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The role of managerial compensation in firm's performance

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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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Описание цели, задач и основных результатов	Исследования в менеджменте и финансах отмечают наличие так называемой агентской проблемы, которая связана с разной направленностью целей топ-менеджмента компании и инвесторов. Предполагаются различные способы решения этой проблемы, и в рамках данной магистерской диссертации рассматривается возможность влияния на эту проблему с помощью использования различных инструментов компенсации топ-менеджмента. Проблема широко освещалась как в научных публикациях, так и общественностью. К рассматриваемой проблеме существуют различные подходы, рассматривающие взаимосвязь компенсации и результаты деятельности компании в различных разрезах, странах и индустриях. Целью данной магистерской диссертации является исследование взаимосвязи между специфическими компонентами компенсации генеральных директоров компаний и результатами деятельности компании в следующий год. Для достижения цели исследования были рассмотрены теоретические и эмпирические исследования в данной сфере. В рамках исследования были выделены три основных компонента компенсации топ-менеджмента, потенциально влияющих на результаты компании, после чего была изучена потенциальную взаимосвязь с результатами деятельности фирмы с помощью регрессионного анализа на выборке из четырех секторов S&P 500. Результаты эмпирического анализа указывают на наличие взаимосвязи с различными знаками коэффициентов между определенными компонентами вознаграждения топ-менеджмента и частью переменных, с помощью которых оценивались результаты деятельности компании в следующий год. Полученные результаты были использованы для формирования управленческих рекомендаций.
Ключевые слова	Агентская проблема, вознаграждение, генеральный директор, компенсация, топ-менеджмент

ABSTRACT

Student's Name	Valiotti Konstantin
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Description of the goal, task and main results	Research in management and finance outlines the existence of so-called Agency problem, which is linked to misalignment of goals between executives and shareholders. Researchers theorize that there are different methods of solving this problem, and this master's thesis is concerned with possible influence of specific compensation tools on solving agency problem. The problem is widely recognized not only in scientific publications, but also in public discussions. The problem is studied through various lenses, in different countries and industries. The goal of this master's thesis is to study the role of specific components of CEO compensation and firm's performance in the next year. To achieve this goal previous theoretical and empirical research was studied. In this master's thesis we isolated three main components of managerial compensation, which potentially could influence firm's performance in the next year. This potential link between those components and performance was further studied in the empirical part of this thesis via regression analysis on the data sample, which consists from four sectors of S&P 500. Results of the empirical analysis show significant links with different coefficient signs between part of the compensation and variables and some of the variables, which were chosen to assess firm's performance. The results were used to form managerial recommendations.
Keywords	Agency problem, CEO, compensation, compensation, top management

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Introduction

Managerial compensation is an important part of the corporate policy and corporate governance decisions. It is also relevant to HR practices and overall strategic management of the firm, as the compensation is seen to be one of the primary motivational factors. Shareholders want to maximize their wealth and in order to do that they need to compensate employees in a manner that will maximize the value of a company.

In scientific research there is a known so-called agency problem, which relates to the situation where managers and shareholders maximize their own wealth, but the ways to achieve those goals for managers and shareholders may be different. Compensation structure for management has important implications on how they will do their job, their motivation to achieve strategic targets and the alignment of their work and goals with those of shareholders, what kind of projects they are going to undertake. Therefore, shareholders have to create such a compensation package for top-management that will be beneficial for both groups.

The structure of managerial compensation evolved over time. Back in the day the managers, who were overseeing the work of others, only received salary. Then an idea of a bonus, which is given for achieving some results that are set before the managers, came to the business world. The new governance mechanism was set as so managers would get more money if they reach certain goals, be it profit or any other indicator of performance. The problem with this method of compensation seems obvious.

First of all, the chosen metric should be the one that is directly concerned with the activities of the said manager, otherwise the managers would not be receptive to this kind of compensation.

Secondly, managers can seek to inflate any metric to receive bigger bonus. The senior management is not a life-time position, so the manager might decide to undertake projects or certain activities that boost short-term position of the company, while compromising it in the long-run.

As the financial science and the business practices evolved more and more mechanisms to compensate managers came to live. Stock options and other long-term incentive plans are supposed to help fight short-termism in the minds of managers and truly make them work for the prosperity of the company.

Nowadays, there are also golden parachutes, retirement and severance pay for the top-management. The golden parachutes became the target of public outcry during the crisis, because general public didn’t really understand the idea behind large sums of money paid to the management in the event of contract termination. While the golden parachute was not only a simple compensational tool, but also a way to keep firm free of unfriendly takeover, it still is an incentive for the manager to look at the company more objectively.

The research of managerial compensation and its link with firm performance is an integral part of financial scientific community. As time goes on, we can see the effect of time-decay of the empirical studies that are done in this domain. Clearly, the executive compensation evolves year to year, so the older research may not be applicable to today's world. We have to look at this problem with a fresh set of eyes, because there are practical implications of understanding the link between managerial compensation and firm's performance.

The research in this area suggests that different data sets may provide different results, and researchers provided the scientific communities with polarized results in this area. Clearly, the time-decay effect, because of which the data can become a little bit obsolete, makes grounds for further research.

Corporate world always changes and evolves. As business and managerial science becomes more advanced, there are created more mechanisms to control business processes and practices inside the corporation.

Managerial compensation is too a subject of ever-happening change.

Raging debates regarding managerial compensation are still heard both in academic world and in public domain. Despite intensive research in this area, there are still many questions that beg to be answered. For example, what is the industry influence on managerial compensation in times of upturn and downturn? It can be argued that managerial compensation simply reflects overall better position of the industry, rather than ability of CEO to expose any effect on firm's value.

The structure of managerial compensation remains to be an actual topic of research, as the new ways of compensation emerge. There are performance awards, options with different vesting periods, unrestricted stock awards, severance pay and other forms of compensation that might influence managerial behavior. And maybe the core question is not about specific form of compensation (vetted vs. not vetted options), but rather about tying compensation to equity, almost with no regard to the form of this equity-based package. It is also possible to study this problem from many different approaches, including psychology, sociology, finance and other (i.e. motivational aspects).

There are possible interferences in the process of constructing managerial compensation. For example, there is a situation when company acquires new CEO. How is it reflected in compensation and firm's performance?

All those questions and problems are integral to understanding the bigger question: how do boards of directors could efficiently construct managerial compensation (assuming that they are interested in growth of firm's value, which is required by duty of loyalty, i.e., they should put corporate interests first)?

We can't list each question about this research domain that remains unanswered or under researched, but hopefully we made a clear picture of the possible advancements in this domain.

This master's thesis is concerned with looking at the link between structure of managerial compensation and firm's performance, and aimed at answering the question: is there a link between executive compensation and company's performance? Subsequently, we will study the structure of managerial compensation and its link to firm's performance.

The objectives, hereby, are:

1. To theoretically study the problem in depth, outlining research in this field that was already performed
2. To represent current trends in managerial compensation and to present this data in clear format
3. To find suitable way to measure market and accounting firm's performance
4. To perform an empirical study and explore the link between firm's performance and managerial compensation
5. To find a link between different structures of managerial compensation and firm's performance
6. To compose a managerial implications arising from our research

We should also note possible limitations to this research area.

First of all, we may not be able to find the data for executives' compensation for every country or industry. It is quite obvious, yet still must be addressed. In the US, the public companies are obliged by law to disclose all information regarding executives' compensation to the SEC. There are enough data to study biggest corporations, originating in the US. In many developing nations, our ability to gather the data on compensation is limited to questionnaires and surveys, and the companies may not want to share this kind of data with general public or even scientific researchers.

This problem would be addressed by sticking to the data of US companies, which happily provide this kind of information. We can access this data by using databases of Thomson Reuters One.

Secondly, the measurement of firm's performance (both market and book) requires vigorous examination. There are, indeed, ways to assess those kinds of performance, but we should know better than just follow in the footsteps of others.

This means, that we would need to look at what and why researchers used in their research as a metric that measures firm's performance.

Further, we need to analyze and find out general trends in executives' compensation in the recent years, see its evolution and what situation there is now. While we are generally speaking about firm's performance, we would still need to use specific measures that accurately represent firms' position in market and book sense.

Theoretical evolution of the field will slowly slide into empirical research, which would be based on regression analysis. Using available datasets for compensation and performance, we would need to create a model that gives crystal clear understanding of the problem.

While the question of the study is pretty straightforward (if we for a moment disregard the need of theoretical overview of compensation), the practical implications of solving this kind of problem should contribute to the actual situations in the modern business settings.

Chapter I. State of the art of managerial compensation and firm's performance

1.1 Theoretical problem

This research heavily relies on Agency theory, which suggests, when applied to the research area of this thesis, that goals of the manager and shareholders may not be aligned. Manager, understandably, is concerned with maximizing his own wealth, while shareholders are concerned with their wealth.

To dive a little bit further in the Agency problem, we turn our attention for the background of this problem, its roots and consequences. Managers and shareholders have different goals, which may arise because of a multitude of factors, i.e., different risk-preferences of those two groups. Thus, investors could have diversified portfolios of companies and can quickly change their portfolio, given their understanding of risk and returns of specific companies, while top management of any given company is concerned with corporate and business problems, goals and activities for this specific company. Managers may have different attitude towards risk, and by default be incentivized to keep their job.

Jensen and Meckling (1976) in their work mention, that those differences in goals and their misalignment could be controlled by controlling activities, which may be too costly (and resource-demanding too) to implement in reality. Information asymmetry, different kinds of uncertainties contribute to the problem of monitoring and controlling of executives.

This situation becomes even more prominent in companies with dispersed shareholders. If there are many shareholders present, a big part of them may not have an incentive to be the leading force in monitoring the executives' activities and decisions. Thus, top management becomes even more influential, while shareholders have less power and control over firm's activities. Even in the firms with strong boards of directors, problems may arise, which is evident in the case of Enron.

Essentially, there is a different tool that comes to minimize agency problem – compensation package, which aligns the goals of shareholders and managers. The point is not to pay more than everyone does, but rather construct such a compensation package, which incentivizes managers to achieve shareholders' goals. Equity-based compensation may be just the right tool to do that.

The problem occurs when those goals are not aligned enough. The judging criteria for a managerial performance varies by firm. Companies use different metrics and KPI to assess, whether executives' decisions are actually contributing to maximization of value of the firm (and, thereby, wealth of the shareholders). It is not an easy task to assess value of decisions of any given manager, especially if the shareholders are concerned with long-term value.

Sometimes, manager's contribution to the firm assessed every quarter, so any big project, while in long-term may provide firm with extremely good opportunities, may ruin his assessment short-term. This might make manager opt for decisions that make him receive the bigger bonus, regardless of how good his or her decisions are for the long-term prosperity of a firm. It is debatable, what kind of "success" shareholders want to see from the managers (some may not look long-term), but the problem becomes only more complicated with this notion.

In the early 1970s economists were concerned with researching risk, risk-based decisions and attitudes towards taking the risks. A great amount of research was done in the field of economics (Arrow, 1971) about this topic. The research in this field sheds a light on problems which occur when different parties have different orientations towards taking risks.

In a sense, agency theory was a continuator of this research, as it was reviewing the problems which arise when different parties in cooperating setting have different goals (Ross, 1973).

Agency theory is aimed at understanding the specific relationship, which occurs when principal delegates some work functions to the agent, who has a responsibility to perform given tasks. This problem is also called principal-agent problem.

Some scholars (Eisenhardt, 1989) describe agency theory as a way to understand and resolve two problems that arise from this specific relationship: 1) goals of those two parties; 2) difficultness of verifying the actions of agent by principal.

To resolve the conflict, goals should be understood. Agency theory suggests that both parties simply want to maximize their own wealth. The second part of the conflict relates to the situation, when shareholders do not possess enough power to actually verify what the agent is doing and whether his decisions are aligned with shareholders' goals. It is especially important for the companies with dispersed shareholders, who might not have strong stimuli to perform controlling functions or who might not have enough power individually to verify managers' performance.

Managers are exposed to different investment opportunities, which might be forfeited, if they are, for example, too risky. Shareholders simply do not have any way to know whether this opportunity even arisen. Thus, the information asymmetry makes the problem even more prominent.

