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Master in Management Program

AGENTS' BEHAVIOUR AND ITS IMPACT ON FINANCIAL RESULTS OF THE COMPANY: PRINCIPAL-AGENT THEORY PERSPECTIVE

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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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06.06.2021

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АННОТАЦИЯ

В настоящее время многие крупные компании имеют сложную организационную структуру, в которой очень четко разделены собственность и контроль над этими компаниями. Что касается акционеров или менеджеров, последние несут ответственность за выполнение целевых показателей и рост бизнеса от имени акционеров, которые часто включают в себя назначения и делегирование некоторых решений этим менеджерам. С другой стороны, акционеры должны выстраивать и поддерживать политику вознаграждения для менеджеров, чтобы мотивировать их к достижению ключевых показателей эффективности. Решение проблемы взаимоотношений между акционерами и менеджерами заключается в том, чтобы найти точку, в которой благосостояние как менеджера, так и принципала будет максимизироваться вместе с долгосрочным стабильным развитием компании и смягчением конфликта интересов между акционером и менеджером. К настоящему времени разработано большое количество планов мотивации для повышения лояльности агентов и мотивационных планов для топ-менеджмента компании, в том числе CEO и NEO. Однако разработанные модели, в первую очередь, не соответствуют универсальности. поскольку они отражают результаты деятельности компании каждый раз индивидуально.

Это исследование направлено на поиск ответа на конкретный вопрос: «Какой план стимулирования оказывает наиболее значительное влияние на результаты деятельности компании в долгосрочной перспективе?» С учетом результатов деятельности компании исследование будет касаться операционного дохода компании, который измеряется как валовой доход после вычета стоимости проданных товаров и операционных расходов. Основная цель этого исследования - выявить связь между производительностью предприятия, вышеупомянутым операционным доходом и общей суммой вознаграждения, выплачиваемого менеджерам за работу от имени акционеров.

Исследование разбито на задачи для достижения цели и ответа на поставленный выше вопрос.

- Проанализировать теоретическую литературу и представить наиболее актуальный контекст агентской проблемы и смежных концепций;
- Приоритизировать найденные теории, концепции, модели, и выбрать наиболее релевантные;
- Построить статистические модели для исследовательского вопроса и соответствующих данных выборки;
- Собрать данные из открытых источников и отсортировать переменные;

- Представить результаты и сделать выводы с рекомендациями для будущих исследований

Регрессионные модели в практической части включают оценку каждого стимула в сочетании между планом стимулирования и производительностью компании, отличным от других исследований, которые были заинтересованы в этой области. В исследовании также обсуждаются новые открытия по этой теме и высказываются мнения об использовании такой модели. И последнее, но не менее важное: есть ограничения и новые идеи для следующих шагов и будущих разработок.

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Название ВКР: Связь между поведением агентов и финансовыми результатами компании в рамках проблемы взаимоотношения менеджеров и акционеров

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ABSTRACT

Nowadays, many big enterprises have been rooted elaborated structure of ownership and control. Regarding owners, or principals, who are responsible for hiring and enrolling the agent to perform the tasks on their behalf that often involve assigning and delegating some decision-making to the agent. The same owners should also enhance an alluring compensation policy for the managers to motivate them to meet KPIs and target values. The principal-agent problem tackles finding a point in which both agent's and principals' wealth is maximized for long-term stable development of the company and mitigating the conflicts of interest between principal and agent. By these days, there have been developed a great number of incentive plans for increasing the agents' loyalty and boosting the motivation plans for the company's top management, including CEO and NEOs (non-executive officers. However, the developed models are primarily discrepant with being universal explanations, as they reflect the company's performance each time individually.

This research is focusing on finding the answer to a specific question: "Which stimulus of incentive plan has the most significant impact on a company's performance in a long-term perspective?" By company's performance, the research will tackle the company's operating income that is measured as a gross income after subtracting the cost of goods sold and operating expenses. The main goal of this research is to find out the link between an enterprise's operational performance and management compensation.

The research is broken down into the tasks to achieve the goal and answer the question mentioned above. The tasks are the following

- Analyse theoretical literature and present the most relevant context of agency problem and adjacent concepts;
- Prioritize discovered theories, concepts, and models;
- Frame statistical models for the research question and relevant sampling data
- Gather data from open sources and sort variables
- Present the results and make conclusions with recommendation for future research

Regression models in the practical part include the estimation of each stimulus in conjunction between incentive plan and company performance in a different way from the other studies that have been interested in this field. The research also discusses new findings on this topic and comes up with opinions on the usage of such a model. Last but not least, there are limitations and new ideas for the next steps and future developments.

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INTRODUCTION

The modern economy's complexity has resulted in a wide range of economic theories that describe numerous financial and business-related processes. In such circumstances, selecting the most exact instrument for analysis becomes a challenge, as companies struggle to determine which model is the most objective and suited for effective decision-making. Each instrument can be used from different perspectives, resulting in a variety of contradicting or arguable outcomes or even showing the situation from a new perspective.

In this aspect, the firm is a unique example of plurality in analytical theories formed on it, where many models and views partially describe the same phenomena and predict comparable outcomes. The variables for these analytical models, on the other hand, are a topic for debate. In this regard, behavioural finance, a psychological study of economics, becomes an intriguing issue. When it comes to analysing a company's financial performance, aspects like stakeholder economic behaviour cannot be overlooked. The research will be focused on the agency hypothesis, which has its own set of internal claims made by insiders who represent management and outsiders who represent the public-private investors. The research describes agency relationships in this theory as a contract in which one party – a principal – hires another party – a manager – to execute any function on their behalf, including delegating decision-making authority to the agent. The problem is that if both the principals and the agents are attempting to maximize their utility, there is a reasonable reason to believe that the agent will not act in the principals' best interests (Jensen & Meckling, 1973). In other words, it's an issue of persuading an agent to act as though he's trying to balance the principal's interests. It is prevalent in all organizations with a scattered organizational structure. The core concept of motivating agents to perform well is based on compensation techniques and instruments that differ in terms of value creation for agents. According to studies, the stock options type for CEO and NEOs compensation adds the most to the business's performance; however, no one has defined what the research means by firm performance in general, or whether the measure of performance is uniform across all industries.

Overall, this research is focusing to find the answer to a specific question: "Which stimulus of incentive plan has the most significant impact on a company's performance in a long-term perspective?" By company's performance, the research will tackle the company's operating income that is measured as a gross income after subtracting the cost of goods sold and operating expenses. The main goal of this research is to find out the link between an enterprise's operational performance and management compensation.

CHAPTER 1. LITERATURE REVIEW

1.1.A firm and agents' behaviour

Economic theory has approached firm phenomena from a variety of angles, beginning with the most basic and evident and progressing to some of those the research will cover, which is more or less difficult, as one would say. The main premise that underpins the majority of conventional economics articles is that the corporation is viewed as a "black box". This broad approach emphasizes the firm's ability to generate outputs from inputs (maximizing present value). Furthermore, this technique was described as one of those derived from the firm theory. Some researchers have criticized such categorisation, claiming that certain scientists are unable to distinguish between the theory of the firm and the theory of the markets on which the firm operates. Similarly, the overview of the firm inside the theory of the company has no sophisticated organization, no control difficulties, no budget, no controller, and, according to Cyert and March, "no aspiring middle management" – therefore the science avoids manipulating significant conceptions and parameters in favour of providing some intricated descriptions. But what does it mean when the research tackles "real theory"?

First and foremost, it is important to provide a brief review of how the company is viewed in new institutional economics, in the hopes of providing some answers to the stated query.

