cash. They divide themselves in two categories: "Option Plans" and Non-Option Plans." Non-Option Plans consist of a grant. This means that at a certain point in the future, the executive will receive a direct payment in the

form of stock. There is no right for the executive to buy the stock based on whether the stock price is above or below a fixed exercise price. Such Non-Option Plans include the above-mentioned Phantom Stock, Stock Appreciation Rights, Restricted Stock or Performance Shares. Stock Option Plans are instead based on Stock Options. The major variables of a Stock Option Plan are constituted by the Vesting Period (the period in which the option exists but it cannot be exercised), the Exercise Price (the future price at which the shares will be eventually bought), and eventual Sale Restrictions on the stock once bought. Each of these items is set by the Compensation Committee. Here, the debate shifts on how the Compensation Committee should properly set such items in order to avoid opportunistic behavior, misalignment of interests, or deviation from the shareholder's interests, for instance, making the vesting or exercise period not linked to time, indexed exercise prices, or long-term sale restrictions (Meulbroek, 2001; Qu and Percy, 2016).

The use of the aforementioned forms of Stock Based Compensation significantly differ from country to country. A report edited by Equilar shows how the use of Long-Term Incentive Plans is remarkably higher in Anglo-Saxon countries compared to European ones. European countries instead record higher levels of base salary and short-term bonuses for the company's CEO compensation, indicating a greatly different trend in terms of Boar's Stock Based Compensation practices.

Relating to the setting of Stock Based Compensation contracts, the relevant literature tends to identify multiple variables that are considered by the Compensation Committee in defining said contracts. Firstly, we have environmental factors, which include the relative corporate and tax law, accounting standards, and industry features. Secondly are factors concerning the company's stakeholders and the company itself, including its size or life cycle stage. Such external variables directly impact the compensation contract and, therefore, its objective (either attraction or retention of talent), the beneficiary (CEO or other Executives), the structure (the choice of the plan), and the performance metrics on which the contract is based (Airoldi, 2003). Other series of variables include the individual beneficiary's variables as well as organizational aspects (internal control systems).

In addition to debating the structure of Stock Based Compensation, many scholars have also analyzed the phenomenon with respect to agency costs and its capacity in properly addressing them, therefore generating different schools of thought. An absolute milestone is represented by the "Optimal Contracting Theory" (Fama, 1980). This theory starts from the assumption that the modern companies' structure, characterized by a separation of the decision-making power and the risk bearing spheres enhanced by different categories of people (top managers and shareholders), are inevitably characterized by attempts or inducements from the top managers to pursue individualistic behaviors, maximizing their personal gains at the expense of the shareholders. Such "deviation" from the shareholders' interests can be solved and automatically neutralized, according to Fama, via an "Optimal Contract" (therefore via Stock Based Compensation) treating the manager's wages like a "marketable asset" and consequently making it subject to the same efficient capital market rules in which shareholders diversify their portfolios. The

"Optimal Contracting Theory" implies that the elimination of agency costs and the relative misalignment of interest between managers and shareholders can be achieved via an optimal contract that properly disciplines the manager's compensation (hence Stock Based Compensation Contracts). This form of compensation was therefore seen as a generator of the right level of incentive for executive and non-executive directors to act in the best interests of the company, ensuring the pursuit for the preservation, long-term value creation, and the prosperity of the company in the best interest of its shareholders. This leads to the conclusion that Stock Based Compensation is seen as an Optimal Solution to address agency costs and the potential misalignment of interests and conflicts that might arise between managers and shareholders. This means that, in Fama's view, as the conflict between these two figures becomes more incentivized, the need for such "Optimal Contracts" grows in order to make sure that such conflicts are mitigated. Therefore, the need to adopt Stock Based Compensation had to be strictly related to the manager's potential ability to deviate from the shareholder's interests.

