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Diploma Thesis

Agency problem – incentive plan and its relation to firm's performance

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Objectives of thesis

The aim of this theses is to analyse the effect of company's incentive policy on agency problem and therefore on firm's performance. For this purpose it is necessary to review the theoretical aspects and empirical evidences made on agency theory.

Methodology

It is aimed to explore the main ideas, perspectives, problems and issues related to the agency theory through a literature survey.

After discussing the theoretical aspects of agency theory and issues related to it there will be provided analytical research of existing enterprise and its experience according to solution of agency problem by using incentive program.

The proposed extent of the thesis

60-80

Keywords

agency theory; private benefits; corporate governance; compensation; incentive system; bonus system; management control

Recommended information sources

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Declaration

I declare that I have worked on my diploma thesis titled "Agency problem – incentive plan and its relation to firm's performance " by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 29.11.2020 _____

Acknowledgement

Agency problem – incentive plan and its relation to firm's performance

Abstract

The Diploma Thesis is focused on the incentive plan, as a tool to deal with an agency problem. Theoretical part of this Diploma Thesis is focused on relationship between executive compensation and firm performance. Firstly, it provides theoretical basis and scientific discussion on the concept of agency problem and relation between CEO and shareholder wealth. Theoretical part also covers the meaning of risk sharing in principal-agent problem. Special attention in literature review paid to components of CEO payment – cash-based and share-based – their distinguishing features, criteria for granting and reasons of application. For comparison analysis were taken two companies from the same field: Citigroup Inc. and Bank of America (which also belong to the "Big 4" USA banks). The first chapter of Practical part is focused on compensation policy of chosen firms, based on their proxy statements. This part especially put emphasize on methods of annual payment calculation for CEO of each bank. Second part provides with the difference in compensation structure of two companies and tendencies in its change through investigated period of time. The interdependence between type of executive compensation and firm's performance is assessed using statistical tools and regression analysis. Results coming from calculations are interpreted based on economic theory. Conclusion represents the summary of results and also the list of suggestions for Citigroup Inc. and Bank of America.

Keywords: agency problem, executive compensation, CEO payment, incentive plan, proxy statement, cash-based payment, share-based payment, stock awards, stock options, management control, bonus system, corporate governance.

Problém zastoupení - motivační plán a jeho vztah k výkonu firmy

Abstrakt

Diplomová práce je zaměřena na motivační plán, jako nástroj řešení problému zastoupení.Teoretická část diplomové práce je zaměřena na vztah mezi kompenzací vedoucích manažerů a výkonností podniku. Nejprve poskytuje teoretický základ a vědeckou diskusi o konceptu problému zastoupení a vztahu kompenzací generálních ředitelů a akcionářů. Teoretická část se dále zabývá významem sdílení rizik v problému vedoucího manažera. Zvláštní pozornost v literární rešerši je věnovaná složkám odměn generálních ředitelů – jimiž jsou mzda a akcie vypořádané v hotovosti - jejich charakteristickým rysům, kritériím pro udělení a důvodům žádosti. Pro srovnávací analýzu byly použity dvě společnosti ze stejného oboru: Citigroup Inc. a Bank of America (které rovněž patří k „Velké čtyřce" amerických bank). První kapitola praktické části je zaměřena na kompenzační politiku vybraných bank na základě jejich zastoupení. V této části je kladen důraz zejména na metody výpočtu ročních odměn pro generálního ředitele každé banky. Druhá část pojednává o rozdílech v kompenzační struktuře dvou bank a tendencích v jejich změně ve zkoumaném časovém období. Vzájemná závislost mezi odměnami manažerů a výkonem banky se hodnotí pomocí statistických nástrojů a regresní analýzy. Výsledky výpočtů jsou interpretovány na základě ekonomické teorie. Závěr představuje souhrn výsledků a také doporučení pro Citigroup Inc. a Bank of America.