It is generally understood that to solve agency problem, one should strive to align managerial goals with goals of the shareholders, effectively monitor managerial decisions and reduce information asymmetry. It is important to note that out of those 3 options, monitoring and reducing asymmetry may not always be a viable option, and even if they are, it is a very resource-intensive process. Thus, alignment of goals of managers and shareholders comes into spotlight as a possibly the most efficient and least resource-intensive option out of those.

One of the ways to minimize the effects of agency problem is to construct such a compensation package that it will effectively monitor manager to maximize shareholders' wealth, which, in turn, will maximize his (or her) own wealth too.

The general basis for understanding the problem of link between managerial compensation and firm's performance in our research generally lies in regression analysis. Further, we will discuss model specifications with chosen variables.

Our idea was to see the link not between the amounts of compensation, which could vary for different reasons and also related to firm's size, but rather between structure of managerial compensation and performance.

1.2 Literature overview

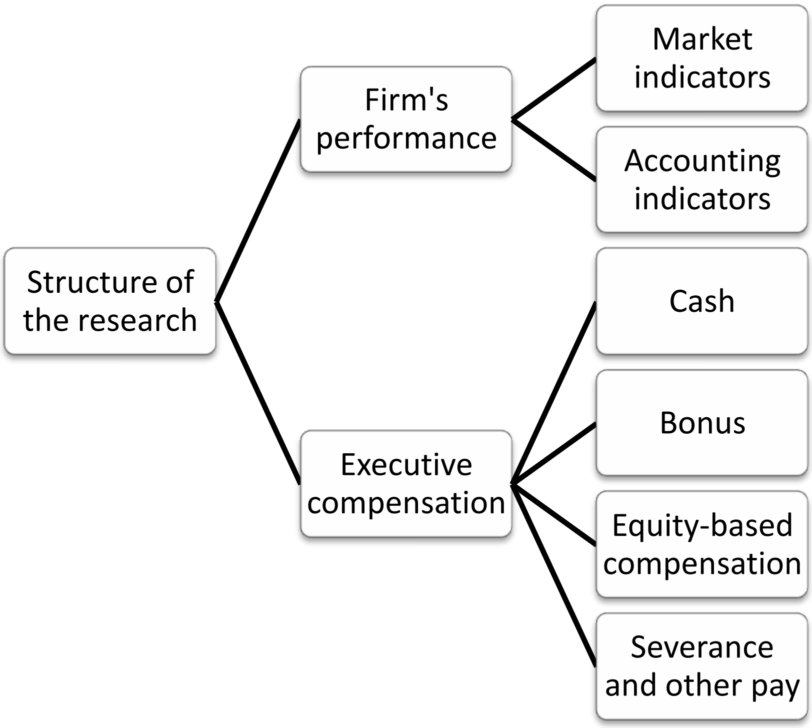
As we have already mentioned, there are numerous articles about executive compensation and firm's performance. Some researchers tend to look at a bigger picture, analyzing mostly the biggest corporations which share the data on executive pay as to comply with SEC regulations on the documentation of public companies. Currently, many countries demand from public corporations to disclose information on managerial performance.

Other researchers try to understand developing or lagging markets. Their approach to the problem may vary, including use of surveys to assess the data of companies that choose to share it. Lack of transparency in the developing markets limits the ability to study this problem, although some of the authors try to do assessments based on voluntary reports. The markets though, evolve, and countries adopt regulations, which aimed at making more financial information available to the potential investors, including the data on managerial compensation.

In our overview we will look at both theoretical foundations of the problems, and also introduce the reader to the empirical research, which was done in recent years in many countries around the globe.

Figure 1 illustrates the most important factors of the research that are taken into account, when trying to understand the link, which we assess in our research.

Figure 1. Structure of the research domains



Here, we turn our eyes to the certain developments of this research domain the scientific literature.

1.2.1 The agency problem and firm's performance

With the development of business world came new forms of governance of firms. Historically, most companies were led by the people (or their family), who established the company. As businesses grew and managerial world evolved, the situation changed. A lot of companies became managed by professional managers, who were raised and taught in business schools or by other means of achieving knowledge and skills that are required to lead an organization.

This constitutes a change in the role of owner or owners in organization. In other words, ownership and control became separated. It should be noted that owners might choose to lead organizations themselves, appoint a manager or leave the decision to board of directors (if there is one).

Owners, who lead their respective organizations, are something that is typical for new organizations and start-ups, if we look at the modern business world. As the company grows, the first leader may give his spot to someone else.

Public corporations, which exist for a long time, generally have a lot of owners, who may represent wealth funds, individual investors, successors of the person, who established organization, and many others. Therefore, a board of directors is the entity that is concerned with appointing a manager.

Regardless of the organization, if owners and managers are different entities, each of them will be concerned with maximizing their wealth. Thus, the agency problem, also known as principal-agent problem, arises.

It is debatable, whether the concerns of those two entities are actually aligned, and when one maximizes their wealth, the other does, too, or not, but the literature suggests that the problem exists.

Not everyone in scientific literature, though, sees this as a solution to the agency problem; some (Blanchard, Lopezde-Silanes, and Shleifer, 1994) believe that it may be a part of the agency problem. Those scholars recognized that some of the pay packages are designed to maximize managerial rent-seeking, and not to provide incentives to align goals of shareholders and managers. This, indeed, may be true, especially with weak boards of directors or when the CEO him- or herself is an appointed member of board of directors. This is another direction for the research.

Talking about agency problem and alignment of goals, it is only natural to touch upon risk and risk preferences of individuals, which are integral part of our problem. The scientific literature treats top-managers as a risk-averse individuals. Harris and Raviv (1979) say that executives would like to receive pay for their work in such a way that its amount wouldn't depend on performance. That is, the managers do not want to take any risk, which can undercut the amount of money they receive.

This suggests that top managers would prefer a simple financial transaction, cash, every month for their efforts, and would probably oppose an idea of receiving payments that are based on equity.

As we have already mentioned, this is probably lies in direct alignment with an idea of certain things that beyond managerial control, as stock returns may not directly be influenced by the managerial decisions.

The research was done in 1979, when overall understanding of strategy, business world and the development of managerial compensation was still under way. But, if anything, this research paints executives as a risk-averse individuals, who prefer to receive same amount of money every month without any dependence on their performance.

After so many years, we have an absolutely different kind of personalities, leading the organizations, and also absolutely different circumstances, in which they operate.

Does their risk-averse preference have any influence on organizational performance? Let's now, for a minute, consider that managers are, in fact, risk-averse.

A risk-averse manager will seek to minimize personal risk, which from the viewpoint of corporation also means that he will seek to minimize project's or firm's risk (Amihud and Lev, 1981). In certain situations risk-minimization may be a viable tactic, but using it as a general approach might negatively influence shareholders' value.

The notion of whether an average manager is risk-averse, risk-neutral, risk-seeking (or somewhere inbetween) is an important consideration for owners as to understand what kind of compensation should they offer.

We also need to look at how shareholders are seen in the eyes of scientific community. A lot of researchers generally consider shareholders as a risk-neutral entity, because they have the ability to diversify their portfolio, essentially diversifying risk for any given firm. It should also be noted that shareholders might understand that managers are risk-averse.

In a sense, shareholders would like managers to be more risky in certain situations, so the idea of equity-based compensation quickly springs to mind.

We shall also address presupposed assumption in the text above about general understanding of managers being risk-averse and investors being risk-neutral. For any given individual manager, investor, fund or any other institution, this may be different. But as much research shows, managers are indeed oriented at bearing as minimal personal risk as possible, unless incentivized otherwise. Investors, on the other hand, are able to diversify their portfolio, meaning that they are risk-neutral if we look at them from portfolio perspective and also assume that markets are efficient.

In following subchapters we will further study the research that was done in markets other than US. Developing countries are vastly different from developed countries, and companies may have big distinctions as well. Different legal, political and economic environment may affect all the things we undergone to research in this thesis. Though we shall note that researching developing countries may be hard because of the amount of disclosure available, generally higher fluctuations in companies' activities and many other factors.

Grossman and Hart (1983) suggest that executives are motivated to bear more risk and make value-maximizing decisions, if their compensation is directly tied to company's performance.

The authors above conform to our notion that incentivizing managers might be a viable solution for making them bear more personal risk. Although "value-maximizing" decisions are defined broadly, we might conclude that it means that managers start to look out for opportunities that raise market valuation and operational performance of a company. Under efficient market hypothesis allows us to make an assumption that market valuation is fair to the company's future, not only its short-term profits.

Hirshleifer and Suh (1992) suggest that compensation packages based on equity make executive more risk-tolerant. It should be noted, though, that if there are effective monitoring institutions (outside board of directors or "big" lenders), then option-based incentives provide less effect. Their conclusion coincides with that of Mehran.

When looking at agency problem and the possible ways to reduce misalignment of goals of managers and owners, it is definitely noteworthy to take into account other factors than managerial compensation.

Effective boards of directors with independent directors or outside strong monitoring institutions may provide some effect on making executives more risk-tolerant. It is still unclear, whether being more risk-tolerant equals better alignment of managerial goals with those of investors. After all, monitoring institutions or strong board of directors may force executives make a decision or fire them, but does it mean that the strategy of the given executive will change?

Frye (2004) mentions growing information asymmetry, which happens when firm's investment opportunities grow. Shareholders cannot directly observe and analyze said opportunities, as those only available for the eyes of the management of the company.

Information asymmetry is a known and well-understood factor of agency problems, so, given those assumptions are true, shareholders need a way of counter-acting this problem.

The board of directors is a suitable entity to somewhat limit the bad effects of information asymmetry, but even they can't monitor each and every possible project. In certain companies the history also draws a grim picture of a board of directors not actually being independent or fit to "manage the managers". The well-known case of Enron is not only an example of mischievous accounting practices, crisis in California, but also an ineffective board of directors, which should've been more strict with the CEO and his plans.

Transactional costs associated with this problem can rise significantly, and while board of directors might be a fine solution, there are also risks and limitations involved.

Another contribution by Frye (2004) that is worth mentioning is the relationship between firm size and use of equity-based compensation. As we have already mentioned, equity-based pay is more effective (we'd argue that even required), when it is hard to control managers for various reasons. Frye asserts that a company size is positively related to equity-based compensation, which supports our position on board of directors and information asymmetry.

It can be hard to distinguish between smaller and bigger organization, and we can measure this difference with more than one methodology. Even if firm size is related to equity-based pay, it is possible that smaller firms typically place more value on employees, rather than processes, and thus this relationship captures the value of an employee to organization.

Another point to be made when carefully analyzing firm size and equity-based pay is that smaller companies can be immature in comparison to bigger companies with established practices and diversified business portfolio.

Mehran (1995) notes that outside directors are more efficient in using equity-based compensation for top-management, and the use of equity-based compensation is correlated with firm's performance. Interestingly, Mehran also mentions that overall structure of the board of directors is not related to the firm's performance, although in firms with outside blockholders there is less equity-based compensation used, which might support abovementioned notion of "monitoring" executives instead of compensating them based on equity.

Outside independent directors are less involved with top executives, and can make their judgments based solely on their expectations. Inside directors, on the other hand, might be more involved with strategic efforts of the firm, thus making them not the most effective entities to design executives' package.

Core, Holthausen and Larcker (1999) found that that weaker corporate governance leads to bigger agency problems, which, in turn, negatively affect the performance of a firm.

Authors of this article were able to show that CEO compensation is bigger when he (or she) is also the board chair, and/or when board of directors is large, and/or when the board of directors is large, and/or when board of directors constitutes of older people who server on more than 3 different boards. Weak corporate governance means that shareholders are ineffectively represented, which gives top management more leeway in his or her actions.

This only supports our previous notion of strong boards being better at constructing pay packages for executives.

Authors succeeded in showing that CEOs received bigger pay when there was weaker corporate governance in the firm. Furthermore, authors assessed how this bigger pay is connected to firm's operational and market performance. They were quick to find that excess pay indicates negative association with both operational and market performance.