Essentially, the new institutional economics differs in that it provides more exact solutions to questions of how enterprises are virtually managed. From the above-mentioned work by Cyert and March "A Behavioural Theory of the Firm" (1963), the research presumes that the most intriguing example of such solutions comes from the perspective of organizational economics. They analyze and evaluate several subjects related to the management process, individual behavior specification, and present some novel notions in their study. One of these becomes a description of the firm's decision-making process. The research should take a closer look at this concept. As a result, the starting point becomes an awareness of what the firm is in terms of the individuals who work there. Cyert and March believe that only individuals have ambitions within the firm, while groups of people do not. As a result, because there is always a visible conflict between individual goals, it becomes a feature of the organization to the same extent. It is called "internal goal inconsistency" (Cyert and March, p. 32-33). March concluded that the resolution of the mentioned conflict is the essence of the idea - "[a] process-oriented political theory of conflict resolution ... that highlights phenomena such as ... negotiation, inconsistency, and more or less continual conflict" (March 1962 [1988], p. 104 & 109). Later, Cyert and March (1963) stated that the organization can be described as a "decision-making process" or a "quasi-resolution of conflict" (p. 169).

Moving on with this approach, these two researches offered the following idea: because different parts of an organization are responsible for various portions of information essential to decision-making, it can be expected some bias in information transmission - it was called "interpretive adjustment" by the authors (Cyert and March, 1963, p. 85). By the way, this argument has been supportive of some respected and quoted studies, including Tirole's work on collusion (1986) and Holmstrom's work on delegation and others (Gibbons, 2013). As it can be concluded, such an argument can be quite useful in determining why some individuals in the firm make certain decisions and why others do not.

Therefore, commenting on Gibbons (2013) and his overview on Cyert and March, the following considerations can be used to conclude discussions on behavioural theory of the firm:

- When watching the behavior of organizational parties, strategic information transmission can become a strong argument;
- Individuals, not groups, are the focus of behavioral economics, otherwise, coalitions;
- Any human cognitive ability is predicated on the idea of bounded rationality and imperfect circumstances;
- A firm as a decision-making process, quasi-resolution of conflicts of interest between players, is an alternative to the “black box”.

“Theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure,” published in 1976, has made a significant contribution to the understanding of internal organizational processes, providing both theoretical underpinnings based on Ronald Coase and Cyert & March, as well as a mathematical interpretation of how the costs of conflicting interests could be measured. Since Jensen and Meckling’s publication, the theory they developed has received a lot of attention, and the model for calculating utility, benefits, and divergence has been replicated, improved, and reintroduced, so there will be used as a paradigmatic example to refer to. Unlike the studies that were based on the authors' previous work, this one takes a slightly different approach to explain behavior. Specification of individual rights is thought to define the costs and rewards that will be distributed within any enterprise. Assuming that the specification is largely carried out through contracting, individual behavior (including that of the management) will be significantly reliant on these contracts. In this regard, the research focuses on the behavioral implications of property rights embodied in contracts between shareholders and managers. It should begin by introducing some of the key concepts that will be discussed later.

Agency relationships are described as a contract between the shareholders and the managers that delegate certain decision-making authority to the latter ones. The interpretive adjustment that occurs with every transmission of information, as well as the pursuit of personal interests (maximizing in most cases), will result in certain divergences in interests on both sides, as was introduced in the early section. These may be controlled by incorporating some incentives from the shareholders' perspective, as well as monitoring activities, which would result in monitoring expenses carried by those shareholders. Implementing bonding expenses that are comprised of both monetary and non-monetary can be advantages for the managers that are inclined to ensure that the managers will not act in a way that harms the shareholders' interests might be another technique to reduce divergence. With an imperfect environment, bounded rationality, and inevitable differences in interests between the parties that could be arisen simply from both sides attempting to maximize utility, it is impossible to guarantee that the manager will act completely rationally and make optimal decisions, either from the shareholders' or managers' perspective. As a result, it might be anticipated some differences in both goals and, how can it seem, decisions. Another sort of agency cost is residual loss, which is a dollar rate that reflects the decline in shareholders' wealth as a result of divergence incurred by managers (Jensen & Meckling, 1976, p. 308).

Moreover, Jensen and Meckling's firm definition differs from the one presented in the first section of this research. "Organization is a legal fiction that serves as a nexus for a series of contracting relationships among individuals," according to the latter (Jensen & Meckling, p. 310-311). The corporate entity is further distinguished by divisible residual claims on the organization's assets and cash flows. To be more accurate, corporate behavior is not analogous to individual behavior, however, a firm is made up of persons, but the contracts that the firm is made up of are what distinguishes it as a distinct entity (nexus of contracts as indicated). As a result, the more well-structured this nexus is, the more balanced the business could be, or to put it another way, the firm will be an "output of complex equilibrium process." (Jensen & Meckling, p. 311).

The following explanation attempts to make the models employed by Jensen and Meckling in their investigation of the impact of agency costs as straightforward as feasible. The first model presented by the authors aims to promote the concept of wealth impact concerning non-pecuniary advantages, these non-material advantages offered to the top management.

The assumptions are divided into permanent – establishing the consistency of the firm's capital and salaries – and temporary – forming the constancy of the firm's capital and salaries. Permanent assumptions create the consistency of the firm's capital, salaries, and one production-financing decision, whereas temporary assumptions create the consistency of the firm's size, lack of uncertainty and risk, and absence of monitoring or bonding capacities. In Figure 1, the relevant graphical depiction of the effect is presented.

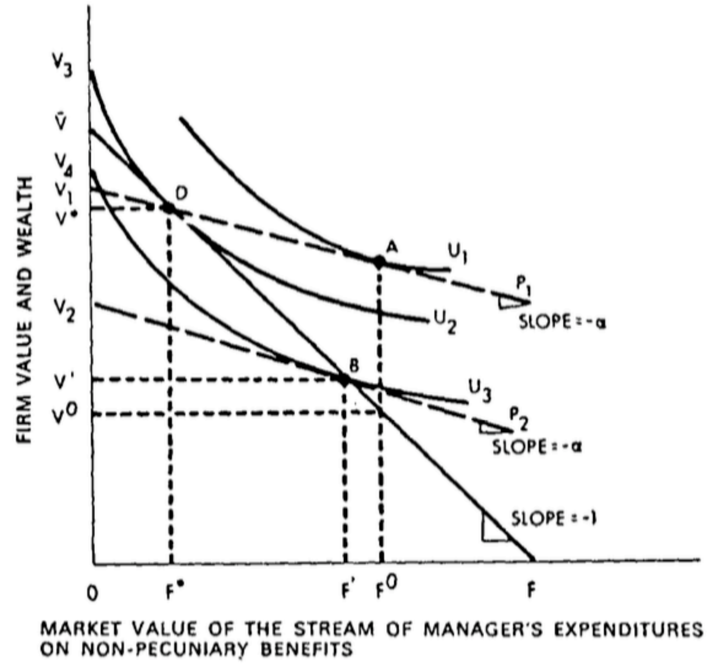

Fig. 1. The value of the firm (V) and the level of non-pecuniary benefits consumed (F) when the fraction of outside equity is $(1-\alpha)V$, and U_j ($j = 1, 2, 3$) represents owner's indifference curves between wealth and non-pecuniary benefits.

Figure 1. The value of the firm and the level of non-pecuniary benefits consumed (Jensen and Meckling, 1976)

A system of indifference curves represents the owner-preferences managers for non-monetary rewards. A firm's wealth is measured on the Y-axis, while spending on the listed benefits is measured on the X-axis. If the owner-manager has complete control over the level of benefits he receives, F, with the except for the financial loss he suffers as a part-owner, his wellbeing will be maximized by raising his consumption of non-monetary advantages. He'll go to point B, where V_1P_1 is perpendicular to V, indicating a higher amount of utility (V is the market value of the firm). The firm's value decreases from V* to V', i.e., by the amount of the increased non-pecuniary expenditures cost to the firm, while the owner-consumption managers of non-pecuniary benefits increases from F* to F' (Jensen & Meckling, p. 317). So, the general rule is that as long as the owner-manager raises his wealth through non-pecuniary incentives, the firm's worth will diminish.