Klíčová slova: problém zastoupení, kompenzace manažerů, odměna generálního ředitele, motivační plán, prohlášení zástupce, mzda, akcie vypořádané v hotovosti, ocenění akcií, akciové opce, kontrola řízení, bonusový systém, správa a řízení společnosti.

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List of Abbreviations

EPS – Earnings per Share

CEO - Chief Executive Officer

ROA – Return on Assets

ROE – Return on Equity

SRA – Simple Regression Analys

1 Introduction

Agency problem represents the conflict of interest between an agent and principal, which arises when agent is entitled to act on behalf of the principal interest, but makes decisions in their own best interests. In economic theory management (in the framework of Thesis – company's CEO) stands as agent, shareholders - as principal.

The agency problem is strongly associated with risk sharing and asymmetric information - agents are expected to prefer less risky investments and have more information, than principal has. Managers could also prefer short-term investment horizon, what might affect company's long-term performance and shareholder wealth.

These assumptions lead principal to regard agency's actions as doubtful and incompatible with principal's own desires. In order to minimize negative effects and align the interests of the agent with those of the principal various mechanisms may be used.

Among them scientists commonly call internal and external audit, management control, corporate governance, piece rates/commissions, and the way of financial rewarding of the managers. One of the main mechanisms which intensive development began in 1970s was renumeration company's CEOs by stock options. Extensive use of share-based compensation explained by its ability to bind the agents' wealth to share price and company performance in general. Share-based payment represented by performance shares, restricted stock grants, and executive stock options, and all of them encourage agent to stick with the company for the long-term and to behave as an owner who have a stake in the business in the form of stock ownership.

Long-term incentive awards are focused on providing agents with a direct concern to enhance value of the firm, therefore firms tie their compensation payments to specific company performance indicators, such as return on assets, adjusted tangible book value, net income and other accounting and market performance measurements.

Large corporations increase proportion of share-based compensation in their CEO payment package while neglecting cash payment. The issue about reasonableness of that process has been raised in that Thesis.

2 Objectives and Methodology

2.1 Objectives

The main objective of this Diploma Thesis is to investigate influence of the CEO compensation structure on company performance. Due to the tendency of share-based executive payment to progressively displace cash-based compensation part, the issue about their role in the impact on firm performance has been raised.

The aim of this thesis is to estimate how different types of CEO renumeration affects company's long-term performance and what is the opposite effect. With a purpose to achieve final objectives of this work, it is necessary to set up following sub goals:

- To conduct literature review in order to explain theoretical context;
- To analyze Compensation Policy for each of the chosen banks, based on their Proxy Statements;
- To calculate amounts of firm performance indicators based on the firms' Annual Reports;
- To build Simple Linear Regression models and check them on BLUE assumptions;
- To use Pearson correlation coefficients as an additional tool for estimation variables interdependence.

2.2 Methodology

The first part of this Thesis represents theoretical background and brief summary of prior scientists' investigations on agency problem. Qualitative analysis tools include literature review on different aspects of principal-agent problem and approaches to determination companies' performance indicators.

CEO compensation policy as a monetary incentive is assumed to solve the agency problems. From the view of corporate governance, different compensation component generates different degrees of risk taking and different orientations in executive decision makings. Cash compensation including basic salaries and bonus plans is mostly used as an entitlement program rather than a motivation program for stimulating performance.

In order to compare values of influence of cash and share compensation parts on firm performance regression analysis was applied.

For practical analysis secondary data was used. Data on various elements of compensation of the company's chief executive officer of USA companies was collected through remuneration reports (Proxy Statements) of the companies (as Form DEF 14A). Additional data on banks' performance indicators was gathered from banks' Annual Reports, which are publicly available on their websites.

To estimate influence of CEO compensation structure on firm performance was chosen two of "The Big 4" USA banks: Citigroup Inc., which has relatively equal relationship between non-equity and equity-based payment in its CEO pay package, and Bank of America, which has incentive plan, where equity-based compensation is extremely dominant.