In a sense, the role of board of directors only becomes even more prominent. Not only strong boards allow for better compensation (and subsequent motivation) for the managers, but they also can save money for shareholders.

Sometimes managers might be rewarded not for their skill, but simply for luck. Bertrand and Mullainathan (2001) believe that so-called ‘pay-for-lack’ is another dimension of agency problem. Pay-for-lack, simply put, is when managers receive better compensation for something that is not under their control, i.e., when the whole industry is booming and companies in this industry enjoy prosperity. However, that may not be a manifestation of “luck”, but rather an ability of the company in booming industry pay more for talent.

Constructing the compensation package already looks like an awfully hard thing to do. Companies need functional boards of directors to do that, and they have to understand information asymmetry, industry conditions and many other things. But there is a light…

Sloan (1993) writes that for shareholders it is optimal to use equity-based incentives in managerial compensation packages (though, the level of compensation should be approximately the same in the end), but it is not practical to tie whole compensation on equity.

Although the exact measurements of how much equity-based compensation should be given to the managers is not really the main point of our research, Sloan’s study shows a clear way of an alignment of owners and managers. We will look at the relationship between equity-based compensation and firm’s performance in later sub-chapter more in-depth.

Managers might have different vision of what they want to do with organization and goals (and means of achievement) for the organization from the shareholders. Clearly, owners would like to interfere with this thought process and demand managers to increase the wealth of the shareholders. But the demands itself don’t look a good way to achieve this result.

The better way for shareholders to maximize their own wealth may lie in maximizing managers’ wealth through equity based compensation. If the organization performs well (from the point of view of investors), then the manager should be rewarded. A simple, yet powerful idea of reciprocity based on actual performance and results.

The devil is, as always, in the details. The measurements of performance, surely, exist. Investors could either look at market indicators, accounting indicators, or both.

The time horizon for those indicators may differ, and managers might be pressured into performing well on quarter-to-quarter basis, as opposed to achieving long-term goals, especially with many independent financial institutions giving ratings and review for companies on quarterly basis.

The problem with indicators is not single dimensional, though, because one might argue that certain indicators are either unrepresentative of managerial capabilities, or can be easily manipulated, or both.

We will explore different ways of assessing firm's performance later. Let's now go back at a possible solution to agency problem within a context of managers and owners. With the understanding of agency problem at hand we might turn our eye to empirical research in various countries. We will look whether the notions introduced in this sub-chapter holds true for companies in all regions

1.2.2 Empirical evidence in the previous research

Executives in today's companies are the people who receive the biggest salaries in the company, either through cash, bonuses, equity or other forms of compensation. The recent crises created a turmoil of attention towards the practices of the firms to pay big sums of cash to managers. The question that is often heard from general public is whether executives actually contribute more than other workers.

The nature of the relationship between firm's performance and managerial compensation can be hard to grasp. Our role is to explore this relationship in macro view, as to whether it actually exists, and if it does, where is it most prominent.

Before we go on with exploring what current research suggests about the problem, we have to understand certain differences in terms of CEO compensation in different parts of the world.

China is an exemplary country where the ownership of public companies is more concentrated that, say, in US. This situation can be explained through both cultural and political factors.

Firms in developing countries might lag behind the firms in developed countries in terms of certain practices, including compensation. Rivalry between firms in some developing countries might be still low (as well as used strategies in those companies), which would make good executives a key to good performance.

There is also a movement in today's world regarding maximum relative compensation. It is proposed that executives should receive a maximum compensation that equals minimum wage in the company multiplied by some factor. Currently this type of limitation is not enforced anywhere, but some companies may engage in this kind of policy by their own choice.

We shall see whether there is a relationship between managerial compensation and firm's performance not only in US, but in other countries as well.

Mehran (1995) analyzed 153 randomly selected manufacturing companies in 1979-1980 time period in the US. His empirical analysis suggests that compensation based on incentives is an advantage for the firm. His other contribution in the cited work is that it is not level of compensation that plays part in motivation of executives, but the form of compensation. The results show that company's performance was positively related to the amount (relatively) of equity and the overall percentage of pay that is based on equity in executive's hands.

A positive relationship between managerial compensation and firm's performance in the research above is an interesting result that gets us to explore the field further.

Frye (2004) studied the effects of equity-based compensation on firm performance. The researcher notes that as time goes on, more firms tend to engage in equity-based compensation for employees. The results of the research suggest that there is a statistically significant positive link between firm's performance (market metric) and the relative amount (in percentage) of equity-based employee pay. The accounting metrics provided different results for two data sets (there were two: earlier sample suggests positive link, while later sample clearly indicates lower returns in terms of book values).

Jeppson, Smith and Stone (2009) took the data for 200 public US companies that reported the data for SEC. In this research managerial compensation was only analyzed as total compensation without any regard to its structure. For firm performance authors used different proxies, i.e., revenue, year-to-year change in net income and year-to-year change in total shareholder return.

Authors found no relationship between managerial compensation and firm performance. The only exception was for total revenue but even in this case, r^2 was only 0.1, which doesn't really explain much of the connection between pay and revenue.

The research didn't find links between managerial compensation and firm's performance, which is a rare but important result. It makes us at least question the nature of the relationship, and further puzzles whether it actually exists. Of course, we should remember that they looked only at total compensation, which aggregates all the forms, and the nature of this relationship could be different from relationship between certain components of compensation with performance.

Most of the research on the US firms points out that the link between executive compensation and company's performance exists and it is positive. There are, certainly, studies that do not conform to this notion, but there aren't much of them. Generally, use of equity-based compensation is positively associated with market and accounting returns, even when measured by different indicators or in different industries.

Let's now turn our attention to other countries, both developed and developing.

Matolcsy and Wright (2011) also notice an interesting effect regarding firm's performance and managerial compensation. Their work, which studied Australian firms (overall data sample consists from 3770 firm years), not only analyzes the relationship between company's performance and pay, but also considers the effects of the firm's characteristics. Their empirical research suggests that the executive's pay composition should be aligned with the firm's characteristics. That is, equity-based incentives are effective for the bigger companies (which are indicated by having larger market-to-book ratio and more subsidiaries), while smaller companies may be better off with straightforward incentives to managers.

Australia is a developed country with strong corporate culture, which somewhat reflects that of US, and the relationship held here. Though, there are interesting implications based on differences with US that we should consider. Options are not tax-deductible in Australia and more costly to establish as a part of compensation, so firms might not want to establish this. And, according to authors, they shouldn't if their firm is small.

The findings by those authors lie actually in alignment with our thoughts about importance of human capital and compensation. Smaller companies tend to put bigger emphasis on the human capital, and executives typically have more freedom of action, yet are monitored more closely. There is less information asymmetry (which we were writing about in the previous sub-chapter), so owners or boards of directors have easier time controlling how managers make decisions regarding the projects.

Evidence from Finnish firms is aligned with that of other countries. Ikaheimo, Kallunki, Moilanen and Schiehll (2013) analyzed performance-based incentives and their link to firm's performance in Finnish industrial sector (7820 firm years captured in the data sample). The authors of the research only wanted to see whether overall performance-based compensation influences future profitability of the firm, so they didn't dissect the data into components (cash and various forms of equity). ROA was used as a firm's performance indicator.

Europe is notoriously different from United States of America in terms of workplace practices and corporate culture. The culture of the country has a big part in the way business is done, and some of the most vocal critics of the "corporate greed" are located in Europe.

Despite all the cultural differences, the overall relationship between firm's performance and managerial compensation still stands. Research on Finnish firms also shed a light on future value of the company (t+1), rather than simply relation of performance with awards in the same year.

Ozkan (2011) found positive link between total CEO compensation and firm's performance (measured by Tobin's Q) in non-financial UK firms (data sample consists of 390 firms – 2304 firm years in total). Additionally, Ozkan mentions not only increase in firm's performance aligned with increase in cash (salary + bonus) CEO compensation, but also subsequent increase in shareholder's wealth. Additionally, author looked at link between equity granted to management and shareholder's wealth, where positive link was also found.

Some of the previous research was elevating the idea of equity-based compensation, while simultaneously downplaying the idea of cash payments. Cash is seen as a tool that is not as effective as equity-based compensation. The reason is simple – equity ties payments to the results of the company, while cash does not. In this study of UK firms cash was positively linked to firm's performance, implying that, possibly, there are more than one way to effectively manage the managers.

Another evidence in support of relationship between firm's performance and executive pay comes from studies done on Chinese companies. The political, economic and business climate is vastly different in China, yet the

Conyon and He (2011) noted that there is a positive link between executive pay and firm's performance. This work deserves attention because it was done on China's public firms and their comparison with USA firms. The paper also shows that there is a significant difference in the amount of managerial compensation (salaries and bonuses) between USA and China firms. Those are independent even after controlling for economic and government factors.

Authors confirmed positive link between firm's performance and managerial compensation independently for both cash incentives and equity grants. For the latter, there was no distinction between various forms of equity, rather an aggregate amount of it in the hands of the managers.

It is also should be noted that ownership in China's firms is highly concentrated. It is pretty often when there is one large shareholder which controls most of the equity of a firm. This stands in a bright contrast with western companies, in which ownership rights are mostly dispersed between many shareholders. In this case, agency theory predicts that there are very low incentives for individual shareholders to invest into monitoring of key corporate decisions. Even so, large shareholders typically become either an efficient monitoring entity, which can partly substitute for equity-based compensation.

Buck, Liu, Skovoroda (2008) support this research with similar data and analysis. Institutional and cultural environment in which Chinese companies operate produced the same results in terms of managerial compensation and firm's performance, which might suggest that this relationship is universal across globe.

This research didn't take into account equity-based compensation, and used average cash payments to the executives as a way to assess managerial compensation. The individual data was not available to the researchers, and some other forms of compensation could obscure the data further.

Chinese business culture and environment was and still is a developing place. The state interference into business process seem to on the slight decline, but the hand of the government still can be seen in various forms. Managerial compensation lies somewhat in the sphere of control of the government, and certainly there are other ways Chinese government can influence executives of those firms.

Despite all those facts, more and more research in China independently vows for the positive link between compensation and performance.

There also is a positive link between managerial compensation and change in shareholder’s wealth in Indian companies, as shown by Bhattacherjee, Jairam and Shanker (1998). While the research was carried out 18 years ago, when India was in much worse shape than it is now, the results are telling. Business practices at this time were only developing in India, and capital markets in the country were underdeveloped in comparison to western world.

There are two important things to consider in assessing this research. Firstly, firm performance was measured by only accounting profits, and not any market metrics. This is reasonable, as capital markets were clearly underdeveloped in India in 1998, and their valuation could be just as random as it would be in, say, North Korea. Secondly, managerial compensation was assessed only by total cash paid to managers, excluding everything that is concerned to equity. This is also reasonable, as the dominating factor in the structure of managerial compensation in India at this time was cash. And equity was rather gimmick, than a common practice.

Under all those factors, the positive relationship was found.

Ramaswamy, Veliyath, and Gomes (2000) also conclude that managerial compensation is positively linked to firm’s performance in India. They used ROA as firm’s performance metric and total compensation for CEOs. Because of certain legal practices in India concerned with financial data disclosure, it was not possible for the researchers to have a distinction between structure of managerial compensation.

India, a developing country, in a very turbulent period of its existence, growing at a steady pace, exhibits the same patterns in relationship between managerial performance and firm’s performance. India is a diverse country with a very different culture from the western countries, yet the relationship holds.

Kato, Kim and Lee (2006) noted the positive link between compensation and performance for South Korean firms. To assess this link they took data on total cash payments to the managers; firm's performance was measured by Rate of Return and ROA. They also used a dummy-variable to see whether existence of stock option plan (around 9% of all analyzed contracts) in the compensation package is significant for performance by itself. It wasn't, but South Korea at that time wasn't particularly keen on using equity-based compensation.

Compensation is one of the greatest motivational factors, and while surveys report how much employees enjoy certain activities, trainings, culture, organizational structure, prestige and other factors, compensation still leads the way in terms of setting those employees on a path of achieving results for shareholders.

The general attitude towards link between performance and compensation leans toward the effectiveness of equity-based compensation, whatever form it takes.