The second model (Figure 2) includes both the management and the owner, as indicated – 100% ownership by the management and fractional ownership by the management.

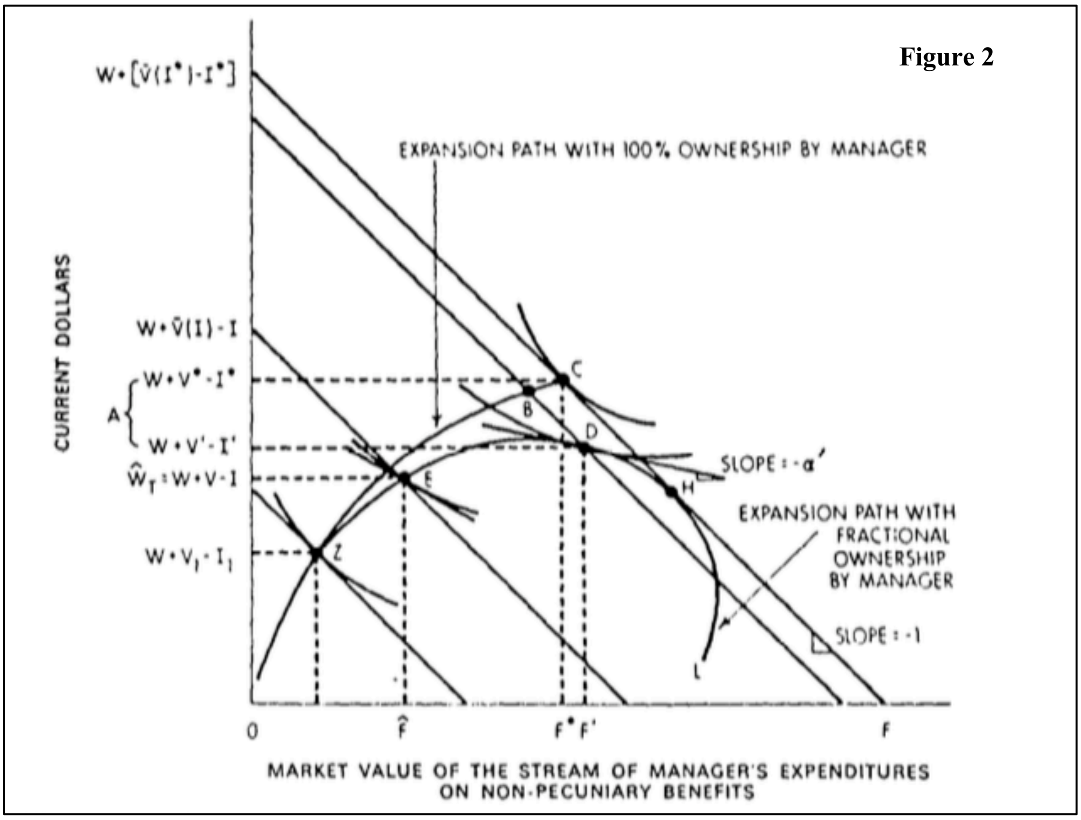

Figure 2. Market value of the stream of managers' expenditure on non-pecuniary benefits (Jensen and Meckling, 1976)

Unlike the previous model, this one incorporates the present owner's wealth (W) on the Y-axis and the concept of investment (I), which is necessary for the project. (V) is the firm's market value, as it was in the preceding case. In this scenario, V is a function of (I) and the level of non-monetary advantages spent by the manager (F).

When the investments are incorporated into a value-maximizing project, Slope -1 reflects all of the conceivable outcomes of F and W. The expansion route OZBC depicts the 'ideal' result of using I in terms of the firm's worth not declining. When there are no agency relationships and consequently no agency fees, OZBC is incurred. When an owner divides his sole rights to the firm into multiple fractional claims, which move from outside equity claims – hence the relevance of agency costs connected exactly with outside equity – the OZEDHL path indicates the combination of the owner's wealth and non-pecuniary advantages. The manager's dollar value (Y-axis) also depicts the firm's present dollar value.

In terms of other equilibrium points, Jensen & Meckling claim that, according to indifference curves and their slopes, a company's growth will be halted when non-pecuniary benefits consumption exceeds the increment value derived from equity funding. To put it another way, when the growth in non-monetary consumption, prompted by falling fractional interest, equals the increment value, the management ceases to expand the firm's size. The costs of running an agency are going up.

The principals may be able to reduce or eliminate these expenditures by incurring monitoring expenditures. As the manager's fractional ownership decreases, so do his incentive to seek out new profitable activities; and as his motivation to collect rents or perquisites increases, so do the expenses of monitoring such tendencies. When there is a split of ownership and control, Jensen and Meckling argue that these agency costs are unavoidable, and that calling them "inefficiencies" is only justified when compared to an "ideal world" where principal and agent interests might be matched at no cost.

Regarding again Jensen & Meckling's study, it can be seen that this publication went deeper into the meaning of agency costs and their origins. To begin with, Jensen and Meckling regarded the process of monitoring the manager's behavior as a type of agency cost. They also recognized two more sources: the manager's bonding costs and the shareholders' wealth loss in some cases where the manager's actions are not focused on maximizing shareholders' welfare (referred to as "residual loss") (Jensen & Meckling, 1976). B. Mitnick's previous study (1973) showed how to compose goals and incentives in terms of principal-agent relationships to optimize the principal's utility, and Jensen & Meckling's study suggests a solution to these problems. Jensen & Meckling's study, on the other hand, "investigates the incentives faced by each of the parties and the elements that go into determining the equilibrium contractual form characterizing the relationship between the firm's manager (i.e., agent) and outside equity and debt holders (i.e., principals)."

1.2. Compensation and managers' performance

Finally, it is also important to present statistically proved and expanded models of the relationship between CEO and NEO compensation and a company's financial performance.

1. The CEO incentive study by I. Jensen and Murphy

Jensen and Murphy explored the topic of incentive types, focusing on finding the most effective strategy to reward both CEOs and NEOs. It is important to mention that this study is adopted to the authors' suggestion "it is not how much you pay, but how" (Jensen & Murphy). In terms of payment, they figured out a few key aspects.

To begin with, annual variations in CEO salary are unrelated to changes in company performance. The quantitative approval is that "every $1000 change in a company's market value equates to a change of 6.7 cents in compensation and bonuses awarded to top management" (Jensen and Murphy). The calculations show that the CEO and NEOs have a negligible impact on the awarding of the CEO and NEOs. With the same change in market value, the total worth of all monetary sources is increased to $2.59.

Secondly, the authors suggest that stocks and options are the most powerful relationship between the wealth of both agents and shareholders. This is a direct premise stating that if shareholders compensate agents for their labor with stocks and options, the utility of both will improve over time. The research does not doubt to assume that this occurs because the CEO and NEOs are interested in tuning their KPIs to increase the company's value and, as a result, the CEO and NEOs' wealth. As a result, if they want to raise their value, they must also improve the worth of the company.

Thirdly, a company's compensation system is challenging because shareholders must strike a balance between their costs and the interests of their agents. In terms of concept, the authors believe that a mix of three policies can produce the correct monetary incentives (Jensen & Murphy):

- A significant portion of an agent's compensation should be made up of stocks (i.e., the agents become shareholders in the company);
- For exceptional performance, base pay, bonuses, and stock and option awards are enhanced; for bad KPIs, base pay, bonuses, and stock and option awards are reduced;
- The risk of dismissal as a result of low KPIs is high and even sensitive.