Contrary to this first belief, another remarkable view was offered by Bebchuck and Fried (2004) in their "Managerial Power Approach Theory." The authors, in fact, argued that simple Stock Based Compensation contracts are not sufficient to properly address agency costs, as they don't consider other possible factors that can lead to a misalignment of interests between managers and shareholders. The theory assumes that managerial power can shape and determine many aspects of the executive's compensation. This suggests that, despite an optimal contract, top managers and executive directors can have such a strong influence within their companies that they can overcome the design process for compensation contracts, shaping it to their advantage, thereby recreating the misalignment of interest situations between them and the shareholders of the company. Such excessive influence can be generated by a magnitude of factors, including excessive loyalty of the company's executives towards the CEO, the CEO's ability to grant extra benefits to the other executives, the absence of a strong shareholder, the fear of not being reelected, or an excessively weak Board. The series of such preconditions allows top executives to influence to their advantage Stock Based Compensation contracts, overcoming their ability to solve agency conflicts. The distortion of such contracts is represented by factors including excessive levels of base salary, cash bonuses not linked to individual performance, and short-term orientation of equity incentives. Bebchuck and Fried offer their personal solutions to such excessive influence from the company's executive and CEO. Stock Based Compensation, contrarily to Fama's view, is not seen as an optimal solution that can, by itself, properly address agency costs. Therefore, even if traditional indicators suggesting the presence of agency costs in the company are absent, they might still arise due to the excessive influence and power from the company's executives that could allow said executives to shape the compensation contracts to their advantage. This ultimately means that Stock Based Compensation is not considered a unique solution to address agency costs.

Scholars have also expressed views on separate theories concerning Stock Based Compensation. One of these theories is the "Gap Cost-Value Theory" (Muurling and Lenhert, 2004), which states that the use of

Stock Based Compensation is not an optimal solution for the company. This is caused by the executives receiving the company's equity usually being subject to several restrictions, as they are unable to diversify their shareholdings, meaning that they are prohibited from taking actions to hedge their risk position (buying competitor's stock or short selling their own company's stock), and they also have restrictions on the trading of those same options. In other words, whoever receives the stock receives less than the cost incurred by the company to grant them, rendering the stock option value to be below its market value, resulting in an opportunity cost for the company. The opportunity cost is represented by the value loss of not having sold the option into the market to investors that could have properly diversified their positions (therefore receiving the full market value), and instead selling it to employees who could not diversify and hedge their positions. This means there is a resulting gap between the value attributed to the employee and the cost for the company.

Another interesting insight is provided by Grey (2002), who focuses on the opportunity cost that Stock Based Compensation can generate for the company, represented by the dilutive effect that the issuing of new stock has for such compensation packages. Also, the opportunity cost is represented by the lower amount of cash raised compared to how much would have been raised if the shares had been sold into the market and not to the company's executives, as they are usually issued at a discount or granted.

A second aspect in which literature debates is the relationship between Stock Based Compensation and corporate performance. In this case, the relevant literature seems to be quite divided. While many have failed to prove an existing relationship (Cordeiro and Veliyath, 2007, Jeppson and Smith, 2011, and Kubo, 2005), others have found evidence of it. For instance, Mehran (1995) investigated in over 200 non-financial US companies the relationship between the equity-based executive compensation and the firm's performance that show a positive relationship between the compensation and both the Tobin's Q Ratio and the Return on Assets (ROA). Other interesting facts were brought out by Jensen and Murphy (1990) who, analyzing the equity compensation of over two thousand US company CEOs from 1974 to 1986, found a positive relationship between the equity compensation and the firm's performance in terms of firm values (Equity Value and Enterprise Value).