The first step of practical part was the analysis of banks' Compensation Policies, which was carried out based on the information from Proxy Statements, that companies publish annually. Then based on the choice of company's performance criteria, values of indicators were calculated and its trends were visualized using Microsoft Excel tools.

For analysis I chose indicators that are commonly used by scientists who analyze CEO compensation and firm's performance in their works. Among accounting indicators, I used ROA, ROE and EPS and Market Value as a market-based criterion.

As one of the tools for variables interdependence estimation I used Pearson correlation coefficients, that represent a measure of the strength of the association between the two variables. The disadvantage of this tests is that outcome of this test shows the same value even when dependent and independent variables change places. Consequently, it is impossible to access which of the variables has an influences on changes in another one. It means that using value of Pearson correlation coefficient I can say just about presence of dependence between variables, but cannot conclude how exactly they affect each other.

In order to deeper assess this influence I constructed Simple Regression models where I estimated dependence between two variables for each bank. I took each of the CEO payment components separately and run regression for its values with firm performance amounts, applying Excel tool called Regression.

Firstly, I chose Cash-based component as dependent variable and firm performance value as independent, and then swapped them around. The same procedure was carried out for share-based compensation. For each of the models I carried out an analysis on BLUE assumptions, which included checks of autocorrelation, heteroskedasticity and normality.

For that purposes was used a cross-platform Stata, which allowed me to assess OLS model's appropriateness to use based on the specific assumptions.

Testing models on heteroscedasticity was carried out using Breusch-Pagan test – obtained p-value > chi-square states that the model fits heteroscedasticity requirements. I couldn't use White's test for heteroscedasticity check because my models has only 8 observations (less than 30), so Breuch-Pagan test was used. Similarly for testing autocorrelation using Breusch-Godfrey test – p-value more than 0.05 tells that there is no serial correlation in constructed model. Jarque-Bera tests were used for normality check. Jarque-Bera test uses t-statistics, which based on coefficients of skewness and kurtosis for et. In that case if obtained t-statistic > p-value, we fail to reject Ho that the residuals are normally distributed.

Results showed that for all of the constructed models' assumptions of OLS regression are satisfied, what says about appropriateness of using them for analysis and creating formulas based on obtained coefficients.

Formula 1:
$$ROA = \frac{Net\ Income}{Total\ Assets}$$

Formula 2:
$$ROE = \frac{Net\ Income}{Shareholder's\ Equity}$$

Formula 3:
$$Earnings\ Per\ Share = \frac{Net\ Income - Preferred\ Dividends}{Wheited\ Average\ Shares\ Outstanding}$$

Formula 4:

*Market Value = Market Value per Share * Total Number of Outstanding Shares*

Formula 5: (Pearson correlation coefficient)

$$r_{XY} = \frac{\sum_{i=1}^{n}(X_i - \overline{X})(Y_i - \overline{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \overline{X})^2}\sqrt{\sum_{i=1}^{n}(Y_i - \overline{Y})^2}}$$

3 Literature Review

The following chapter represents the summary of prior researchers' investigations on agency theory. Literature review focused on different interpretations of observed phenomenon and its specifics. Theoretical part specifies also scientific approaches to agency theory: principal-agent problem and positivism. Great emphasis of literature review was put on types of executive compensation – its distinctive features, ways of payment calculation, reasons and historical trends of application. Finally, there is an overview of firm's performance criteria which are commonly treated by scientist in order to access interdependence between CEO annual payments and company outcomes.

3.1 Agency problem – Definition

Economic agreements that imply issues of risk sharing and incentives implementation may be described in terms of agency problem. With the purpose to analyze this phenomenon and its characteristics, we need to define its nature through the prior identification of agency relationship and agency costs.