There is, however, another side of the coin. It's critical to find out how many stocks the agents will need to own. For example, Warren Buffett, one of the world's most astute investors, the "Wizard of Omaha," controls around 45 percent of the world's third-largest firm by market capitalization. Presumably, the company's loss of $10 million equates to a $4.5 million drop in the CEO's net worth. The quantity of changes in market value with subsequent changes in agents' wealth is referred to as the "feedback effect" (Jensen and Murphy).

2. E.H. Griner's association research

E.H. Griner's approach is the latest model for estimating and explaining previously explained relations. The paper's greatest value comes from the fact that it was written in the same year that the SEC issued new regulations: in 1993, publicly traded companies were required to publish proxy statements that included compensation for 6-7 top executives in all forms, including base salary, bonuses, and stock option awards.

Griner's key study issue was "how to judge the reasonableness of CEO compensation?". To answer that question, it was necessary to determine whether there is a statistically significant relationship between compensation and performance (within the constraints of the firm's size). The author used data from 263 of the largest U.S. corporations in 1992, including CEO remuneration from each proxy statement and other financial data, to calculate return on equity for each case. He also calculated shareholder return and total assets. Griner's regression model is rather straightforward (going further, the research took some of his ideas with noticeable changes). Griner essentially regressed the compensation system figures against firm size and, separately, against ROE performance. In addition, there are regressed figures on shareholder returns. It is not relevant to discuss this idea because it's identical to ROE and, as Griner's studies show, it's not representative. Each sort of compensation was regressed against each category of performance, and the author assessed each variable and multicollinearity using a correlation matrix.

The findings and discussion are divided into two categories:

1. Primary hypotheses testing;
2. Minor yet important aspects to pinpoint.

To begin with, it is discovered that there is a link between remuneration and performance. Compensation is commensurate with the company's size; nevertheless, because the longitude side of the relationships between variables is not examined, it becomes a limitation. The second set of data reflects the implicit meaning of compensation fairness. In the relationships between compensation and performance, 7 firms out of 263 exhibit exceeding confidence intervals, implying that CEOs are paid more than is fair.

The work's limitations include a thorough understanding of the nature of changeable relationships. “The study is naive in the sense that nearly no statistical analysis can account for all of the elements that influence compensation decisions,” the author explains. This statement is completely congruent with the hypothesis presented at the outset of the theoretical backdrop. Assuming such uncertainty in real-world data, the author advises that the model be tested with more variables, which is another weakness of the study. Also, it may be reasonable to pursue the investigation further, devoting more time to data analysis. In his final piece of advice on future advances, E.H. Griner suggests that it may be interesting to take a completely different method to evaluate success, such as using customer satisfaction or level of service, or other quantitative measures.

CHAPTER 2. METHODOLOGY AND RESEARCH DESIGN

2.1. Hypotheses

As previously stated, our goal is to determine which compensation instrument has the most impact on the company's success. Compensation objectives assigned by principals – sometimes known as agency costs, or pecuniary costs – are the exact relation between compensation and performance as stated in literature review chapter. All of the following costs are divided into four categories: payments made by principals to agents in the form of:

1. Base salary (sometimes referred to as "basic pay" or "base compensation").
2. Compensation under non-equity incentive plans (annual amounts indicate bonuses awarded under the Executive Management Bonus Plan ("EMBP"));
3. Long-term financial incentives – stocks and options
4. Other compensation instruments

As the pattern and format of proxy statement is unique for all the companies in the USA which upload their documents, it is crucial to mention the table[1] (Figure 3), or example of Executive Compensation Program of JP Morgan Chase & Co. (Proxy statement of JP Morgan Chase & Co., 2021).

<table>
<tr><th>Elements</th><th>Description</th><th>Vesting Period</th></tr>
<tr><td colspan="3">Fixed</td></tr>
<tr><td>Salary</td><td>▪ Fixed portion of total pay that enables the bank to attract and retain talent
▪ Only fixed source of cash compensation</td><td>N/A</td></tr>
<tr><td colspan="3">Variable</td></tr>
<tr><td>Cash incentive</td><td>▪ Provides a competitive annual cash incentive opportunity
▪ Payout determined and award in the year following the performance year
▪ Represents less than half of variable compensation</td><td>Immediately vested</td></tr>
<tr><td>RSUs</td><td rowspan="2">▪ RSUs serve as a strong retention tool
▪ Dividend equivalents are paid on RSUs at the time actual dividends are paid
▪ RSUs and PSUs do not carry voting rights, and are subject to protection-based vesting and the OC stock ownership/retention policy
▪ RSUs and PSUs provide a competitive mix of time-based and performance-conditioned equity awards that are aligned with long-term shareholder interests</td><td>Generally, over 3 years (50% after 2 years, 50% after 3 years)</td></tr>
<tr><td>PSUs</td><td>Combined period of 5 years prior to availability
▪ Award cliff-vests at the end of 3-year performance period</td></tr>
</table>

[1]https://www.sec.gov/Archives/edgar/data/0000019617/000001961721000275/a2021proxystatement.htm#ia483d4d264e64a6baa67f4d6af4c82cd_61

	as the value of payout fluctuates with stock price performance ▪ PSUs reinforce accountability by linking objective targets to a formulaically determined payout based on absolute and relative ROTCE ▪ PSU performance goals are the same for the entire award term ▪ PSU payout ranges from 0-150% and is settled in shares ▪ Dividend equivalents accrue on PSUs and are subject to the same vesting, performance and clawback provisions as the underlying PSUs	▪ Subject to a 2-year hold after vesting

Figure 3. Example of elements of executive compensation program of JP Morgan Chase & Co (Security of Exchange Commission, DEF-14A Form 2021).

The research will employ a calculated and deliberate sample. The population will be the companies that are substantial enough to have separate ownership and control, resulting in principals and agents, and that have also published proxy statements for the last 6 years starting since 2016. The next steps is to extract the following information:

1. Compensation data for CEOs and NEOs that have been made public, including proxies for all of the positions stated above;
2. Data on a company's property, plant, and equipment (PP&E) investments and operating profits, all gleaned from annual financial reports.

The research will be focused on 3 industries, presented in the United States: (1) pharmaceuticals, (2) Retail, (3) Airlines. The documents can be found on the SEC's (Securities and Exchange Commission of the United States) official website. They're organized around the DEF 14A (annual proxy statements) and 10-K (annual financial reports) marks, and the Commission verifies them. All of the materials have been thoroughly reviewed and are now available in their final form.

The major limitation of the sample is in its determined nature. The organizations are chosen based on the visibility of their proxies in public, but it seems to be true that generalization will be able to reveal comparable characteristics within the population of similar organized enterprises in related industries, particularly retail. Another constraint is the definition of investment. According to Jensen & Meckling (1973), investments remain in a linear relationship with agent behaviour. To put it another way, as long as an agent is motivated by monetary gain, he will engage in high-risk investment initiatives; otherwise, he would not. The short-term is the most representative for agent decision-making in a favourable way, affecting financial results positively in other words, because the company's investments are usually divided into long-term and short-term. Because investments in PP&E are the same as investments in non-current assets, which provide the majority of revenue for any company from our scope, and these positive results should be correlated with increases in sales (operating income). As a result, it is considered operating income to be a measure of firm performance. To achieve the goal, there is a model with the following key hypothesis in Figure 4.

Hypotheses
1. The size of the Base salary of managers is positively related to the company's operating income
2. The size of the Bonuses of managers is positively related to the company's operating income
3. The size of the Stocks and Options of managers is positively related to the company's operating income
4. The size of Other compensation of managers is positively related to the company's operating income
5. Among 4 types of remuneration, Stocks and Options contribute to the most extent to company's Operating income.