Finally, such division is also recorded on the relationship between corporate governance and corporate performance. Some researchers have shown the absence of a link between corporate governance indicators, especially regarding the independence of the Board of Directors, and the company's performance (Erickson, Park, Reising and Shin, 2005; Main and O'Reilly, 1995). However, research by Baysinger and Butler (1985), found a positive relationship between the level of stock compensation of more independent Boards of Directors (characterized by factors such as a higher number of independent directors) and the firm's performance, especially in terms of Return on Equity and the overall market evaluation. A similar conclusion was reached by Rosenstein and Wyatt (1990). Several other studies have also shown a positive relationship between the independence of the Board of Directors (especially in the

presence of independent directors) and the company's performance (Xie, Davidson and Dadalt, 2001, Byrd and Hickman, 1992, Weisbach, 1988).

We can therefore see how a major trend is absent in the past relevant literature with respect to both the relationship between the stock-based compensation and performance and the relationship between some corporate governance indicators and the company's performance. Such a trend was recorded in the aforementioned relationship between Stock Based Compensation and agency costs.

Providing a definition to Corporate Governance is not an easy task. In fact, for its definition, we record two major views. The first one is provided by Larcker (2007) and Rezaee (2003). Corporate Governance, in their view, is constituted by mechanisms to protect shareholders whenever there is a separation between the ownership and the control sphere within the company, meaning when the figures of the shareholders and of the managers are separate. A second view is provided by Hanson and Song (2006), where Corporate Governance is seen in relation not only to the protection of the company's shareholders but to the generic misalignment of interest between the company itself and the stakeholders, a series of other subjects that interact with it. Therefore, from Hanson and Song's perspective, the problem is not to protect shareholders from the company's management behavior, but the mitigation of potential conflicts that could arise between the company and its interacting subjects. Such distinction in the definition of Corporate Governance is similar to a more complex debate in Corporate Governance concerning the objective of each company, the first of which is the "Shareholder Theory," theorized by the American Economist Friedman in 1962. According to this theory, the main objective of each corporation is the maximization of shareholder's profits and value through operative and dynamic efficiency. Its major focus group includes the equity holders who must be properly satisfied by the manager. Such a view is closer to the first definition of Corporate Governance. However, the major con of this theory is represented by the fact that the maximization of shareholder profits pursued in the shareholder theory (at all costs) could enhance critical decisions on sensitive topics such as disposing toxic waste, employing child labor, or harming the environment. In contrast to this view, the Stakeholder Theory proposes a new objective. This theory considers the value creation process at the same level for all the counterparts that interact with the company. This includes the stakeholders, all those entities which interact directly or indirectly with the company (employees or creditors or the overall community), and entities that can be potentially impacted (not only economically but also socially or environmentally) by the value creation process. This second view is therefore closer to the second definition of Corporate Governance provided by Hanson and Song (2006).

Concerning worldwide models, the first comparative studies, related to the debate of both scholars and politicians regarding comparative Corporate Governance among different nations, have emerged in the late 1990s, due to both the loss of competitiveness of the US economic system and the harmonization process in the EU. Empirical research suggests that each country is characterized by its peculiar Corporate Governance Model (Aguilera and Jackson, 2003) even though it is still possible to identify

some general models which show common features shared by several countries, despite some specific differences at the individual level. These models are the Anglo-Saxon Model (Outsider System), the German-Japanese Model and the Latin Model (two versions of the Insider System).

The Anglo-Saxon Model, common in countries such as the US and the UK, is characterized by the presence of companies whose dispersion of ownership (Kaen, 2003) is extremely high and a strong role of the capital markets, which are seen as a proper control mechanism to discipline the company's top managers. The fragmentated ownership structure leads to a strong separation of the ownership of the company (shareholders) and its management (Parrino and Starks, 2001). Contractual relationships between companies are characterized by high levels of vertical integration, short-term contracts with suppliers, and Boards characterized by the so called "One Tier Structure," which means that the shareholders appoint the members to the Board of Director, which is in charge of both the management and supervisory (enhanced via an internal Committee) function. The strong emphasis on capital markets implies that the major method for resolving corporate crises is represented by the market for corporate control, where the poor performing company is taken over by new investors (Mulherin and Poulsen, 1998). Such a system is also known as the Insider System.