Table 1. Overview of previous empirical research

Author(s)	Object(s)	Relationship	Indicators used
Mehran (1995)	US: 153 randomly selected manufacturing companies	Positive link between equity based-compensation and firm's performance	Tobin's Q ROA
Frye (2004)	US: 121 (first sample) and 212 (second sample) public US companies traded on NYSE/NASDAQ/AMEX	Significant positive relationship between Equity-based compensation and firm's performance in first sample; Mixed result for second sample	Tobin's Q (in year following equity granted) ROA
Jeppson, Smith and Stone (2009)	US: 200 randomly selected public companies	No relationship between compensation and firm's performance	Revenue YTY change in Net Income YTY change in total shareholder return
Matolcsy and Wright (2011)	Australia: 3770 firm years	Positive relationship between equity-based compensation and managerial compensation for bigger firms; Negative for smaller	ROA ROE Percentage change of market value adjusted for dividends Percentage change of market value adjusted for dividends and risk
Conyon and He (2011)	China: 1342 domestically	Positive relationship	Annualized stock return

	traded firms with 5928 firm years	between managerial compensation and firm's performance	over twelve years (SHR) ROA
Buck, Liu, and Skovoroda (2008)	China: 601 domestically traded firms	Positive link between managerial compensation and firm's performance	Shareholder value Total shareholder return Pre-tax profit ROA
Bhattacherjee, Jairam and Shanker (1998)	India: 237 firms	Positive link between managerial compensation and change in shareholder's wealth; no link between compensation and profit	Profit after taxes Shareholder's wealth
Ramaswamy, Veliyath and Gomes (2000)	India: Top 150 firms	Positive link between managerial compensation and firm's performance	ROA
Kato, Kim and Lee (2006)	South Korea: 246 public Korean firms (1998-2001)	Positive link between cash compensation and firm's performance; no significant relationship between *existence* of stock option and performance	Rate of Return ROA
Ikaheimo, Kallunki, Moilanen and Schiehll (2013)	Finland: 7820 firm-years (2002-2011)	Significant positive link between compensation and future firm's profitability	ROA
Ozkan (2011)	UK: 390 non-financial firms with 2304 firm-years (1999-2005)	Positive link between firm's performance and total cash compensation, shareholder's wealth and total cash compensation	Tobin's Q Rate of return on common stock

1.2.3 The development and the structure of managerial compensation

Traditionally, employee compensation revolved around salary, which was simply paid in exchange for some labor, some functions that he or she performed. Executives, if we can call them this, were too employees, who received cash for performing his duties.

In the XIX century, which we take from early onset of business development practices, managers didn't need to be incentivized to perform better than they did. It is worth mentioning, that at this point in time separation of ownership and control wasn't a commonplace occurrence.

As the business evolved, professionals managers became necessary, first at operational level, and as separation of ownership and control developed, at top management level. It was generally very desirable to get this position, compensation was fair for this level of employment, and, what’s much more important, there was no pressure to grow or get better for corporations at the start of its history. Moreover, at this time most owners were the top managers themselves, leading the way.

Low competition, no real understanding of business strategy and the simple need to meet the customer’s demand didn’t call for additional incentives or compensation.

As competition grew, so more owners were more and more concerned with keeping their employees incentivized to do better, than the competitors. Mostly top management was awarded with bonuses, if they met a certain target, overcome it or owners thought that executives worked with rigor. A real system of compensation was yet to be born.

Post World War II American economy enjoyed prosperity because of many economic and social factors. Corporations grew at a steady pace, and academics became formulating strategy and managerial science. Understanding of the value and role of human capital grew along with it. Although managerial strategy in the beginning was mostly concerned with processes, many still believed that it’s people who implement this strategy and who actually get things done.

Along with cash executives started to receive both short-term and long-term incentives. It was then a question of how owners should judge managerial performance. Incentives are great, but an owner must understand what exactly it is he want to invoke in a given manager. Work ethic and rigor is not something the owner could realistically measure objectively. It then became obvious that executives should be rewarded if their company grew, outperformed competitors or simply met certain goals and targets, achievement of which helped organization become better and made shareholders wealthier.

With the rising importance of finance, financial markets and capital of the firm, more and more financial instruments arisen. Those instruments were primarily aimed at investors and financial markets, but with their growing use and overall knowledge about them, they became a possible solution to align efforts and goals of executives, who at this time were already seen as an entity concerned with their own wealth, with those of shareholders.

In this time more ways of compensating managers became prominent. Retirement contributions, premium life insurances, use of corporate aircraft and other became a way to motivate manager to stay in the firm for a long time to guarantee his or her financial prosperity. Golden parachutes, concerned with rewarding executives after being sacked after takeover, became more used and recently were under fire of main-stream media, who didn't understand goal of this form of compensation.

Today's package mostly consists of base salary, bonuses and equity-based incentives as a main compensation, and also premium health care and other benefits.

Let's now consider typical equity-based incentives for illustrative purposes.

As we have already mentioned, the primary goal of equity-based incentive programs is to align goals of managers with those of shareholders, as well as help executives accumulate wealth.

Long-term incentive programs that are concerned with equity might have tax consequences different that those of traditional salary or bonuses (that depends on the country and the form of long-term compensation).

Before offering stock to public, the company may have a right of first refusal, and also right to repurchase issued stock under the compensation package, if the manager terminates employment with the company. Those two features are not intrinsic (although used by default mostly) to the equity-based plan, and might be negotiated.

There is often another provision for public owned companies, which requires shareholders' approval on exercise of an option or payment.

Let's first list main forms of long-term incentives:

- Nonqualified stock option
- Incentive stock option
- Stock appreciation right
- Restricted stock awards
- Others

Nonqualified stock option means that an employee is granted an option to buy company's stock at a predetermined exercise price. The exercise period for such option is defined by the agreement, and the typical length is 10 years. Important consideration with NSO is vesting period, which can be designed on the basis of simply time or some contributions (performance) of the option-holder. Typically, an agreement includes a clause by which an employee loses the right to exercise an option on termination of employment.

Incentive stock option means that an employee has a right to buy stock at a predetermined price. An important consideration for ISO is that they can only be granted to an inside employee (no outside consultants, who can be granted NSOs). There are some limitations in design of the ISOs, and the exercise period can't exceed ten years. ISO is an effective and popular incentive strategy because it grants an employee tax benefits.

Stock appreciation right is the contract under which its holder has the right to get an amount equal to the appreciation in the value of a fixed number of shares. SAR can be paid in cash or with firm's stock, but it is generally better to receive it in stock, because of favorable taxes.

Restricted stock means that an executive is awarded with some amount of shares but with certain restrictions. Typically, restricted stock contracts disallow transfer of the share and creates a risk of losing those shares for a disclosed amount of time. Termination of the contract means that shares are returned to the firm, and there is vesting period.

Restricted stock units means that an employee is rewarded with hypothetical amount of shares. After predetermined period of time, the executive is entitled to get an amount equal to the value of his or her hypothetical amount of shares. An employee may additionally get compensation for dividends, which would have been paid, if those shares were actual, and not hypothetical.

Performance shares are typically paid as stock units after some predetermined goal is achieved by a manager. More and more often, as Mercer mentions in their report, companies adopt this type of incentive and tie it to total shareholder return.

Those are main equity-based compensation packages that a company might use. Obviously, lots of modifications to them can be made, and some more equity-based incentives do exist. It's not practical to describe each and every one, as our goal is to give understanding what is equity-based compensation.

Many of those options have a vesting period, and the reward itself might be cancelled if employee is terminated. This should help manager start seeing their working situation as a long-term, as they have to work for some time (or deliver good performance in the long-run), and do everything they can to help the firm grow and maximize shareholders' wealth.

All those things played an interesting role in shaping the relationship between managers and owners, and we turn our eye at how they are placed in modern world.

Latest Mercer report (2015) on executive remuneration notices that shareholders across the globe are trying to make their voices heard, and they want to exert more influence on compensation decisions.

In Europe there is a growing support for the movement that would require a binding vote on pay. Currently Germany, Switzerland, Netherlands, Italy (for financial services) and UK have a binding vote mandates, but more countries are looking into legislation that is concerned with this problem. US, China, Japan, Australia and few other countries have a non-binding vote to pay.

A non-binding vote that rejects a proposal might undermine the reputation of the company, the manager and the board of directors, which might become a problem down the road in the markets, passing bad signals about financial position of the company.

Although stronger influence of shareholders might be a desirable result for them, it's not guaranteed that any of those measures will actually yield results in terms of ability to control and monitor manager more efficiently. A growing support for say-on-pay movement may be somewhat explained by some of the criticisms, aimed at the ineffective boards of directors, who fail to fulfill their duty to shareholders.

Mercer (2015) estimates that most of the companies adopted incentive plans based on Total Shareholder Return (TSR is a total return received by the shareholder; in short, can be calculated as capital gain plus dividends to the investor), but there is a growing sentiment about possible downfalls of this measure. Some believe that it is not the best indicator to base managerial incentives.

The main benefit of TSR is the ability to compare performance of stocks, even if dividend policy is different and they exhibit different growth. TSR is a simple metric that is tied to shareholders' wealth and, in theory, should put managers on the path to achieve wealth-maximization for shareholders. But Transaction Advisers (2015) found that the more diverse portfolio is, the harder it is to generate a high TSR, so it might not objectively reflect the skill or influence of the executives. TSR might also lag behind for three and more years. And while incentives that are tied to TSR are typically at least three years long, the longer lag would be unfairly reflected in the compensation.

According to Mercer, companies across the globe show the trend of increasing the base salaries of about 3% on average per year for the 2012-2015 years. There is also a slight increase in the use of short-term incentives during those years.

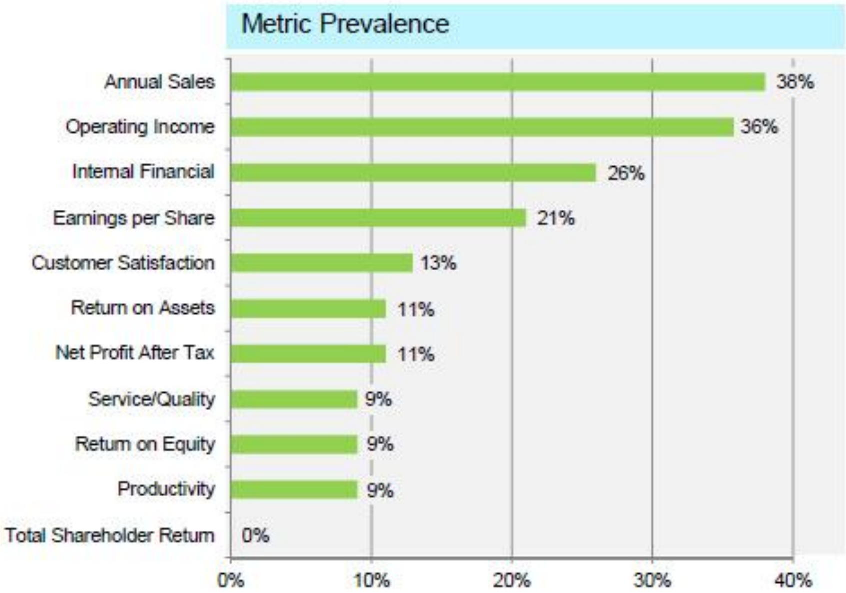
In terms of Long-term incentives, Mercer believes that a lot of companies are striving for simplification in the use of LTI. In Europe most companies are using just one LTI technique, while in US performance share plans becoming more prevalent, and stock options are still quite often used, but those are decreasing. Overall share options becoming much less prevalent, while performance-based awards and restricted stock (service based) become part of the compensation package more often.

So what are the metrics that are tied to executives' compensation?

Mercer outlined top-4 metrics, to which short-term managerial performance bonuses are tied (companies with over $5bln in revenue): Annual Sales (used in 38% of cases), Operating Income (36%), Internal Financial (26%) and Earnings Per Share (21%). Typically, internal financial (concerned with cash flows, which many perceive to be the main part of value creation for the firm's valuation) metrics are used in mature industries.