Economics is not the sole science where agency theory has found its application. Scholars from a number of various disciplines and (далекий по смыслу) fields had also investigated agency theory from different perspectives. Some of them are listed below:

- The professional golf tour (Ehrenberg and Bognanno 1990)
- Organizational behaviour (Eisenhardt, 1985),
- The military (Asch 1990),
- Universities (Gomez-Mejia and Balkin 1992),
- Family business (Tsai et al., 2006),
- Churches (Charles Zech, 2007),
- Law (Lan and Heracleous, 2010),
- Health care (Jiang et al., 2012), etc.

Some of these studies comprise more theoretical aspects (law, organizational behavior), while most of them focused more on incentive compensations (variety of rewards and potential of its implementation). At the same time, both types of researches build their research around agency relationship and interaction between two sides of it.

An extensive discussion of this topic in the scientific community based on the forecasting of rational individuals' behavior, who take part in bilateral relationship, where information asymmetry about the other individual's interests and actions exist.

Jensen, M.C. and Meckling, W.H. (1976) determine an agency relationship "as a contract under which one or more persons (the principal(s)) engage another person (the agent) to *perform some service on their behalf* which involves delegating some decision-making authority to the agent"[1]. In economic theory management stands as agent, shareholders - as principal.

As Ross (1973) notes: "We will say that an agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for the other, designated the principal, in a particular domain of decision problems"[2].

Therefore, among scientists agency relationship consists of two subjects - principal and agent - and the foundation of its existence - initiative to make decisions. However, the difference between agent's decisions and those decisions that would maximize principal welfare will definitely arise in certain degree.

Fama and Jensen (1983) highlighted 4 steps of decision process:

1. Initiation - formulation of recommendations and schemes on the use of resources and contracts development;

2. Ratification (approval) - selection one solution plan among all to execute;

3. Implementation - execution of ratified decisions;

4. Monitoring - measuring the effectiveness of agent decisions and rewards' application and realization[3].

They also divided these steps for 2 groups - they defined initiation and implementation as *decision management*, and the remaining two (ratification and monitoring) as *decision control*.

Agency theory researches generalized, that when decision-makers (agents) who initiate and execute important decisions are not the main residual claimants (residual claim

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[1] JENSEN, M.C., MECKLING, W.H, *Theory of the firm: managerial behavior, agency costs and ownership structure*, 1976, p. 307.

[2] ROSS, S. *The Economic Theory of Agency The Principal's Problem.* (1973), p. 134.

[3] FAMA, E.F., JENSEN, M.C. *Separation of ownership and control*, 1983, p. 311.

here understood as the shareholders' (or other parties) right to the company's profit after payment of all previous, fundamental obligations.), they may do not take into account the influence of their decisions on shareholders' welfare or might deliberately take actions that deviate from the residual claimants interests.

From here importance of monitoring agent decisions takes place. Hence, it is expected to be efficient when individual agent stays involved in managing certain decisions and controlling another, but does not perform functions of implementations and control over the single decision. In a word, Fama and Jensen stated that separation of ownership is efficient and widespread, and there is an empirical study to challenge this viewpoint.

Peter Tufano in his study "Agency Costs of Corporate Risk Management" argued that "to the extent that managers are not full residual claimants, there may be agency costs associated with motivating and monitoring managers who resort to certain types of external financing".[4]

Jensen and Meckling (1976) defined agency costs broadly as the sum of:

1. *the monitoring expenditures by the principal* (including principal efforts to 'control' the agent behavior through budget restrictions, compensation policies, operating rules and so on),

2. *the bonding expenditures by the agent* (pecuniary as well as non-pecuniary),

3. *the residual loss* (the dollar equivalent of the decrease in welfare experienced by the principal due to this divergence).