The German-Japanese Model is characterized, differently from the Outsider System, by a high ownership concentration (Barca and Betch, 2001) where the largest companies are characterized by the presence of a strong shareholder in their ownership structure (usually a bank or other companies). The role of capital markets is less emphasized, and markets are less addressed by companies in order to raise capital, preferring instead the banking system since the largest shareholders don't want to be diluted from new equity injections into the companies (Wenger and Kasener, 1998). The contractual relationship among companies is characterized by higher cooperation and crossholding mechanisms. Moreover, such a system is characterized by a "Two Tier" Board structure in which shareholders nominate a supervisory organ (Supervisory Board) with the duty to monitor the company's Board whose members are nominated by the Supervisory Board itself. We therefore record two organs, one in charge of the management, Management Board, and the other in charge of the control, the Supervisory Board (Zattoni, 2020). The resolution method for corporate crises then passes through the controlling shareholder, which replaces the company's management, implementing a turnaround of the company, usually with the help of lending banks (Aoki and Patrick, 1994).

The last Model is the Latin Model. This model is still part of the Insider System, which means that it has the same general features as the German-Japanese Model with some specific differences. The ownership structure is still concentrated, however, the company's largest shareholder is usually represented by an entrepreneurial family instead of a bank or another company. The contractual relationship among companies is still characterized by high cooperation and crossholdings, but with the structure of the "group," a chain of multiple legal entities on top of which sits a financial holding company controlled by the entrepreneurial family. The structure of the Board of Directors is still the Two-Tier Structure, with the

difference that shareholders directly appoint both the Supervisory Board and the Management Board. The role of the financial markets and method for corporate crisis resolution is almost identical to the one of the German-Japanese Model.

As for the major corporate Governance mechanisms, they can be divided into internal and external mechanisms (Zattoni, 2020). The external mechanisms include the above-mentioned market for corporate control, the managerial labor market (that constitutes an evaluation measure for the company's top managers), and external auditors (whose role is to analyze the company's financial statements and to verify whether all the correct accounting principles and estimates have been properly applied). The internal Corporate Governance Mechanisms are represented by the Board of Directors, thanks to its control mechanisms including the various Committees; Independent Directors; the Lead Independent Director; Incentive plans, whose rationale is to align the top managers' interests with the shareholders'; and a large controlling shareholder that can properly monitor the company's Board and replace poorly performing management.

Hypothesis Development

The purpose of this master dissertation is to verify the relationship between Stock Based Compensation within the company's Board and Corporate Governance Indicators that might suggest the presence of agency costs inside the company as well as certain performance indicators. Therefore, in order to have an all-around view of the phenomenon, I want to test the determinants and of Stock Based compensation and its relationship with corporate performance.

Relatively to the determinants of Stock Based Compensation, I argue that potential rise of agency costs within a company heighten the level of Stock Based Compensation reported in its board.

As a first corporate governance indicator potentially suggesting the presence of agency costs, I focused on the number of Independent Directors serving in the Board. Their role is to mitigate the risk of predominance of the Executive Directors' (the CEO's) decisions within the Board that could potentially benefit the Board itself and the larger/controlling shareholders at the expense of the minority shareholders. Therefore, an increase in number of Independent Directors should correspond to an increase in the Board's monitoring, leading to a reduction of the use of Stock Based Compensation to properly monitor the company's executives. I therefore predicted the following:

Hypothesis 1: Companies with a lower number of Independent Directors are associated with a higher level of Stock Based Compensation within the Board.