Figure 4. List of constructed hypotheses based on research goal and analyzed literature.

The ultimate goal, however, is to establish measurable differences in various compensation strategies by the end, which partially overlays the hypothesis. The central model is created with R-studio as the statistical analysis tool. The hand-picked numbers and figures are initially placed in an Excel sheet, where they are properly structured before being used in R.

2.2. Regression analysis

Ordinary Least Squares (OLS) is a method for estimating unknown parameters in a linear model and determining the statistical significance of variables and their impact on the model. In the case of this research, the linear model will be as follows:

model = lm(data=Dataset, Sales ~ Base + Bonuses + Stocks + Other + e), where

Lm – linear model;
Dataset – aggregated 4 types of remuneration by the industry, company, Chief Executive Officer, Named-Executive Officers, Year;
Sales – annual Operating income from a company's annual reports;
Base – Annual base salary, or fixed salary, the aim of which is to attract and retain highly qualified executive officers;
Bonuses – Annual payment for CEO and NEOs. Total sum depends on whether an officer meets KPIs with their established thresholds;
Stocks – Stocks and Options paid for CEO and NEOs with definite vesting period. The main aim is to retain officers;
Other – Non-monetary or partially monetary incentives such as residential security systems, use of car and driver, personal use of company aircraft, and so on;
e – Random error of analysis.

There is no doubt to say that the model shows The Hypotheses' essence. Each variable does, in fact, have a reasonable and justifiable place in the model:

1. In econometrics, sales is referred to as a dependent variable. Because cash dividends paid are a part of operating income, information about sales, which can also be understood as operating income of a company, gives the whole explanation concerning principals' usefulness.
2. The model and analysis take into account the agent's utility, namely three fundamental and main aspects of the incentive plan, which, according to the research, has an impact on the companies' sales. The variables in the regression model are listed as follows: (1) Base (NEO and CEO base salaries) (2) Bonuses (Non-equity incentive plan compensation) (3) Stock (options and stock awards) (4) Other (all other compensations for the agents which are incurred for one year). All three variables are *explanatory,* or *predictors* in linear regression

It is critical to present the validation process that will be used in our research. The research will use the t-test, F-test, and p-value – the asymptotic significance test to see if any of the predictor variables are insignificant. There are two possible outcomes:

- If the p-value is greater than statistical significance (p>), the hypothesis is rejected since the variable's insignificance is confirmed;
- If the p-value is less than statistical significance (p), the hypothesis is not rejected since the variable's insignificance has not been proven.

The study's findings include not only the identification of inconsequential variables, but also the identification of the most influential variables that have an impact on the dependent variable. In other words, linear regression analysis aids the research in answering the question: "Which of the four types of remuneration has the greatest impact on Sales?"

2.3. Regression validation

When it comes to the model's quality, it is examined using general specification tests. The research constructed a statistically correct and justified model in order to obtain accurate and interpretative results that would explain and reflect our findings. This signifies that the linear model, which was estimated using OLS, was successfully tested using statistical tests that can identify:

1. There is *no multicollinearity* among the predictors in the model;

2. There are no differences in variabilities (variance or any other measure of statistical dispersion) or heteroscedasticity among the variables (Achen & Schively, 1995)**.**;
3. When all random variables in a sequence have the same finite variance, there is homogeneity of variance.
4. The compliance of Gauss-Markov theorem with all the assumptions (Lewis, 1966):
   - The variables must be *exogenous and independent***;**
   - Consistent estimators are *convergent and asymptotically unbiased;*
   - The errors have expectations equal to zero;
   - The errors are homoscedastic.

Using the R software, the research was able to identify the above events using various statistical tests. Tests such as these will be used to verify the model used in this study:

- White Test for heteroscedasticity;
- Goldfeld-Quandt Test for heteroscedasticity;
- Breusch-Godfrey Test for serial correlation, or autocorrelation;
- Correlation matrix for multicollinearity among the regressors;
- Breusch-Pagan Test for heteroscedasticity;
- Durbin-Watson Statistic for serial correlation, or autocorrelation.

2.4. Limitations of the research

The restriction at this point could be that operating income and sales can fluctuate owing to external causes (e.x. restrictions on pharmaceutical companies); it is presumed that such things are not influencing the model.

Last but not least, every proxy statement includes information about each CEO and NEO's Executive Management Bonus Plan (EMBP). However, the research discovered that some of them had experienced some alterations in their primary positions (for instance, some of them had been fired or had retired).

To get rid of those miscalculations, the research has matched the salary new assigned CEO received for the latest year with the salary previous NEO took before leaving, retiring or position changing. To eliminate these mistakes, the research matched the pay obtained by the new allocated CEO for the previous year with the salary received by the previous NEO before departing, retiring, or changing positions.

CHAPTER 3. ANALYSIS

3.1. Regression model

The research constructed a linear model (Figure 5) and detailed all of the variables. The goal of this section is to display and analyze the outcomes of the analysis.

```
Call:
lm(formula = Sales ~ Base + Bonuses + Stocks + Other, data = R_8)

Residuals:
    Min      1Q  Median      3Q     Max 
-8.4685 -0.6866  0.0370  0.6367  3.5607 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept)   4.9763     0.4839  10.284  < 2e-16 ***
Base         -0.4319     0.4802  -0.899  0.37010    
Bonuses       0.5943     0.2235   2.659  0.00883 ** 
Stocks        0.8768     0.2178   4.026 9.57e-05 ***
Other         0.1462     0.1456   1.005  0.31699    
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.332 on 130 degrees of freedom
  (1 пропущенное наблюдение удалено)
Multiple R-squared:  0.4484,    Adjusted R-squared:  0.4314 
F-statistic: 26.42 on 4 and 130 DF,  p-value: 4.835e-16
```

Figure 5. Descriptive statistics of the model (RStudio)

The results of the abovementioned model should be analyzed and interpreted. To begin, it is necessary to rewrite the model using coefficients for each dependent variable:

Sales = 4.9763 - 0.4319*Base + 0.5943*Bonuses + 0.8768*Stocks + 0,1462*Other + ε

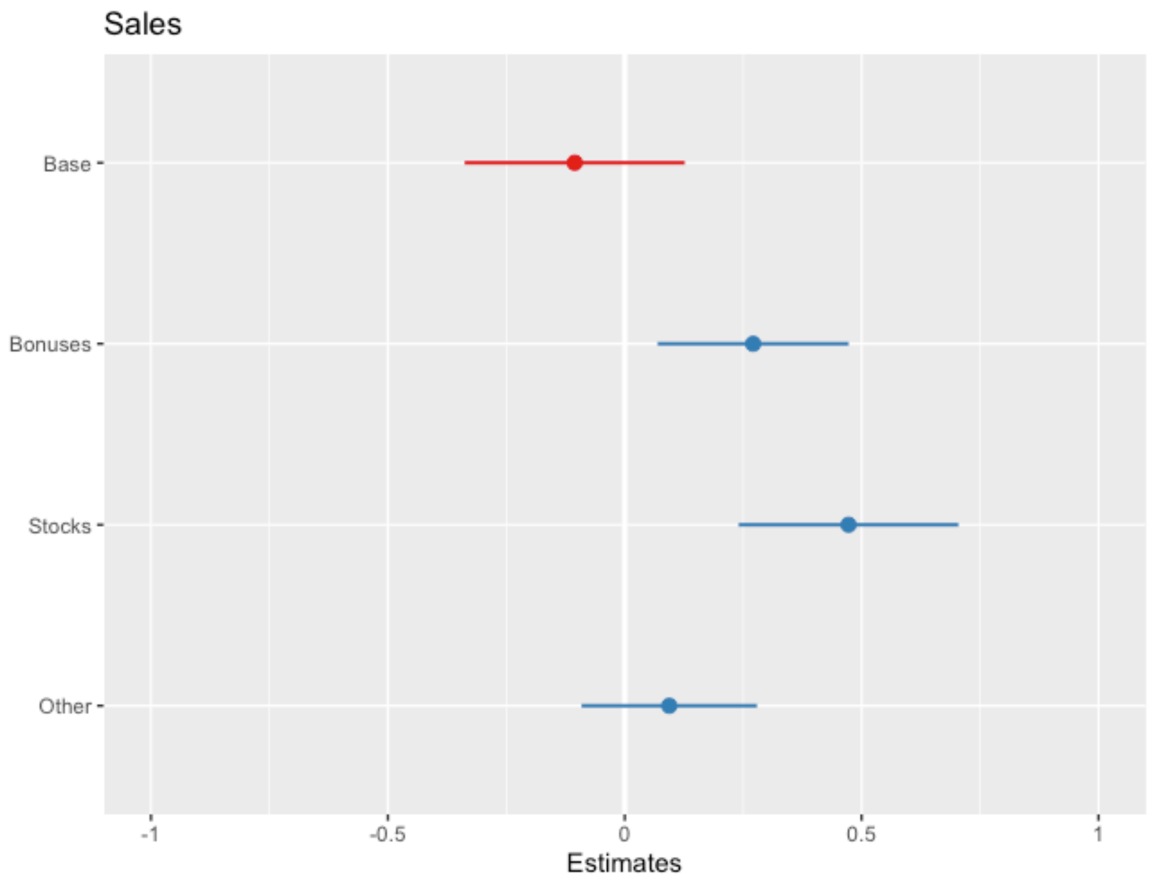

Figure 6. Coefficients of dependent variables (RStudio)

The analysis of the model demonstrates that p-values of Base and Other are significantly higher than α, meaning that hypothetically β can be equal to 0, hence the hypothesis β = 0 is not rejected.

Dependent variable Base

- P-value of dependent variable Base is 0,37 that is higher than statistical significance `0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1.`
  Figure 6 shows quite a wide interval (it is important to highlight that 0 belongs to this interval) in comparison to three other variables.
- **Dependent variable Other**
  P-value of dependent variable Base is 0,32 that is also higher than statistical significance, and 0 also lies in the interval.

There are 2 variables – Stocks and Bonuses – that have lower p-value than α. Interpreting this low p-value, hypothesis about statistical insignificance of the coefficient β is rejected. Having both narrower intervals which are either before or after 0. Figure 5 shows that variable Bonuses is close to 0, however with the statistical level of significance 0,001 it can be concluded that Bonuses is a significant variable.

To conclude in this high-level analysis, two out four dependent variables are statistically significant, hence the research may use them to predict independent variable Sales.

The variable Stocks has the lowest statistical significance and almost equals to 0, the research will figure out the contribution of Stocks through creating another model, without this variable. Thus, the research has two models – the first one with 4 dependent variables, the second – with 3. Figure 7 shows the difference of these two models.

```
Calls:
model_ln: lm(formula = Sales ~ Base + Bonuses + Stocks + Other, data = R_8)
model_ln_1: lm(formula = Sales ~ Base + Bonuses + Other, data = R_8)

=======================================
               model_ln   model_ln_1
---------------------------------------
  (Intercept)    4.976***    5.363***
                (0.484)     (0.501)
  Base          -0.432       0.764
                (0.480)     (0.399)
  Bonuses        0.594**     0.865***
                (0.224)     (0.225)
  Stocks         0.877***
                (0.218)
  Other          0.146       0.163
                (0.146)     (0.154)
---------------------------------------
  R-squared      0.448       0.380
  N            135         135
=======================================
  Significance: *** = p < 0.001;
                ** = p < 0.01;
                * = p < 0.05
```

Figure 7. Comparison of two regression models (RStudio).

The output shows that R-squared decreased insignificantly from 0,448 to 0,38, and p-value of the whole model because statistically insignificant, however the first model has p-value 0.001.

The next question is *How will R-squared change if the model takes away each of the variable?*

```
Calls:
model_ln: lm(formula = Sales ~ Base + Bonuses + Stocks + Other, data = R_8)
model_ln_1: lm(formula = Sales ~ Base + Bonuses + Other, data = R_8)
model_ln_2: lm(formula = Sales ~ Stocks + Bonuses + Other, data = R_8)
model_ln_3: lm(formula = Sales ~ Stocks + Base + Bonuses, data = R_8)

===============================================================
                model_ln   model_ln_1  model_ln_2  model_ln_3
---------------------------------------------------------------
  (Intercept)    4.976***    5.363***    4.806***    4.605***
                (0.484)     (0.501)     (0.445)     (0.312)
  Base          -0.432       0.764                  -0.316
                (0.480)     (0.399)                 (0.466)
  Bonuses        0.594**     0.865***    0.569*      0.687***
                (0.224)     (0.225)     (0.222)     (0.203)
  Stocks         0.877***                0.756***    0.883***
                (0.218)                 (0.171)     (0.218)
  Other          0.146       0.163       0.115
                (0.146)     (0.154)     (0.141)
---------------------------------------------------------------
  R-squared      0.448       0.380       0.445       0.444
  N            135         135         135         135
===============================================================
  Significance: *** = p < 0.001; ** = p < 0.01; * = p < 0.05
```

Figure 8. Comparison of four regression models (RStudio).

Looking at Figure 8, it can be seen that the value of R-squared does not change when one variable is removed, except Stocks, as previously noted. The model contains four regressors while the others have only three, signalling that it might be illogical and even wrong. To get around this constraint, the research moves from R-squared to adjusted R-squared.

The analysis of the *model* concludes that

1. *Hypothesis 1* is rejected
2. *Hypothesis 2* is not rejected
3. *Hypothesis 3* is not rejected
4. *Hypothesis 4* is rejected.
5. *Hypothesis 5* is not rejected.

There is no question that there are no biases, miscalculations, or misinterpretation of the model summary, which includes p-value analysis, t-test, R-squared, and adjusted R-squared to compare models with varying number of variables, AIC (Akaike Information Criterion) (Akaike, 1985) that assigns a penalty to the models and selects the best one with the lowest penalty level, and BIC (Bayesian Information Criterion) (Burnham & Anderson, 2002) which in most cases duplicates AIC ad differs from the first one by the level of penalty.

Overall model is the following:

$$Sales = 4.9763 - 0.4319*Base + 0.5943*Bonuses + 0.8768*Stocks + 0{,}1462*Other + \varepsilon$$

We can assess the contribution of each regression by comparing the estimates of these regressors since the model is linear and the estimation method is Ordinary Least Squares (OLS). When all of the estimates are compared, it's clear that the regressor Stocks has the highest value, which is 0.8768. As both dependent and independent variables are logarithmic, the interpretation is the following:

«with 1% increase in stock and option payments, the company's operating income could potentially grow by 0,8768%,»

3.2.Validation of the model

The quality of the model, data, and type of variables exert significant influence on the outcome. The only way to know if the built model takes into account the results that the research may rely on is to evaluate the model with certain statistical tests. RStudio includes all of the essential tests for detecting all potential biases, erroneous estimates, and invalid p-values when testing hypotheses. There are 4 important tests to stress the model: multicollinearity, heteroskedasticity, autocorrelation.

- **Multicollinearity**

First and foremost, the presence of multicollinearity among the regressors in the model must be confirmed. If the regressors are positively or negatively associated with one another, it is plausible to conclude 4 features:

1. Estimates are not exclusive;
2. Confidence intervals are broad and even dummy;
3. Some regressors may be incorrectly evaluated;
4. The model is overly vulnerable when adding or removing regressors.

a. The model is too vulnerable with adding or throwing out regressors.