Michael E. Drew and Jon D. Stanford (2003) defined residual losses as the opportunity cost of incompletely enforced contracts. They explained it following way: "The residual loss is the value of losses incurred by the principal from decisions made by the agent which produce results which deviate from those resulting from a decision of the principal with the same information and talent as the agent. The principal will find it

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[4] TUFANO P. *Agency Costs of Corporate Risk Management*, 1998, p. 69.

profitable to incur expenditure in policing the contract to the extent that the reduction in the loss from non-compliance is equal to the incremental costs of enforcement"[5].

Slightly another essence of "agency costs" term provided Fama and Jensen (1983). They interpreted it as follows: "Agency costs include the costs of structuring, monitoring, and bonding a set of contracts among agents with conflicting interests. Agency costs also include the value of output lost because the costs of full enforcement of contracts exceed the benefit"[6].

Fama and Jensen in their article "Separation of Ownership and Control" explored with a close attention a separation of decision and risk-bearing functions in large corporations and came to conclusion that this practice takes place due to the benefits of specialization of management and risk bearing and effectiveness of common approach to controlling the agency problems caused by separation of decision and risk-bearing functions.

According to the theory, separating ownership from control can result in costs for the principal, known as agency costs, thus requiring costly mechanisms for controlling these costs.

When the principal-agent relationship is initiated, the agency costs are clear to the principal. However, when the agent takes action counter to the agreement, the principal perceives that he or she has assumed more risks.

Eisenhardt (1989) in his article "Agency Theory: An Assessment and Review" synthesized 2 problems, that supposed to appear in agency relationship: "The first is the agency problem that arises when (a) the desires or goals of the principal and agent conflict and (b) it is difficult or expensive for the principal to verify what the agent is actually doing. The second is the problem of risk sharing that arises when the principal and agent have different attitudes toward risk"[7].

In essence, agency theory stems from an economic view of risk-sharing (Eisenhardt, 1989), which occurs between two parties, principals and agents, yet each of

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[5] DREW E.M., STANFORD J.D. *Principal and Agent Problems in Superannuation Funds*, 2003, p. 142.

[6] FAMA, E.F., JENSEN, M.C. *Separation of ownership and control*, 1983, p. 314.
[7] EISENHARDT, K.M., *Agency theory: an assessment and review*, 1989, p. 59.

the two parties may possess different approaches to solve the problem (Jensen and Meckling, 1976). Risk sharing problem have been described in details in economic literature of 1960s and early 1970s as one that increases when members of cooperation possess different position toward risk.

Alan J. Marcus (1982) in his article "Risk sharing and the theory of the firm" presented the model, which predict, that "from the owner's perspective, managers will exhibit excessive risk aversion and underinvest in risky projects"[8].

Problem of risk aversion strongly stressed by Eisenhardt (1989). As evidence of higher degree of agent's risk averse over principal's, he stated that agents are risk averse because they are unable to diversify their employment risk, whereas principals are risk neutral because they can diversity their investments[9].

According to relevant researchers in the agency theory, risk aversion is not the only one reason for the principal-agent problem, but conflicts of interests between two parties in general and the asymmetric information between them.

This concept found a confirmation among the most researchers and creates the generally accepted idea, that the core solution for principal-agent problem is efficient organization of information synergy and risk-bearing functions in order to align the interest of both parties. This overflows into a problem of determining *the most efficient contract*, that regulate the relationship between principal and agent. "These contracts or internal "rules of the game" specify the rights of each agent in the organization, performance criteria on which agents are evaluated, and the payoff functions they face." - states Fama and Jensen (1983)[10].

Nevertheless, for its effective implementation this type of contracts should follow several assumptions. Classical agency theory posits 3 groups of them: human, organizational and informational assumptions.

Burnham (1941) stated that "At the very heart of the agency problem lies the concern of self-interest behavior that may encourage an overzealous agent to not act in the

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[8] MARCUS J. A., *Risk Sharing and the Theory of the Firm*,1982, p. 369.

[9] EISENHARDT, K.M., *Agency theory: an assessment and review*, 1989, p. 72.