I then focused on two phenomena that could take place within the board that should, according to my prediction, impact in the opposite way of the board's Stock Based Compensation. The first is the "CEO-

Chairman Duality," which takes place whenever the Chairman and the CEO's role are executed by the same person. In such a scenario, the CEO-Chairman figure has a strong influence in the company, being able to negatively, at the expense of the shareholders, influence the decision-making of the other Board members. I then focused on the presence of the Independent Lead Director, the representative of the Board's Independent Directors and coordinator of the relationship and information exchange between them and the company's CEO. This presence is considered as an additional tool for shareholders to properly monitor the behavior of board members and hence reducing the rise of Agency Costs. Therefore, my predictions are:

Hypothesis 2: Companies characterized by the presence of CEO-Chairman Duality are expected to record a higher level of Stock Based Compensation within the Board.

Hypothesis 3: Companies that have the presence of the Lead Independent Director in the Board of Directors show a lower level of Stock Based Compensation.

I then focused my attention on the controlling shareholder's stake and the fact that a higher dispersion of ownership in the company implies a lower level of control over the company's Board. Additionally, the presence of a large blockholder is related to a higher level of pressure and monitoring over the company's Board. When the percentage of the controlling shareholder of the company increases, that shareholder inevitably increases his economic interest in the company and his level of control over the Board itself (as his voting rights increase as well), ensuring that the executive directors will not act in an opportunistic way and cause Agency Costs to rise. Furthermore I argue that the eventual nature of the company's largest shareholder might impact such a level of monitoring over the Board and consequently the level of Stock Based Compensation. Therefore, my following predictions are:

Hypothesis 4: The lower the percentage of the largest shareholder, the higher the level of Stock Based Compensation granted to Board members.
Hypothesis 5: The typology of the first shareholder impacts the level of Stock Based Compensation inside the Board, other things being equal.

Subsequently, I evaluate the relationship of stock based compensation with the company's performance. Although the debate among scholars has produced divergent results, the Agency Theory framework tends to be favorable to the hypothesis that Stock Based Compensation should, by addressing Agency Costs, influence the company's performance. This should imply that companies characterized by higher performance indicators should be the ones where the level of Stock Based Compensation is higher. This since companies that are characterized by higher and better performances are also the ones that are more

properly able to operate their business free of conflicts of interests, with better risk management policies, more efficient asset-utilization practices and healthier long-term objectives. All factors that should indicate the presence of a higher stock based compensation within the company's board Therefore, the next Hypothesis is as follows

Hypothesis 6: Companies with higher levels of Return on Equity (ROE) and Return on Assets (ROA) are characterized by a higher level of Stock Based Compensation within the Board of Directors.

Lastly, I tested the relationship between the level of Stock Based Compensation and the overall market evaluation of the company via the "Tobin's Q Ratio," which measures the overall market evaluation of the company. Also in relationship to Hypothesis number 6, if it is true that the most performing companies (in terms of ROA and ROE) are the ones where the level of stock based compensation is higher, I also expect that companies with a higher overall market evaluation should be the ones where the Board's stock based compensation is higher, as a higher Tobin's Q is a synonym of a general preference and appetite from market investors towards that same company. Such preference should indicate that, among others, the company is enhancing a stronger stock based compensation policy within its Board. Hence, the objective of this hypothesis is to verify whether if a higher market evaluation effectively corresponds, as some scholars argue, to higher stock based compensation levels inside the Board.
Hypothesis 7: Companies with higher levels of Tobin's Q Ratio are associated with higher levels of Stock Based Compensation within the Board.

Research Method

In order to test the 7 Hypotheses of my study, I used a sample of 487 companies operating in different countries. All the companies are characterized by the following: over 250 employees, over $500 million in annual revenue, and less than $10 billion of Debt. The companies operate in a wide range of 9 different industries.
I tested all the Hypotheses in a multi-variate regression model, where the dependent variable was the Board's Stock Based Compensation. There are 11 dependent variables in the model, eight of which are related to the 7 Hypotheses and three of which are controlling variables introduced in the model not related to any hypothesis. The eight variables are: the number of Independent Directors within the Board of Directors; a dummy variable (only assuming the values of 0 and 1) equal to 0 in case the CEO Chairman Duality is absent and equal to 1 if such Duality is present within the Board; the presence of the Lead Independent Director (represented with another Dummy Variable that changes from 0 to 1 whether such figure is present or not within the board); the controlling stake of the first shareholder (represented as a percentage on the total amount of the company's outstanding shares); another Dummy assuming a

value 0 if the company's largest shareholder is a non-Financial one and 1 if it is a Financial Shareholder; the company's ROE and ROA and, finally, the company's Tobin's Q.