Figure 2 shows most of the metrics, which are used by companies with more than 5 billion dollars in revenue:

Figure 2. Metris, which are used to tie managerial performance bonuses to, in organizations with over $5bln in revenues



(Source: US Short-term incentive plan design survey for-profit organizations over $5B in revenues)

One thing to mention is the prevalence of EPS as a metric, to which short-term performance bonuses are tied. Some scholars (Koller, Goedhart, Wessels, 2015) believe that this metric is not reflexive of whether the value is being created for the company and only leads to short-termism in the decisions and actions of managers.

We can dissect executives' compensation to three main components: salary, short-term incentives, long-term incentives. Base salary for executives in US firms comprises only around 15% of total pay, while STI accounts for 20% and LTI accounts for 65%. For bigger corporations this ratio might be skewed even more towards LTIs.

As Mercer estimates, in 2013 the biggest part of LTI pay for executives were Performance awards (up to 51% in 2013 from 41% in 2011), while RSUs and cash comprised only about 21%. Another 25% of the pay consisted of options, which are on a pretty severe decline from 2011, when they represented 35% of executives' compensation.

Shareholders (through boards of directors) grasp the necessity to motivate executives with long-term incentives, and are trying to construct the best possible package as to maximize their own (shareholder's) wealth.

For executives of S&P100 this gap between options and performance awards is even wider. Managers of S&P100 companies received 56% of LTI as performance awards, 20% as cash and STI, and only 22% (dropped from 36% in 2011) in options. A clear trend on falling significance and prominence of options and their growing substitution with performance awards, is seen.

Compensation packages in the recent years became much more data-driven and performance-oriented, and shareholders want to squeeze as much value for money as possible. It is characterized through growing support for say-on-pay movement, less unrestricted options and more prevalent awards that are tied to performance.

Babchuk and Fried (2003) also mention certain practices that they called "stealth compensation", which include pension plans, deferred compensation, post-retirement perks and consulting contracts. Those compensation practices can also be seen as long-term incentives, if they are clearly communicated to the management rather early. Consulting contracts, on the other hand, may arise as a parting gift to an employee, rather than a predefined condition. Some of those compensation practices cannot be assessed beforehand by the market or investors.

The ability of any company to have a relationship with a manager after he or she leaves the company is undisputable. It is certainly possible for a company to construct such a pay package that evades the eyes of a public. Post-retirement consulting fees cannot be taken into account, and it is not even clear whether to treat them as a perk for working or a simple desire of a company to keep knowledgeable consultant at bay.

There have also been certain questionable practices, some of which are already forbidden. Loans below market rate for CEOs was a thing in US before legislation came through, which disallowed this practice. And loans can also be "forgiven", which makes it a direct contribution to the wealth of the manager. Some of those practices may exist outside of US.

1.3 Hypotheses development

To assess how structural components of managerial compensation is linked to firm's performance, we put forward certain hypotheses.

Hypothesis 1: There is no significant link between relative amount of salary (to total compensation) CEO gets and firm's performance in the next year

The relationship between salary and subsequent performance of the firm is not that easy to assess. Salary is the basic component of the compensation that is perceived as something everyone gets, and no one really expects to perform better or worse based on salary at the level of top-management. On the other hand, salary is an entry-ticket that shows commitment and respect for the experience and skills that CEO brings. Overall, we perceive this component to be rather insignificant in terms of its ability to motivate employee push themselves to achieve better results for the firm.

In this hypotheses we stand somewhat in contrast to Kato, Kim and Lee (2006) and Ozkan (2011), who found positive link between total cash compensation and performance. The reason for our hypothesis, despite having contrasting results from other researchers, lies in the exclusion of equity-based compensation from the model in Kato, Kim and Lee model. We assess that the changes in the compensation package do not reflect this positive relationship, and their exclusion of equity-based compensation also allows us to hypothesize about insignificance of cash compensation.

Hypothesis 2: There is a significant positive link between the relative amount of Option Awards CEO gets and firm's performance in the next year

Option awards, although are less prevalent than RSAs right now, are too forward-looking, although when we reviewed the data, it felt like Options were used much more for the purposes of awarding managers for their good previous work, at the end of term and also for similar reasons. This observation, obviously, doesn't hold for all companies, and many use them for motivational (forward-looking) purposes. We assume that, despite said differences, Option Awards positively linked to firm's performance in the next year.

Both hypotheses 2 and 3 follow into the footsteps of the previous researchers, i.e., Mehran (1995), Frye (2004), Matolcsy and Wright (2011), who showed empirical evidence of positive link between equity-based compensation and firm's performance. We will see whether this notion holds.

Hypothesis 3: There is a significant positive link between the relative amount of RSA (to total compensation) CEO gets and firm's performance in the next year

Restricted stock awards, as we have discussed already, perform different function from the salary altogether. RSAs are forward-looking and they bring more value to an employee, if the company grows. To get this bonus, employee has to achieve certain targets or wait before RSAs vest. Thus, managers can easily see the alignment between their own goals (wealth maximization) with goals of the firm.

Hypothesis 4: Appointment of new CEO is significantly linked to firm's performance in the next year

When new CEO comes to lead the company, the dynamics of the firm, the culture, the strategic process and goals might change significantly in quite short time. Fresh CEO is always looking to raise profitability for the firm, because that's why he came to the company in the first place. It puts enormous pressure on achieving results, at least in the first years of his or her tenure. This is quite a force that directly impact company's performance, and that is what we hypothesize.

The company (through board of directors) creates a new package for CEO, based on his or her skills, experience, goals and other things. It is a control variable in our case, but it affects the way compensation is being composed, so we also include it in our research from hypotheses standpoint.

Summary of chapter 1

This research is concerned with understanding the link between executives' compensation and firm's performance. Scientific literature suggests that the problem exist, and a lot of scholars studied this area rigorously through different methodological lenses, approached analyzing firm's performance in different ways and assessed the problem in different countries.

The agency theory, which revolves around relationship where one party gives a certain work functions to another part. In this relationship, the goals of those two parties (principal and agent) might not be aligned, which potentially creates a conflict. For an organization, an internal, latent conflict between shareholders and managers can be a critical situation, which prohibits future growth and limits investment opportunities (Eisenhardt, 1989).

Managers by default do not seek to attain to shareholders' goals and eager to work towards their own goals. Shareholders, on the other hand, want their goals to be achieved. This creates a need for a solution, which aligns managers and shareholders. Many believe that pay packages are the way to do that. However, certain problems arise: weak boards of directors may create bad compensation packages (for shareholders), information asymmetry, and different risk attitudes.

Some scholars (Arrow, 1971) suggest that roots of the problem lie in different attitudes towards risk. Managers are risk-averse and do not want to undertake projects, which create a situation where said manager bears personal responsibility for its success. Shareholders, on the other, hand are risk-neutral. From this relationship arises information asymmetry, a situation where managers might be exposed for investment opportunities, but shareholders have no means to know about them. Their goals in this situation would be somewhat unattainable, if the mechanisms of control are not imposed. And those mechanisms might be way too complex for an organization.

Researchers (Frye, 2004; Huselid, 1995) also suggest that equity-based compensation is a way to expose managers to taking more risks and undertaking projects, which they might have forfeited without this type of compensation. Equity-based compensation can be seen as a potential solution to the agency problem (and the construction of optimal contract), which aligns goals of managers and shareholders.

This research is organized around learning in-depth theoretical basis for this problem, uncovering recent trends in executives' compensation and empirically analyzing the relationship between managerial compensation and firm's performance.

In the end of the chapter, we have developed four hypotheses to test in the empirical part of our work, based on the previous research of the problem.

Chapter II. Empirical research

2.1 Methodology

Regression models

To approve or disprove hypotheses, which we developed in the first part of this research, we use regression models in the research, which mostly differ by dependent variable (firm's performance), but some also differ in control variables as discussed above.

We performed hausman test on each model to help us decide, whether we should choose fixed-effects or random-effects model. In each situation, it was more suitable to use random effects. Some also compare efficiency of the random-effects/fixed-effects models with pooled OLS, but there is no real basis for doing so in our research, as the pooled OLS would disregard that data was gathered on many different companies for multitude of years.

Basic model

For regression analysis we propose this model:

$$Performance_{t+1} = \alpha + \beta_{i,t} * X_{i,t} + \gamma_{i,t} * Y_{i,t} + \varepsilon$$

Where:

- $Performance_{t+1}$ – firm's performance;
    - Natural logarithm of market capitalization – market-based
    - Return on Assets – accounting-based
    - Tobin's Q – mixed model
- $X_{i,t}$ – vector of variables, which reflect structural components of managerial compensation;
- $Y_{i,t}$ – vector of control variables;
- $\beta_{i,t}, \gamma_{i,t}$ – vectors of unknown coefficients;
- ε – random term.

It should be noted that we use performance with one-year lag to assess how managerial compensation in this year is reflected in firm's performance in the next year. Now we will discuss each component of this model.

Firm's performance

Measuring firm's performance is no easy task, despite the obvious fact that there are numerous metrics to assess how good company is doing through accounting or market measurements. The problem is choosing the right metrics, as they are obviously at measuring different aspects of the performance. Can we truly assess and evaluate the company on the basis of certain metrics, if they are measuring very specific returns and also include information that can be influenced by the managers or the market?

The problem of performance measurement points us to the necessity to assess the company in two dimensions: market-based and accounting based.

In this research we use three measures of firm's performance:

- Natural logarithm of Market Capitalization$_{t+1}$
- Return on Assets$_{t+1}$
- Tobin's Q$_{t+1}$

Market-based measurement

Market-based measurements allow us to see how (in our research) structure of managerial compensation is linked to the way the company generates value for shareholders, as assessed by investors. Recently it was hotly debated topic that current way of reports on Wall-Street (i.e., quarterly review of the company performance) forces managers to balance short-term decisions with long-term decisions, which may not be the best course of action in certain situations.

On the other hand, some researchers say that markets (especially in developed countries) are efficient, which means that market-based valuations are an effective way of understanding value of the company as a whole, as the investor have the full picture of what is going on in the company. While this point is debatable, and may only exist in the perfect world, many believe that markets are efficient to some degree.

Regardless of those limitations, market-based measurement is a holy grail for any public corporation, which most often strives to grow their valuation. As it is a goal for many companies (and subsequently managers), than it is most definitely the right way to assess performance in our research.

For market-based metrics in our research was chosen natural logarithm of market capitalization. This metric is standard enough to look at the growth or the fall of valuation of the company, and natural logarithm allows us to standardize data, simultaneously making it more appropriate for analysis.

This is the primary metric of interest for those who look from the positions of investors at our research.

Accounting-based measurement

Accounting-based metrics is a different beast altogether. Companies are free to adopt certain practices to influence accounting measurements, which can be aimed at softly manipulating taxation, for example. The difference in accounting practices pose a limitation, as sometimes it becomes unrepresentative of real situation in company. The use of "special purpose vehicles" (as in the case of Enron) may also pose a significant threat to valuation of the company, if it is based on accounting measures (though, market-based measurements provide no different insight in this case). Ability to invest or divest, to get more debt or payout debt, to underwrite net income, to depreciate differently and many other things influence how the company accounting measurements are constructed.

Despite those obvious limitations, it is still important to look at the link between managerial performance and firm's performance through the lenses of accounting performance, as it may provide additional insights.

For accounting-based measurements in our research was chosen Return on Assets, which measures how efficiently company generates earnings by using its assets. The metric is somewhat limited to how company engages in asset management, but on average it is good enough to determine firm's performance.

ROA is calculated as $\frac{Net\ income}{Average\ total\ assets}$

Another obvious limitation of ROA is that doesn't capture forward-looking possibilities and mostly shows, how efficiently assets are being utilized in generating earnings. Theoretically, it sounds wise to measure, but practically any decision in regards to assets of the company can inflate or deflate the metric significantly. Management decisions are concerned with many different things, and some of them, while positive for the company in long-term outlook, may be negatively reflected in certain ratios, including ROA. It also doesn't include any expectations about the future profits and projects, which somewhat limits the scope of the ratio, even if it describes current performance.