[10] FAMA, E.F., JENSEN, M.C. *Separation of ownership and control*, 1983, p. 316.

best interest of the principal"[11]. This statement describes, first of all, human assumption, which concerns self-interest, which can be expressed by moral hazard; risk aversion, bounded rationality.

Further on, organizational assumption presents participants disagreement on performance goals, efficiency as the effectiveness criterion and information asymmetry between principal and agent. Informational assumption interprets information as a commodity that might be purchased. It should be mentioned, that at the very heart of the agency problem lies the concern of self-interest behavior that may encourage an overzealous agent to not act in the best interest of the principal (Burnham, 1941).

Classical agency theory pays more attention to the human assumption, especially to the moral hazard and risk aversion. Agency costs in the form of moral hazard and adverse selection arise because contracts are by nature incomplete and principals face a problem of information asymmetry with regard to agent effort.

Moral hazard represents lack of efforts, which agent is supposed to provide according to contract between him or her and principal. It might occur especially in the cases of big projects, when the whole task or research, that company carries out is too complex and, as a consequence, corporate management is not able to discover what exactly agent is doing.

It means, that problem of moral hazard occurs after the contractual agreement, when principals are faced with the impossibility of knowing what the effective effort made by agents is, who abuse the discretion and power they have been given so that they can attain certain objectives.

"A natural remedy to the problem is to invest resources into monitoring of actions and use this information in the contract." - claimed Bengt Hölmstrom in his article "Moral Hazard and Observability". Then he also admitted, that "... full observation of actions is either impossible or prohibitively costly"[12]. Due to it interest centers around the use of imperfect estimators of actions in contracting.

Casual observation indicates that imperfect information is extensively used in practice to alleviate moral hazard, for instance in the supervision of employees or in

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[11] BURNHAM J. *The managerial revolution; what is happening in the world*, 1941, p. 33.

[12] HÖLMSTROM B. *Moral Hazard and Observability*, 1979, p. 83.

various forms of managerial accounting. Harris and Raviv (1976) analyzed imperfect information application and came to conclusion, that any additional information about the agent's action, however imperfect, can be used to improve the welfare of both the principal and the agent[13].

The next element of human assumptions - adverse selection - refers to the misrepresentation of competencies by the agent, deliberate distortion of his or her abilities. For example, the agent might state that he or she have some particular skills and experience in a specific field and the employer is not able to completely verify whether this is true or not. Adverse selection arises due to principal inability to check these skills or experience while hiring or at the time when the agent is working. Charles Perrow in his study "Economic Theories of Organization" simply put *adverse selection* as hiring a poorly qualified agent. "The principal has a problem: the agent may misrepresent her 'type', that is, her training, skills, and character, when seeking employment"[14].

Thereby, in the case of unobservable behavior (due to moral hazard or adverse selection), the principal has two options. One is to discover the agent's behavior by investing in information systems such as budgeting systems, reporting procedures, boards of directors, and additional layers of management. Such investments reveal the agent's behavior to the principal, and the situation reverts to the complete information case.

Robert Dahlstrom and Rhea Ingram (2003) in their article proposed also social network analysis as monitoring instrument needed for principal to assess agent before conclusion of the contract between them. As they figured out, this method has potential to decrease costs needed to be beared in order to reduce uncertainties, as well as some limitations in holding this procedure[15].

Jensen (1983) mentioned agent's opportunism as a destructive element of agency relationship to be eliminated, and provided 2 instruments to implement it - outcome-based and behavior-based contracts.

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[13] HARRIS, M., RAVIV, A. *Optimal Incentive Contracts with Imperfect Information*, 1979, p. 249.

[14] PERROW, C. *Economic theories of organization*. 1986, p. 24.

[15] DAHLSTROM R., INGRAM R. *Social networks and the adverse selection problem in Privatization in Emerging Economies: An Agency Theory Perspective*, 2000, p. 662.