My expectations from the results were the following: corporations recording a lower level of Independent Directors, the presence of the CEO-Chairman Duality, or the absence of the Lead Independent Director should pay more Stock Based Compensation to its Board members; corporations characterized by a lower concentration of ownership and by the presence of a Financial Institution as its largest shareholder should provide a higher level of Stock Based Compensation to the Board; and corporations characterized by higher values of ROE, ROA and Tobin's Q Ratio are characterized by a higher level of Stock Based Compensation within their Board.

Analysis of the Results

The results of my study fully demonstrate 4 out of the 7 predicted hypotheses described above (Hypotheses 2,3,4, and 7). Concerning the remaining three Hypotheses (1,5, and 6), two have been fully rejected (1 and 5) and Hypothesis 6 has shown a controversial result by which the Hypothesis was not confirmed nor rejected. As a conclusive and brief summary of the Model's Output, I provide the following list of synthetic conclusions that can be drawn from the previous analysis. In particular, what has emerged from the various models is that while holding other variables constant, on average, we can state that:

- as the number of Independent Director unitarily increases in the Board, the level of Stock Based Compensation increases by 0.02 units;
- companies with the presence of the "CEO-Chairman Duality" record a level of Board's Stock Based Compensation approximately 20 percent higher compared to the companies in which such duality does not take place;
- companies whose Board is characterized by the presence of the Lead Independent Director record a level of Board's Stock Based Compensation approximately 27 percent lower compared to the companies in which such a figure is absent;
- for every decimal increase in the controlling stake of the largest shareholder, the level of Board's Stock reduces itself by roughly 0.03 units;
- there is not enough evidence to conclude that the nature of the company's largest shareholder can influence the level of Stock Based Compensation within the Board;
- the relationship between Stock Based Compensation and the accounting performance of the company (measured under the ROE and ROA) is controversial, as it lacked for the former and was confirmed for the latter;

- and the Tobin's Q ratio and the level of Stock Based Compensation in the Board are positively correlated.

Conclusions

This study demonstrates that Stock Based Compensation can be considered a tool to prevent and address Agency Costs and all the associated problems that such costs might imply for the company's shareholders. In fact, this paper suggests that Stock Based Compensation is significantly higher in those corporations where several Corporate Governance indicators suggest the presence of more accentuated Agency Costs such as: the presence of the "CEO-Chairman Duality," whose excessive power might negatively influence the other Board members and breach their independence; the absence of the Lead Independent Director, whose role is crucial in mitigating the relationship between the Independent Directors and the executive ones; and a higher dispersion of ownership and therefore the lack of a large shareholder who might be more incentivized in properly monitoring the Board's activities, making sure that no deviation from the shareholder's interest takes place. This could tell us that the Compensation Committee (as well as the company's shareholders) is aware that a higher chance of executive deviation from the shareholders interest (causing therefore Agency Costs to rise) might take place in case those preconditions occur, therefore increasing Stock Based Compensation as a preventive measure to avoid such misalignments and deviations from the shareholders' interests. Such a conclusion seems to be closer to the concept of "Optimal Contract" described by Fama (1980), as we have seen that whenever the issues between shareholders and top managers are more likely to arise, the Boards tend to respond with a higher use of Stock Based Compensation in order to prevent those issues.