In order to detect the correlation between the regressors inside the model, the research tackled the following model matrix:

```
> model_multic <- model.matrix(data=R_8, Sales~0 + Base + Bonuses + Stocks + Other)
> cor(model_multic)

                Base      Bonuses       Stocks       Other
Base     1.000000000 -0.02781617 -0.008813765 -0.04665170
Bonuses -0.027816168  1.00000000  0.111294905  0.09184448
Stocks  -0.008813765  0.11129490  1.000000000  0.01295033
Other   -0.046651697  0.09184448  0.012950334  1.00000000
```

Figure 9. Test on multicollinearity

The regressors' correlation is quite weak, allowing the research to conclude that the model does not have multicollinearity. In this example, the relationship is not higher than 11%, implying that the regressors are independent on each other.

- **Heteroskedasticity**

The next bias of a model is heteroskedasticity. It might exert a negative influence on the quality of the model because of several reasons:

a. The estimates of regressors are not effective (true variance and covariance are underestimated);
b. Invalidation of statistical tests of significance (hypotheses and confidence intervals might be invalid).

The researched applied 3 popular tests to identify heteroskedasticity:

- Breusch-Pagan Test
- White Test
- Goldfeld-Quandt Test.

Firstly, the research has to tackle VCM (Variance-Covariance Matrix) matrix that is heteroskedasticity consistent (vcovHC) with RSE (Robust Standard Errors). The new matrix will be consistent to heteroskedasticity, the estimates of regressors will be effective; there will be possible to test the hypotheses and construct confidence intervals. Thus, the research will be composed of the comparison of two tests of one model (Figure 10):

1. General model
2. Model with Variance-Covariance Matrix that is heteroskedasticity consistent (vcovHC)

```
> coeftest(model_ln, vcov. = vcovHC(model_ln, type="HC2"))

t test of coefficients:

            Estimate Std. Error t value  Pr(>|t|)
(Intercept)  4.97635    0.80762  6.1618 8.378e-09 ***
Base        -0.43190    0.57906 -0.7459  0.457089
Bonuses      0.59425    0.20800  2.8570  0.004981 **
Stocks       0.87680    0.22031  3.9798  0.000114 ***
Other        0.14625    0.16532  0.8846  0.377988
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

> coeftest(model_ln)

t test of coefficients:

            Estimate Std. Error t value  Pr(>|t|)
(Intercept)  4.97635    0.48387 10.2844 < 2.2e-16 ***
Base        -0.43190    0.48021 -0.8994  0.370097
Bonuses      0.59425    0.22353  2.6585  0.008835 **
Stocks       0.87680    0.21777  4.0263 9.572e-05 ***
Other        0.14625    0.14559  1.0045  0.316990
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Figure 10. Coefficient tests for two models (RStudio)

Comparing 2 models, it could be seen that the values of *Standard errors* are changed insignificantly for all the regressors except B0. P-values are the same in terms of regressors' significance.

Finally, the research suggests comparing confidence intervals for two models:

```
> ci <- mutate(ci, left_ci=estimate-1.96*se_hc, right_ci=estimate+1.96*se_hc)
> ci
              estimate     se_hc    left_ci
(Intercept)  4.9763497 0.8331371  3.3434010
Base        -0.4319042 0.5959007 -1.5998694
Bonuses      0.5942542 0.2160966  0.1707048
Stocks       0.8767979 0.2271889  0.4315077
Other        0.1462481 0.1703975 -0.1877310
              right_ci
(Intercept) 6.6092985
Base        0.7360611
Bonuses     1.0178036
Stocks      1.3220881
Other       0.4802271
> confint(model_ln)
                 2.5 %    97.5 %
(Intercept)  4.0190666 5.9336328
Base        -1.3819376 0.5181293
Bonuses      0.1520298 1.0364786
Stocks       0.4459735 1.3076223
Other       -0.1417818 0.4342779
```

Figure 11. Confidence intervals for heteroscedasticity (RStudio)

The model with Variance-Covariance Matrix that is heteroskedasticity consistent, has wider confidence intervals (Figure 11) (For example, the confidence interval of the model for regressor Bonuses is approximately (0.15;1.04), in the model with vcovHC the interval is (0.17;1.02)).

1. **Breusch-Pagan Test**

```
> bptest(model_ln)

	studentized Breusch-Pagan test

data:  model_ln
BP = 10.292, df = 4, p-value = 0.03578
```

Figure 12. Breusch-Pagan Test (RStudio)

Figure 12 shows that the p-value is a little bit larger than zero, meaning that the hypothesis about heteroskedasticity in the model *is rejected*.

2. **White Test**

```
> bptest(model_ln, data=R_8, varformula = ~ Base + I(Base^2) + Bonuses + I(Bonuses^2) + Stocks + I(Stocks
^2) + Other + I(Other^2))

	studentized Breusch-Pagan test

data:  model_ln
BP = 14.346, df = 8, p-value = 0.07318
```

Figure 13. White Test

White Test (Figure 13) indicates that the p-value is still a little bit higher than 0, however, the research will assume the hypothesis about heteroskedasticity *is rejected.*

3. **Goldfeld-Quandt Test.**

```
> gqtest(model, order.by = ~ Shares, data= Data, fraction = 0.2)

	Goldfeld-Quandt test

data:  model
GQ = 2.9958, df1 = 39, df2 = 38, p-value = 0.0004938
alternative hypothesis: variance increases from segment 1 to 2
```

Figure 14. GQ Test

It can be seen again that p-value is almost equal to zero (Figure 14), thus the hypothesis about heteroskedasticity in the model is not rejected. However, there is another variable with relevant level of significance in the model – Bonuses with the high p-value.

To conclude with heteroskedastisity, if at least one test indicates that there is no evidence of heteroskedasticity in the model, the research states that hypothesis is not rejected because some tests did not identify heteroscedasticity because of lack data, but others do not.

- **Autocorrelation**

Autocorrelation can be identified by the following features:

1. Regressors and correlated with each other;
2. The variables are not exogenous and independent;
3. The estimates are not effective;
4. Invalidation of statistical tests of significance (this leads to the fact that both hypotheses and confidence intervals are invalid);
5. Standard errors are inconsistent;

In order to identify autocorrelation, the research will build a new Variance-Covariance matrix that is heteroskedastic and autocorrelation consistent with new RSE (robust standard errors).

There are 2 fundamental tests to detect autocorrelation:

- Durbin-Watson Test
- Breusch-Godfrey Test.

The research assumes using both of Variance-Covariance Matrices to use robust standard errors and compare them with general standard errors of the model (Figure 15)

```
> coeftest(model_ln, vcov. = vcovHAC(model))

t test of coefficients:

            Estimate Std. Error t value  Pr(>|t|)
(Intercept)  4.97635    1.34485  3.7003 0.0003168
Base        -0.43190    0.96816 -0.4461 0.6562608
Bonuses      0.59425    0.32855  1.8087 0.0728085
Stocks       0.87680    0.32018  2.7385 0.0070389
Other        0.14625    0.22515  0.6495 0.5171319

(Intercept) ***
Base
Bonuses     .
Stocks      **
Other
---
Signif. codes:
0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> coeftest(model_ln)

t test of coefficients:

            Estimate Std. Error t value  Pr(>|t|)
(Intercept)  4.97635    0.48387 10.2844 < 2.2e-16
Base        -0.43190    0.48021 -0.8994  0.370097
Bonuses      0.59425    0.22353  2.6585  0.008835
Stocks       0.87680    0.21777  4.0263 9.572e-05
Other        0.14625    0.14559  1.0045  0.316990

(Intercept) ***
Base
Bonuses     **
Stocks      ***
Other
---
Signif. codes:
0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Figure 15. VCM with robust errors

The value of new robust standard errors, or *Std. Error* significantly changed. For instance, standard errors of Stocks increased significantly (from 0.22 to 0.32 and from 0.20 to 0.46 respectively), standard errors of Bonuses decreased from 0.33 to 0.22, and as a result, p-value of the regressor Bonuses is significantly increased.