Mixed measurement

To assess our problem further, we decided to look at one more metric, Tobin's Q, which some consider to be more or less market-based, while other categorize it as an accounting-based metric. It is not our goal to debate, whether Tobin's Q should be considered either of those.

Tobin's Q is a widespread measurement of long-term firm performance (Bozec, Dia & Bozec, 2010). Generally it can be calculated as $\frac{Market\ value\ of\ company + total\ debt}{Total\ assets\ value\ + total\ debt}$, but there are other possible ways to approximate Tobin's Q. For our research the above-mentioned formula was chosen.

Tobin's Q also captures market expectations of the firm, essentially showing how much the company valued over replacing it with the similar assets. This indication of the potential growth and overall market potential of the firm is important, as no company actually exists in a vacuum.

Managerial compensation

As we noted previously, there are different forms of managerial compensation, which include, but are not limited to, salary, bonus, restricted stock awards, option awards, different forms of long-term incentives, pension matching, certain perks (corporate jet, cars, help with taxes, hotels, etc), golden parachutes and many other.

However, the most prevalent three are salary, restricted stock awards and option awards, at least for our data sample (part of S&P 500 Composite, which will be discussed later on). Because of the fact that we need to have enough observations to make any significant claims about results, we decided to concentrate mostly on three variables, which are relevant to compensation:

- Salary-to-total ratio (relative amount of salary)
- RSA-to-total ratio (relative amount of restricted stock awards)
- Options-to-total ratio (relative amount of option awards)

During studying the problem and looking at dataset without yet done analysis, it became somewhat evident that those forms of compensation perform different functions in organizations and are popular enough to be included in the model.

Salary is an almost mandatory form of compensation, which exists in any organization of our data sample. Salary is a safe base for a top manager, he will still earn it, barring any legal incidents that may prohibit him from doing so.

Restricted stock awards are future-oriented, and generally they those awards are paid out after employee vests for a specific time period or meets performance-based goal. During vesting period or before achieving performance-based goal, employee gets no real value from having this award, but if their performance is good enough, they will get this value in the future. Thus, RSA seems to be a theoretically effective means of motivating employee without making him or her too “comfortable”.

Option awards are less prevalent than RSA in recent years, but many companies still engage in granting option awards. Employee gets an opportunity to buy stock of the company in the future at a specified price. It is assumed that the manager will try to maximize firm’s value to make the option more valuable: as the price of stock rises, the value of option increases (difference between exercise price and stock price).

Option awards can be seen as somewhat more risky or less valuable, because if the stock price falls below exercise price, than an employee gets no value. RSAs, on the other hand, will always have value, although it may go up or down depending on the stock performance.

Those three parts of compensation are the most interesting look at. They also are somewhat prevalent, which is important for data analysis. Many other forms of compensation may be specific to different companies, or simply not widespread enough to be analyzed yet.

Salary, restricted stock awards and option awards, on the other hand, are known entities in the world of compensation, and their practical effect is well-assumed and hypothesized.

Control variables

As our problem is multifaceted, we have to consider some important control variables, which are not directly relevant to the managerial compensation, but rather to firm's specific characteristics, such as performance or size.

In this research we control for:

- Firm's size
- Firm's performance
- Whether there is a new CEO (binary)

Firm's size

Firm's size is an important thing to consider, while researching firm's performance and managerial compensation, because it has direct impact on the amount of compensation and also possible interferences in structure of compensation. We do not have problems with the size of compensation, as we only look at ratios, but bigger companies may employ more equity-based compensations as opposed to smaller firms in our sample. To control for this possible variation, we introduce natural logarithm of sales (or revenue) to our data model, which would theoretically control for different firm sizes.

Firm's performance

Firm's prior performance is an important thing to consider, as it can have direct carryover to performance in the subsequent periods. We will control it by introducing specific performance variables to our regression models: either ROA (for market-based and mixed-based models), or growth in sales (for accounting-based model).

Return on Assets is calculated as $(\frac{Net\ Income}{Total\ assets})$.

Growth in sales is calculated as $\left(\frac{Sales_t}{Sales_{t-1}} - 1\right)$.

Influence of new CEO in the firm

As the company acquires new CEO or promotes one of the managers to this high role, new compensation package is constructed, and both the structure and size of the compensation can vary significantly, regardless of the firm's performance or other company-specific characteristics.

New CEO is an important change in the company, which might drive new culture or altogether different view of the business itself. It may also transfer to subsequent change of the business practices and consequently different performance.

We control this by adding binary variable, where “1” stands for new CEO coming into the position.

2.2 Sample selection

As our empirical research is based on regression analysis, we had to construct a data sample.

Initially we started with the index – S&P 500 Composite, from which we took certain sectors to include in our data sample. As our understanding of the researched problem grew, we were choosing which sectors to include in the final list. The index is composed of US public companies, who exhibit strong performance, and also includes stocks, which are perceived as a having good growth potential.

The data range for the sample is fifteen years – from 2002 to 2016.

From 500 companies from S&P 500 Composite we decided to research 155 from 4 sectors (NAICS classification): manufacturing, information, retail, services. Manufacturing and retail are two very stable sectors, while information and services sectors characterized by different business process and overall strategic orientations.

Names and SIC codes of sectors and sub-sectors:

- Manufacturing (subset of NAICS 31-33)
  - Petroleum and Coal Products Manufacturing (NAICS 324)
  - Chemical Manufacturing (NAICS 325)
  - Machinery Manufacturing (NAICS 333)
- Retail (NAICS 44-45)
- Information (NAICS 51)
- Professional Services (NAICS 54-56)
  - Professional, Scientific, and Technical Services (NAICS 54)
  - Management of Companies and Enterprises (NAICS 55)
  - Administrative and Support and Waste Management and Remediation Services (NAICS 56)

The chosen sectors of S&P 500, despite their differences in terms of services and goods produced, follow the same pattern in terms of growth, which is evident through market capitalization and the growth of it. Figures 3 and 4 show that all four sectors follow the same pattern.

Figure 3. Average market capitalization by sector

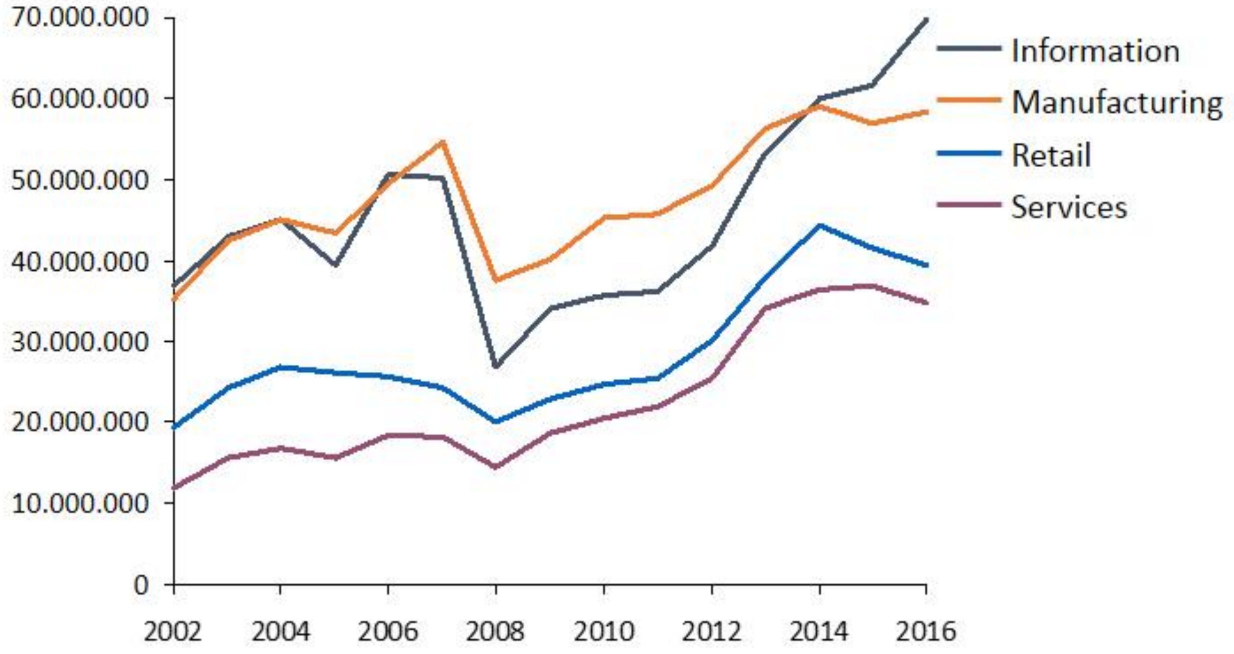
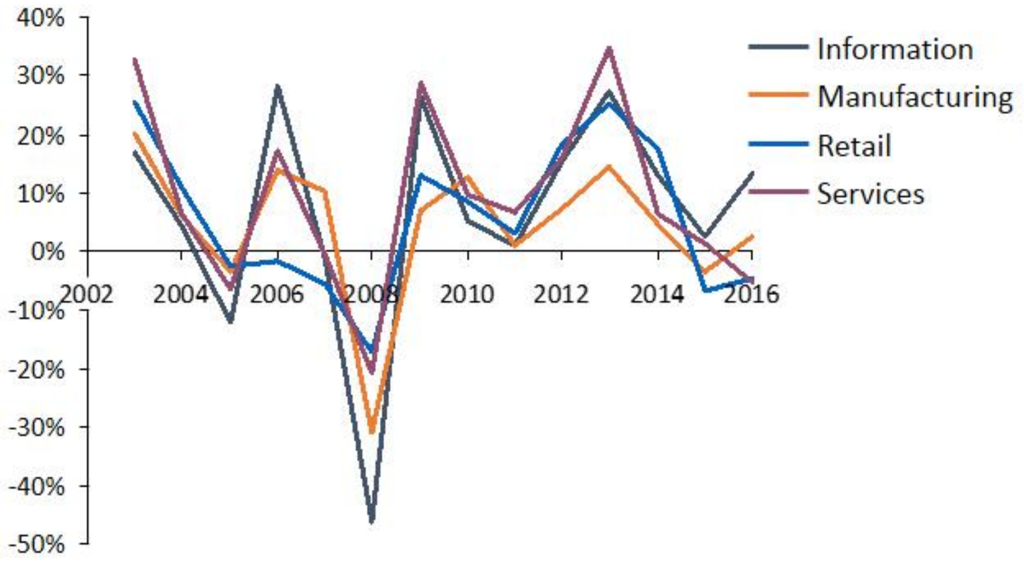


Figure 4. Average growth per year for each sector



Sectors show similar trend and thus were included in our data sample. The relative differences in how they grew and fell are present, but the overall development of the sectors is quite similar.

Services sector includes companies which produce and perform business supporting functions, i.e., SalesForce, and not really consulting functions as it might be suggested by the name of the sector. Thus, the companies in this sector are comparable to the rest of the data sample.

From this list of 155 companies subsequently were excluded 20 companies, which were unrepresentative of the general practices of managerial compensation in public companies. Some of those companies had more than one CEO at one point in time, thus, the structural compensation and its link to company's performance couldn't be properly assessed. Other companies still had founders as a CEO, who set themselves salaries, which do not reflect practices in executives' compensation (salary 1$ or simple fixed salaries for numerous years).

One of the limitations of the considered data sample is somewhat unbalanced data for numerous years. Not every company engages in paying managers with Restricted Stock Awards (RSA) or Options; some of the companies were not public (during part of the time frame we analyze) or even existed during all of the years, which are considered in our research.

The sample was constructed by using Thomson Reuters Datastream and Thomson Reuters Eikon. Data on companies' performance was taken from Datastream, while Eikon was an integral part of gathering data on executives' compensation.

2.3 Descriptive statistics of variables

Variables in our work can be classified either as concerned with managerial compensation or as concerned with firm's performance. Let's look at table 2 firstly to quickly overview the descriptive statistics of the dataset at hand.