Also, the results have shown that investors tend to prefer, while enhancing their investment decisions, companies where Stock Based levels are, on average, higher. This higher use of Stock Compensation is considered a reassuring signal that Agency Costs are less likely to rise, meaning that investors tend to trust the top managers' commitment to create value and to act in the best interests of equity holders, but also since, as has emerged from the results, companies whose Stock Based Compensation is higher seem to demonstrate more adequate and efficient asset utilization practices in order to generate income. This is a series of factors that inevitably drive the investor's sentiment, explaining therefore the mentioned higher market evaluations. Therefore, under this perspective, the analysis' conclusion seems to deviate from what many scholars have argued (including Bebchuck and Fried, 2004). This part of the existing literature was not convinced that the enhancement of a stronger Stock Based Compensation policy could have improved the company's performance, due to the top managers' potential ability to overcome the compensation contracts and set them to their advantage (re-creating therefore a misalignment of interest situation inside the Board). Such a conclusion remarks not only the importance of Stock Based Compensation in the performance measurement process, but also its role in the overall improvement of

the company's transparency and reliability in front of the financial markets' investors who periodically decide where to invest their funds or savings. Also, such a higher market evaluation seems to completely deviate as well from those scholars believing that the use of Stock Based Compensation was a "value destroying" item for companies.

This paper has attempted to find evidence of the relationship between the level of Stock Based Compensation within the Board and both some Corporate Governance indicators (therefore what could be the determinants of such compensation) and the company's performance. Nevertheless, despite the quality and the depth of the analysis, it is worth pointing out the following limitations.

The first limitation is related to the fact that there hasn't been a rigorous distinction between the "First Type" and "Second Type" of Agency Costs. As extensively covered in Chapter 2, the first typology relates to conflicts between top managers and shareholders whereas the second typology arises due to misalignment of interests between the large block-holders and the minority investors. My analysis mainly took inspiration from the "classical" theory (as proposed by scholars including Bearl and Means, 1932; Meckling, 1976) and has therefore focused on the relationship between shareholders and the Board members, studying how such "external" subjects (shareholders) feel assured, according to certain conditions, by the work of the "internal" Board members (mainly executives). This means that the focus was mainly oriented towards the "First Type" of Agency Cost. However, as anticipated, another typology of Agency Cost could arise in the moment in which the ownership structure of the company comprises one or multiple large shareholders who, exercising an excessive control over the company, can pursue their personal interests at the expense of the minority shareholders. Such an aspect, and all its issues and consequences relating to the "Second Type" of Agency Costs, has not been explored.

Secondly, no distinction has been made when analyzing Stock Based Compensation between firms operating in different industries or in different phases of their life cycle. Although I have extensively covered, in Chapter 3, the sample's companies division into nine different industries, and although I have inserted in the Model an Industry classification for the sample's companies, the analytical analysis was not set in a way that would have allowed me to obtain industry-adjusted or life-cycle stage related results for the level of Stock Based Compensation. The reason I have not enhanced such data transformation resides in the fact that, after having introduced a specific dummy variable (in Hypothesis 5) to enhance a distinction between the company's Largest Shareholders, it resulted that there was not enough evidence to potentially believe that the level of Stock Based Compensation might significantly vary from industry to industry. Therefore, I tested all the various Hypotheses regardless of the industry in which the firm operates.

To conclude, further research could be enhanced in order to examine the impact of multiple other elements on the Board's Stock Based Compensation including: this studies' Corporate Governance variables taking into account the difference between several industries in order to be able to examine industry-adjusted levels of Stock Based Compensation; other Corporate Governance variable including

the typology of Board structure (one-tier or two-tier), the presence of a given Committee within the Board; and variables taking into account the life-cycle's stage in which the company currently is. In addition, it would be interesting to find out whether the conclusions that have emerged with this study still hold changing the Dependent Variable in a variable that could enhance a distinction into the various forms of Stock Based Compensation (for instance only of Stock Options or Stock Grants). Such suggestions might provide interesting developments in the research field of Corporate Governance and the always current and debated issue of Agency Costs.