First of them, *behavior-based contracts* is expected to inform principal about agent's actions through information system. This enables to reduce agent opportunism, since then he or she realize lack of opportunities to mislead the principal.

For example, Fama and Jensen (1983) described the role of the board of directors as an information system that the stockholders within large corporations could use to monitor the opportunism of top executives[16]. Behavior-based management efforts focus on processes, emphasizing "tasks and activities" that lead to a reduction in supply risk (Eisenhardt 1989; Logan 2000).

The other option is to contract on the outcomes of the agent's behavior. Such an outcome-based contract motivates behavior by coalignment of the agent's preferences with those of the principal, but at the price of transferring risk to the agent.

Outcome-based contract, aims to reduce conflict of interests between agency relationship subjects via convergence of principal's and agent's goals, since the benefit for both of them depend on the same actions. Complete reliance on outcome-based efforts signifies an exclusive concern with bottom-line results, regardless of how suppliers achieve them (Choi and Liker 1995)[17].

Eisenhardt (1989) argued that both types of contracts - outcome and behavior-based - can cope with aligning of principal and agent interests. He reasoned that outcome and agent characteristics influence the choice of contract. Specifically, outcome uncertainty and risk aversion of agents are positively related to the use of behavior-based contracts, whereas outcome measurability are negatively related to the use of behavior- based contracts[18].

Nevertheless, the emerging consensus among economists is the core of principal-agent theory consists in the trade-off between the cost of measuring behavior and the cost of measuring outcomes and transferring risk to the agent.

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[16] FAMA, E.F., JENSEN, M.C. *Separation of ownership and control*, 1983, p. 313.

[17] CHOI, T. Y.; LIKER, J. K. *Bringing Japanese Continuous Improvement Approaches to U.S. Manufacturing: The Roles of Process Orientation and Communications*, 1995, p. 599.

[18] EISENHARDT, K.M., *Agency theory: an assessment and review*, 1989, p. 73.

3.2 Principal-agent problem and Positivism

From the historical point of view on agency theory it is important to mention its development in two directions: principal-agent problem and positivism (governance mechanisms). Both of them are focused on the relationship between the agent and the principal, however, they have a number of differences that scientists emphasize in a number of studies.

First of all, starting with principal-agent concept, as it is considered more theoretical. Principal-agent researchers focus their interest on general, theoretical implications of assumptions, logical deduction and mathematical proof.

Principal-agent research identifies two possible agency problems: risk-sharing and agent monitoring. The two problems are linked in that, a divergence in the area of risk-sharing creates information asymmetries, which in turn reduces the principal's ability to monitor agent behavior. The shift in risk-sharing, whether perceived or actual, makes it inherently difficult to create an ideal contract between the principal and the agent.

The positivists, in opposite, centered almost solely on the particular case of the shareholder/CEO relationship in the large corporation - positive agency theory, therefore, is an empirically-oriented examination of principal-agent relationships.

Positivist agency theory focuses on those critical governance mechanisms that limit agent's self-serving behavior (Eisenhardt, 1989). Such mechanisms are believed to provide the desired alignment of goals and objectives for principals and agents, yet Dalton et al. (2007) question whether or not these mechanisms are effective.

It characterizes positivism as more practical concept, that seeks not only to identify the conflict of interests between agent and principal, but also elaborate measures, that allow to reduce it. The main idea of it is to answer the question "Which governance mechanisms to use in order to limit agent's self-interest behavior?"

Because the use of incentives to create alignment of interests between principal and agency is a primary mechanism proposed by the theory to reduce agency costs, the theory is without doubt one of the main (if not the main) theoretical frameworks in the area

of compensation management (particularly at the top management level) (Gomez-Mejia, Berrone, & Franco-Santos, 2010)[19].

Generalizing theoretical background of these two concepts, it could be concluded, that they are complement one another following way: positivist theory finds out diverse contract alternatives, and then principal-agent theory specifies which contract is the most efficient under the impact of outcome uncertainty, risk aversion, information asymmetry, and other variables.