Table 2. Descriptive statistics of variables

Variable	Observations	Mean	Median	Std. Dev.	Min	Max
Salary (thousands)	1556	1246.031	1075.865	784.1297	34.615	8100
Restricted Stock Award (thousands)	1106	5794.309	4415.11	6480.088	.628	94555.28
Option awards (thousands)	910	3843.082	2625.065	5277.202	2.315	77990.74
Total compensation (thousands)	1551	12041.69	9346.189	11306.42	136.341	156077.9
ROA	1906	.0774794	.08165	.0956978	-.9799	.7906
Sales or	1938	27088.57	8874.3	53856.26	.877	485873

Revenue (millions)						
Market Capitalization (millions)	1886	38967.04	14375.92	64817.96	33.684	504239.6
Tobin's Q	1878	2.110995	1.655151	1.605236	.342236	20.70805
Salary to total	1551	.1869845	.118758	.1843766	.0062775	1
RSA to total	1101	.3895544	.3638934	.2087593	.0002921	.9712706
Option awards to total	905	.2901101	.2511602	.1903211	.0001057	.9460692
Market Capitalization log	1885	16.59754	16.48107	1.326983	10.42478	20.03856
Sales log	1938	16.02284	15.99867	1.598388	6.776507	20.00146

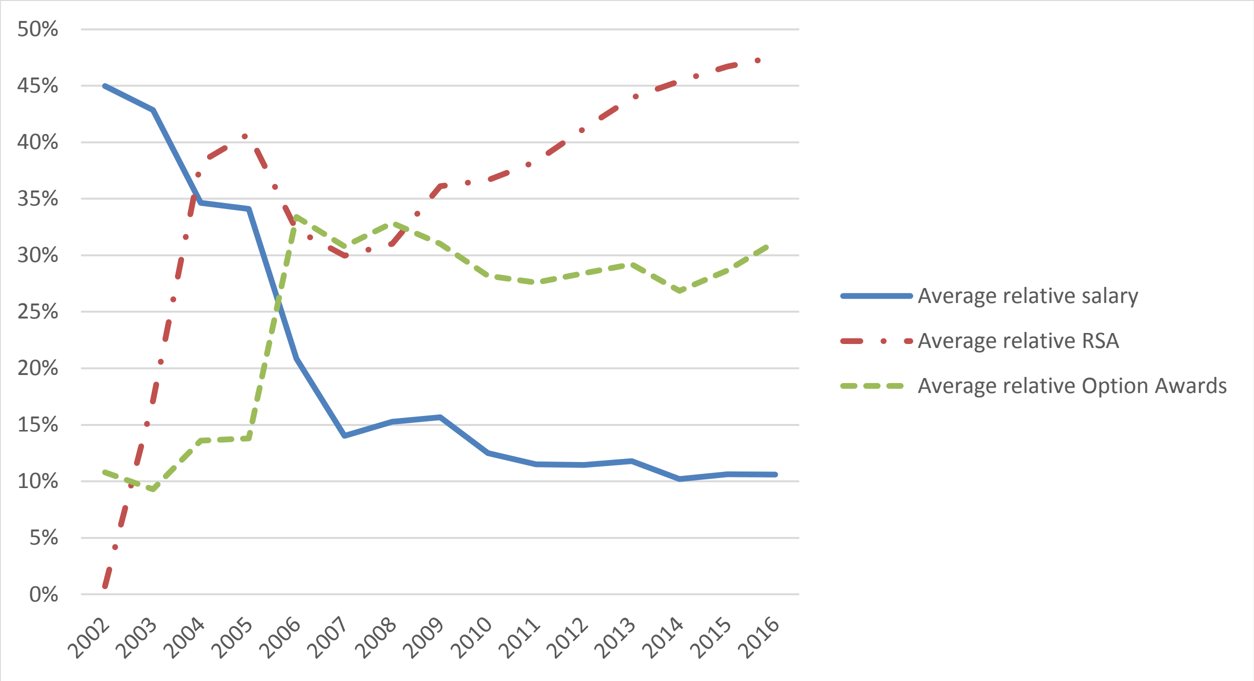
The difference in observations is explained by a multitude of factors. First of all, there were not enough data in Eikon databases on certain years for certain companies. Furthermore, not every company was public or even existed during the 15 years that we look at. The limitations of data were addressed in model specification.

Salary had become less prevalent (dynamic for prevalence of Salary to total compensation is shown in figure 5 in next page), and most companies tend to use it in a compensation package less and less. It still is a safe way to earn money, but in the whole package of compensation it plays pretty insignificant role in recent years. As the possible ways to compensate managers grew, more companies leaned on paying with different forms.

Restricted Stock Awards have gradually become the biggest part of executives' compensation. The rise and fall of different forms of compensation is assessed on the figure 5, which show the dynamics in terms of compensation structure by years.

Option awards at some point in time were as popular as restricted stock awards, but during the crisis in US was passed legislation, that undercut one of the biggest advantages of option awards – tax benefits. After that, Restricted stock awards became more prevalent, partly because they seem more beneficial to employees, partly because of legal climate.

Figure 5. Average relative amounts of forms of compensation



Note: Companies can either use RSA, Options or both. Other parts of compensation were excluded

It should be noted that we excluded some other components of the compensation, which are not used as widely as those three, including bonuses, specific benefits, perks, changes to pension plans, tax assistance, use of corporate cars and jets, non-specified long-term incentive plans and some other forms of compensation.

We have chosen 4 sectors in our data sample: manufacturing, information, retail and services. We have already discussed those sectors and their specifics above. There is also a difference in companies' overall size (as reflected in market capitalization; lowest is approximately 33 million, highest is approximately 504 billion). Those differences are addressed in the model specification, as it was discussed above.

Overall, we tried to create a balanced data sample in terms of maturity, performance and size of the companies. It is not an easy task, given that we started with four distinct sectors of an index, but overall it was possible to include similar companies in the sample.

Additional data on sectors could be inferred from Appendices 1, 2 and 3. The first appendix shows the names of the all companies, included in the data sample. Appendices 2 and 3 show additional information in regards to similarity of the trends of the companies, included in the data sample.

2.4 Results of empirical analysis

As we have discussed previously, we ran three similar regression models for each way we measure performance. Results of those regressions are presented in the table 3 below.

Table 3. Results of regression models

Variable	Market-based	Accounting-based	Mixed
Relative Salary	-1.54**	-0.18**	-1.705*
Relative RSA	0.417**	-0.08***	0.710**
Relative Options	-0.152	-0.05	-0.263
Sales log	0.448***	0.028***	-0.331***
ROA	-0.01	N/A	0.021***
Sales growth	-0.013***	0.02	-0.007
New Ceo (binary)	0.118*	0.021**	0.047
_cons	9.58***	-0.318*	7.2***

Note: the symbols *, ** and *** sign the variables significant at the 10%, 5% and 1% levels respectively.

All three models are statistically significant (Prob > F 0.000), so we can conclude that all those models provide us with accurate results.

One of the first things that come to attention is the significance of negative link between relative amount of salary and firm's performance; all three models confirm this finding, although on different levels of significance.

As we have seen from the descriptive part, the relative amount of salary to overall compensation is significantly lower right now than it was in early 2000s. It seems to be quite understood both by the practical and academic worlds that salary is not enough to motivate management to achieve better performance throughout the years. Salary provides a safe base to transfer whatever knowledge and skills manager has, but it doesn't really provide any motivational force after that.

Initially, we hypothesized that salary would be an insignificant factor, but the empirical result proved us wrong. The more management has a salary relative to total compensation, the worse performance of the company is expected. It can be explained by the fact that salary is "safe" compensation – it is not going to vary based on performance, so there is no incentive to perform better, and even an incentive to not take any risks and enjoy their cash compensation.

Thus, hypothesis 1, which stated that relative amount of salary to total compensation is insignificant, couldn't be confirmed.

Next in line are option awards and we hypothesized that their effect would be similar to that of Restricted Stock Awards. As we discussed earlier, those two types of compensation are somewhat similar in their effect: they both are forward-looking, but Option Awards are inherently somewhat riskier, because they only worth anything if exercise price is lower than the price of the stock.

Our model couldn't confirm any relationship between option awards and firm's performance in the next year, as all 3 models showed that this variable was insignificant to the regression. It can either be because of compensation-specific practices, i.e., mass transition to RSAs, so Options are only left in certain firms, or it can also be because of the possibility that companies use it a little bit differently, i.e., as an award to an employee, rather than motivational force.

Thus, Hypothesis 2 couldn't be confirmed in our research.

Relative amount of Restricted Stock Awards is significant in their link to firm's performance. Two models (market and mixed) show positive link to performance, while accounting-based model shows slightly negative link.

Let's first consider findings in market and mixed models. This is somewhat predicted result, because we expect forward-looking motivation to be linked with performance in the next year of the grant. RSA always have value for an employee, even their value may go down. Managers are motivated to achieve set targets, without being pressured too much into shying away from risky opportunities (especially when RSAs are granted on the vesting, and not performance basis).

However, accounting based model (which has ROA as a dependent variable) shows slightly negative coefficient. Now we somewhat consider the limitations of accounting measures, which we talked about at the start of the chapter. Accounting measures can be influenced within the organization. It is possible that the result is inconclusive or can be attributed to difference in accounting practices or the way assets (or net income) are treated in the company.

The hypothesis 3 is confirmed with two models, while the third model can't confirm it.

As we previously discussed, theoretically new CEO brings his or her skills and experience to the firm. Many of those CEOs actually possess a lot of knowledge about the company and industry, as it quite often happens that COO or other officer gets promoted to the CEO position. Two of our models show positive link between appointment of new CEO and firm's performance in the next year, while mixed model (Tobin's Q) shows no significant link at all. It is quite possible that new CEO works hard on improving operational performance and tries to optimize internal processes and assets, which can initially transfer to better accounting measures.

Theoretically, the result could be explained by a variety of factors, and it needs more deep research before we actually extrapolate the result. This link, which is evident in two models, may be attributable both to the new vision or strategy that CEO brings (divesting decisions) or favorable market valuation as the company becomes “fresh”, or any other factor. Scope of our research doesn’t include this digging, but further research could shed more light on this topic.

Thus, Hypothesis 4 was confirmed by two models, while the third model couldn’t confirm it.

2.5 Main findings

In this part we will try to shortly look at what we have achieved in this research and also assess how our results compare to the results of the other researchers in this domain.

In this research we had explored how different components of managerial compensation are linked to firm’s performance. Our findings stay somewhat consistent with the recent research in this area, although not all of our regression models were able to confirm the findings. Let’s first reiterate our findings:

1. Relative amount of salary received by CEO is negatively linked to the company’s performance in the next year

There were different studies done on how cash compensation is linked to firm’s performance, but most of them were made with different methodology in mind, i.e., explaining whether compensation could be explained through performance. We stand in contrast to researches of Kato, Kim and Lee (2006) and Ozkan (2011), who found positive link between total cash compensation (salary and bonuses together) and firm’s performance. We should also note that besides different exploratory process, they had included various forms of compensation that were cash-based in this total and also viewed an amount of compensation, rather than relative amount of it to total compensation in the pay package.

2. Relative amount of Option Awards received by CEO is not significant to the company’s performance in the next year

Despite the obvious similarities between Option Awards and Restricted Stock Awards, they seem to not perform the same function in the data sample, which we studied. Option Awards are different, and they can have zero value for an employee, while RSAs always have value. Thus, in certain situations employees can somewhat predict (regardless of the accuracy of this prognosis), whether their option will have value in certain amount of time. This makes Option Awards riskier and some CEOs may even become demotivated, if they perceive that their option will be worth nothing. Some peculiarities arise, if you look at the data sample, as many companies seem to award Option Awards almost randomly, while RSA follow a certain pattern. The decision-making process in companies can shed light on how those awards are structured and granted, scope of our research doesn't allow us to answer this question directly.

3. Relative amount of Restricted Stock Awards received by CEO is positively linked to company's performance in the next year in Market-based and mixed models, and negatively linked in accounting-based model

It is evident that there is a difference in three models, which was discussed, but shall be discussed again in the light of this result. It should be noted that accounting-based model, which uses ROA as a dependent variable, doesn't capture forward-looking possibilities of the firm and is also sensitive to any increase in total assets. Other two models are either concerned with how much market values the company (market-based), or how investors value the company over its possible replacement with the similar assets.