1. **Durbin-Watson Test**

```
> dwtest(model_ln)

	Durbin-Watson test

data:  model_ln
DW = 0.88947, p-value = 8.557e-12
alternative hypothesis: true autocorrelation is greater than 0
```

Figure 16. Durbin-Watson Test (RStudio)

Durbin-Watson test is equal to 0.9, meaning that there is autocorrelation to some extent. As it is set, if the number equals to 2, there is no autocorrelation; if the number equals to 0, there is positive autocorrelation; if the number equals to 4, there is negative autocorrelation.

2. Breusch-Godfrey Test

```
> bgtest(model_ln, order = 2)

	Breusch-Godfrey test for serial correlation of order up to 2

data:  model_ln
LM test = 50.252, df = 2, p-value = 1.224e-11
```

Figure 17. Breusch-Godfrey Test (RStudio)

Breusch-Godfrey test shows that the model has autocorrelation because of small p-value. Concluding with autocorrelation, the model is inclined to have this bias, and in order to mitigate the risks of autocorrelation, extra data is needed.

CHAPTER 4. CONCLUSION AND FURTHER DISCUSSION

Although it took some time for the validity of the data to be fully established, the clarifying procedures have had no effect on the meaning of the findings. A number of noteworthy observations have been made by the model. They entail verifying the assumptions, putting Jensen and Meckling's first theoretical proposals (1973) to the test, confirming Jensen and Murphy's work on CEO incentives, and adapting Griner's approach with major revisions.

To begin with, it can be shown that equity compensations, or providing agents with shares and options, are the most influential and successful manner of maximizing agents' and principals' utility and so favourably affecting firm performance. This research backs up the theory that providing agents a stake in the company they work for increases their contribution to the company and, as a result, improves its financial performance. Jensen & Meckling proposed the similar idea in 1976, arguing that the management should be incentivized to engage in risky investment activity in order to increase income returns if his intention to do so is backed up by the claims (1976). The concept was refined in later Jensen & Murphy study, and it can be seen the similar disposition in the instance. The research demonstrated that the basic performance of a corporation, as measured by gains in operating income, is dependent on the remuneration offered to agents.

The classification of monetary compensation techniques has aided in the formalization of the model, as the sorts of payments to agents are essentially the same across all capital structure organizations. The considerable influence of the above-mentioned equity benefits on the evaluation of each type of remuneration has been thoroughly demonstrated. On the other hand, the negative appraisal of Base payment leads to believe that expanding this sort of remuneration will have the opposite impact. Jensen and Meckling can also be consulted for an explanation of such an intriguing result (1976). Because base salary is not usually matched with key performance indicators and metrics (for these reasons corporations made up with Bonuses) additional remuneration is nearly always made up of advantages that are unrelated to the professional components of an agent's direct obligations, the apriori increase in such premium-related additions is lowering agents' genuine motivation to perform better in the interests of their principals. Figure 2 depicted the aforementioned consequence. As a result, there is a decline in sales. However, failing to increase additional compensation will not solve the problem. The negative effect emerges when the amount of mention compensation consumed exceeds the level of incentive required. The magnitude of this volume, as well as a solution to this problem, will have to wait for future advancements.

Another takeaway from the study is that operational income, or Sale, can be utilized, as well as return on equity, shareholder value (as in Grinder), or business value, as indicators of corporate performance (as in Jensen and Murphy).

The following are some of the limitations of the model presented: (1) The organizational structure is always separated between ownership and control, (2) the compensation data is definitive and valid, (3) the operating income is unaffected by external market conditions.

Because the study was conducted using data from concrete types of organizations, the exploitation of non-current assets, as in any retail-based industry, is a critical concept in the work. It's a topic of possible discrepancies in compensation instrument estimations between industries.

To sum up, each corporate instance is distinct in its essence - various relationships, different people with their personal behaviours and levels of professionalism, but the nature of people's interests is unquestionably the same – increasing their own utility. The major issue is determining the appropriate principal-agent simultaneous utility equation. Statistical analysis is undoubtedly one of the answers, with others to follow.

APPENDIX 1.

List of the companies for the research

Industry	**Company**
Airlines	Spirit Airlines
Airlines	JetBlue
Airlines	Alaska Airways
Airlines	HAWAIIAN AIRLINES
Airlines	SkyWest
Airlines	Delta Airlines
Airlines	Southwest Airlines
Retail	CRACKER BARREL
Retail	CHEESECAKE FACTORY
Retail	McDonalds
Retail	Dine Brands Global
Retail	Jack in box
Retail	ARAMARK
Retail	Dunkin
Retail	Starbucks
Airlines	American Airlines
Pharmaceuticals	3M
Pharmaceuticals	Abbott Lab.
Pharmaceuticals	AbbVie Inc.
Pharmaceuticals	Bristol-Myers Squibb Company
Pharmaceuticals	JOHNSON & JOHNSON
Pharmaceuticals	Merck & Co., Inc.
Pharmaceuticals	Pfizer Inc.

APPENDIX 2.

Example of Compensation Table at Merck & Co., Inc.

Company	Merck & Co., Inc.

Названия строк	Salary	Stocks	Options	Bonuses	All other compensation
Jennifer Zachary	**4 588 187**	**10 423 126**	**4 395 140**	**5 608 670**	**614 558**
2015	691 346	1 472 234	800 000	991 800	69 827
2016	761 538	1 443 846	880 001	803 985	88 900
2017	811 538	1 551 413	659 999	885 638	88 031
2018	553 846	2 454 748	600 166	638 400	165 997
2019	856 818	1 790 006	705 120	1 529 500	80 572
2020	913 101	1 710 879	749 854	759 347	121 231
Kenneth C. Frazier	**9 571 681**	**58 263 157**	**26 475 956**	**18 496 500**	**4 558 013**
2015	1 500 000	9 912 966	4 800 000	3 402 000	283 472
2016	1 527 404	7 875 521	4 800 002	2 518 425	302 468
2017	1 572 212	8 814 767	3 750 000	2 686 575	314 875
2018	1 610 577	9 456 006	3 901 093	3 061 800	2 905 028
2019	1 659 482	11 425 398	4 500 763	4 609 200	375 485
2020	1 702 006	10 778 499	4 724 098	2 218 500	376 685
Robert M. Davis	**6 205 905**	**15 760 183**	**7 560 287**	**8 198 908**	**706 432**
2015	963 884	2 103 993	1 399 998	1 391 872	92 257
2016	991 654	2 428 286	1 479 998	1 092 000	117 259
2017	1 018 289	2 679 655	1 140 001	1 216 163	104 962
2018	1 043 726	2 764 058	1 140 317	1 389 977	111 695
2019	1 075 557	3 046 785	1 200 201	2 090 702	120 864
2020	1 112 795	2 737 406	1 199 772	1 018 194	159 395
Roger M. Perimutter	**6 617 669**	**18 921 584**	**8 600 314**	**9 363 270**	**913 284**
2015	1 021 926	3 335 960	1 600 000	1 946 700	140 416
2016	1 052 288	2 625 174	1 600 001	1 302 824	160 256
2017	1 083 750	2 820 733	1 200 000	1 296 032	128 917
2018	1 116 262	2 909 523	1 200 341	1 488 486	147 696
2019	1 151 783	3 808 436	1 500 254	2 238 873	162 429
2020	1 191 660	3 421 758	1 499 718	1 090 355	173 570
Общий итог	**26 983 442**	**103 368 050**	**47 031 697**	**41 667 348**	**6 792 287**

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