This is a pretty important point, as the investors might be more concerned with the value of the company, rather than with the accounting returns. Thus, for investors (and Boards of directors), RSAs can be very valuable in constructing compensation package for top executive.

We somewhat stand in line with the research of Mehran (1995), Frye (2004), Matolcsy and Wright (2011), who confirm positive link between equity-based rewards and firm's performance. But for our research, it is not just any equity-based compensation, but rather a very specific one – Restricted Stock Awards.

4. Appointment of new CEO is positively linked to company's performance in the next years in market- and accounting-based models, while mixed model found no significant relationship

Appointment of new CEO means that the old compensation package is no longer relevant, and Board of directors need to construct a new one, which depends on the experience and skills, that brings the new CEO. His or her overall vision for the company may also differ from that of his or her predecessor, which would generally be reflected in strategic decision-making process.

While it is not directly relevant to the compensation, appointment of new CEO changes compensation practices and packages, so it is still an important thing to look at, when we research compensation structure and performance. Market-based and accounting-based model show that appointment of new CEO is positively linked to performance, which can be explained by favorable valuation (as the market believes that new strategic decisions will revive the company’s spirit) in market case, and by changes in overall operating process in accounting model. Mixed model shows no significant relationship

2.6 Theoretical and practical implications

This thesis has implications both from theoretical and practical standpoints. As most of the previous research was mostly concerned with assessing absolute values or justification of compensation through performance, this research shows another perspective on the studied problem. We believe that with the development of new compensation practices and packages, better disclosure forms, the problem can be further studied and analyzed in various parts of the world. Studying structure of compensation and its influence on performance proved to be a rather good way to address the problem.

Another possibility for further researches is to look at other countries, but current disclosure practices in many countries may prohibit from doing so. It would be rather efficient to study the problem at a bigger sample, and to compare the results for different countries, at least in the developed world.

As to managerial complications, those are defined mostly for shareholders, who want to maximize potential of their executives to achieve better firm’s performance.

Based on our interpretation of the data, presented in the sample, and interpretation of the regression analysis, we can formulate four managerial implications of this research:

1. Salary should be provided to the executive, but shouldn’t be perceived by the shareholders as a means of motivation
2. Restricted Stock Awards is an effective tool of motivating managers to achieve greater firm’s performance, as assessed by the market
3. Option Awards are not as effective as Restricted Stock Awards, and the preference should be given to the latter
4. Appointment of the new CEO may give company a long-awaited boost in performance, which would be reflected in market valuation

Summary of chapter 2

In this chapter we proposed a model to research how compensation structure of a CEO is linked to firm's performance in the next year. The research was carried out via regression analysis in three different models, which provided different insights in the problem.

We have defined firm's performance through 3 dimensions: market-based (logarithm of market capital), accounting-based (Return on Assets) and mixed model (Tobin's Q, which also reflects how company is being perceived by the market relative to the possible similar replacements of assets of the company).

To use our model, we constructed a data sample of the companies, which consists of 4 sectors (information, retail, manufacturing, services) of companies in the S&P 500 Composite Index. Those industries, taken together, can be seen as representative of much bigger amount of companies, as they touch upon technologies, shopping, producing goods, offering and deploying new services. The data is gathered on 15 years (2002 to 2017), but not all companies have this much data, because some of them are new to stock market, and some were created quite recently.

We have also looked at trends in compensation in our data sample, which show that salary became relatively small part of the overall compensation package, while RSAs and Option Awards are on the rise.

The results of the analysis are mixed. We have learned that relative amount of salary in compensation package is negatively linked to performance; despite their similarities, Restricted Stock Awards and Option Awards are not the same in terms of their relation to firm's performance. RSAs are significantly positively linked to performance in two models, while accounting-based models shows negative coefficient. Option Awards, on the hand, are not significant at all to performance in the next year. We have discussed those differences and the possible reason for accounting-based model showing negative coefficient. We have also learned that appointment of new CEO is significantly positive linked to performance.

Conclusion

This research is mainly concerned with finding assessing the link between structure of managerial compensation and firm’s performance. In the first chapter we have analyzed and presented theoretical foundation for the problem at hand, and also looked at empirical research on the topic in various parts of the world. Most of the research is pretty focused, and is methodologically different from this work. We have looked at the trends in the managerial compensation both through the lenses of Mercer’s reports and our own data sample.

In the empirical part of the research we have analyzed the link between structure of managerial compensation and firm’s performance, with latter being measured in three different dimensions: market-based, accounting-based and mixed (Tobin’s Q) model. We have discussed the differences between all those measurements of the performance, and empirically studied how they are connected to various components of compensation (we took cash compensation, Restricted stock awards and Option awards).

Generally, on the basis of our empirical research, relative amount of salary is negatively linked to performance, so it shouldn’t be primary way of motivating employees to achieve shareholders’ goals. Our research also wasn’t able to find any link between Option Awards and performance of the firm in the next year, but further research may shed light whether our notion stands. Currently, we believe that this form of compensation is not as effective as Restricted Stock Awards. Taking into account different results for compensation variables in different models, we believe that Restricted Stock Awards is an effective tool to, at least partially, align goals of managers and shareholders, as this type of compensation is positively linked to firm’s performance in the next year (as assessed by market and mixed (Tobin’s Q) models). Therefore, it might be essential for shareholders to construct a compensation package for executives that includes RSA through board of directors.

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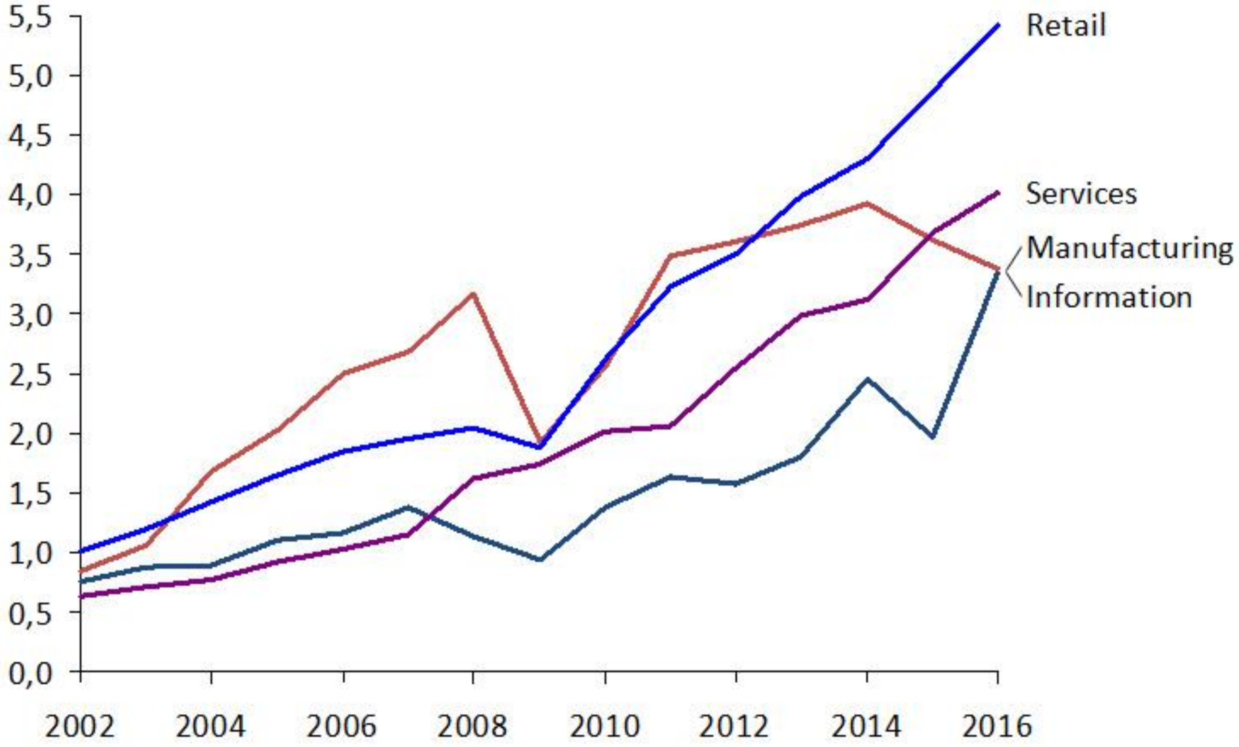
Appendices

Appendix 1. List of companies by sectors

Information	Manufacturing	Retail	Services
Activision Blizzard Inc	Abbott Laboratories	Advance Auto Parts Inc	Accenture PLC
Adobe Systems Inc	AbbVie Inc	AutoNation Inc	Automatic Data Processing Inc
AT&T Inc	Air Products and Chemicals Inc	Autozone Inc	Biogen Inc
CBS Corp	Albemarle Corp	Bed Bath & Beyond Inc	CA Inc
CenturyLink Inc	Alexion Pharmaceuticals Inc	Best Buy Co Inc	Celgene Corp
Charter Communications Inc	Allergan plc	Carmax Inc	Cerner Corp
Citrix Systems Inc	Amgen Inc	Costco Wholesale Corp	Cognizant Technology Solutions Corp
Comcast Corp	Applied Materials Inc	CVS Health Corp	F5 Networks Inc
Discovery Communications Inc	Baker Hughes Inc	Dollar General Corp	Fiserv Inc
DISH Network Corp	Bristol-Myers Squibb Co	Dollar Tree Inc	Fluor Corp
Electronic Arts Inc	Caterpillar Inc	eBay Inc	Gilead Sciences Inc
Hewlett Packard Enterprise Co	CF Industries Holdings Inc	Express Scripts Holding Co	H & R Block Inc
Intuit Inc	Chevron Corp	Foot Locker Inc	Incyte Corp
Level 3 Communications Inc	Church & Dwight Co Inc	Home Depot Inc	International Business Machines Corp
Microsoft Corp	Clorox Co	Kohls Corp	Interpublic Group of Companies Inc
Netflix Inc	Colgate-Palmolive Co	Kroger Co	Jacobs Engineering Group Inc
News Corp	Coty Inc	L Brands Inc	Nielsen Holdings PLC
Red Hat Inc	Cummins Inc	Lowe's Companies Inc	Omnicom Group Inc
S&P Global Inc	Deere & Co	Macy's Inc	Paychex Inc
Scripps Networks Interactive Inc	Dow Chemical Co	O'Reilly Automotive Inc	Regeneron Pharmaceuticals Inc
Tegna Inc	Eastman Chemical Co	Ross Stores Inc	Salesforce.Com Inc
Time Warner Inc	Ecolab Inc	Signet Jewelers Ltd	Symantec Corp
Total System Services Inc	Eli Lilly and Co	Staples Inc	Teradata Corp
Twenty-First Century Fox Inc	Estee Lauder Companies Inc	Target Corp	Verisign Inc
Verizon Communications Inc	Exxon Mobil Corp	Tiffany & Co	
Viacom Inc	Flowserve Corp	TJX Companies Inc	
Walt Disney Co	FMC Corp	Walgreens Boots Alliance Inc	
Yahoo! Inc	General Electric Co	Wal-Mart Stores Inc	
	Hess Corp		
	Illinois Tool Works Inc		
	Ingersoll-Rand PLC		

	International Flavors & Fragrances Inc		
	Johnson & Johnson		
	KLA-Tencor Corp		
	Lam Research Corp		
	Mallinckrodt Plc		
	Marathon Petroleum Corp		
	Merck & Co Inc		
	Mosaic Co		
	Murphy Oil Corp		
	Mylan NV		
	National Oilwell Varco Inc		
	Perrigo Company PLC		
	Pfizer Inc		
	Phillips 66		
	PPG Industries Inc		
	Praxair Inc		
	Procter & Gamble Co		
	Stanley Black & Decker Inc		
	Tesoro Corp		
	Valero Energy Corp		
	Vertex Pharmaceuticals Inc		
	Xerox Corp		
	Xylem Inc		
	Zoetis Inc		

Appendix 2. EPS trends for chosen sectors



Appendix 3. Total assets trends for chosen sectors