3.3 Types of executives' compensation

Jensen and Meckling (1976) indicated that, in order to reduce the conflict between agent and principal, shareholders should bind the manager's wealth to company performance or share price. By using compensation policy to manage the slope of the relation between managers' wealth and stock price, shareholders can induce managers to take actions that increase equity value[20].

Carola Frydman and Raven E. Saks in their study "Historical Trends in Executive Compensation" stated, that at the beginning of the 20 centuries, the practice of executive compensation was strictly protected in secret, what means a little historical evidence of incentive payments[21]. Later, during World War I, this information has received wide publicity according to scandal caused by disclosure of exorbitant salaries of railroad officers.

By the early 1930s, disagreements related to pay levels had spread to the heads of all businesses, resulting in establishment of the Securities and Exchange Commission (SEC) in 1934, the purpose of which is release of information about executive officers and

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[19] GOMEZ-MEJIA, L. R., BALKIN, D.B. Determinants of Faculty Pay: An Agency Theory Perspective, 1992, p. 942.

[20] JENSEN, M.C., MECKLING, W.H, *Theory of the firm: managerial behavior, agency costs and ownership structure*, 1976, p. 307.

[21] FRYDMAN C., JENTER D. *CEO Compensation*, 2010, p. 5.

director's remuneration in order to prevent managers from engaging in wrongful behavior and mismanaging corporate assets.

The main source of the data needed to analyze executive compensation in particular firms and industries in general is SEC Form DEF 14A, that is also called as a "definitive proxy statement". DEF 14A is normally compiled for annual meeting of shareholders to provide them with information about company's background information, voting procedure, board and, what is in our field of interest, executive compensation - DEF 14A is supposed to give an explanation on how incentives are defined for CEO and what are the forms they paid.

Consequently, there are available data provided by SEC from the 1930s to the present, that allows us to analyze some trends in the evolution of CEO compensation.

According to Carola Frydman and Dirk Jenter (2010) research, based on the hand-collected data from proxy statements using SEC and S&P ExecuComp database, development of CEO compensation had following trends:

1. Significant prevalence of *salaries and annual bonuses* from 1936 to the 1950s. tied to one or more measures of annual accounting performance, and paid in either cash or stock.

2. Dramatic increase of incentives in form of *stock options* in the early 1980s in order to give CEOs an incentive to enhance shareholder value by building dependence of remuneration amount on share prices.

3. Stock option establishment as the largest component of executive remuneration. "Option compensation comprised only 20% of CEO pay in 1992 but rose to a staggering 49% in 2000."

In addition, CEOs often receive contributions to defined-benefit pension plans, various perquisites, and, in case of their departure, severance payments. The relative importance of these compensation elements has changed considerably over time. (они же)

To better explain its development tendency, we will look at characteristics and specifics of each component of CEO pay.

It should be noted that even though companies widely vary in remuneration methods, most executive compensation packages consist of five basic elements. In accordance with the recommendations of Securities and Exchange Commission (SEC) *"Summary Compensation Table for Fiscal Years"* in the form DEF 14A is required to

provide comprehensive information on principal compensations divided into the specified columns:

Salary (1), Bonus (2), Stock Awards (3), Option Awards (4), Non-Equity Incentive Plan Compensation (5) and All Other Compensation.

The combination of top two elements - Salary and Annual Bonuses - is generally referred to Total Cash Compensation (TCC) and considered as short-term incentives.

Short-term incentives usually are formula-driven and have some performance criteria attached depending on the role of the executive.

Salary is the fixed element of executive compensation, that is competitive for each role and commonly measured based on company revenues and market capitalization. The base salary for executive pay is normally stated as an annual salary, although it is typically paid monthly or bi-weekly, similar to other salaried staff.

Base salaries constitute a key component of executive employment contracts, that normally guarantee minimum salaries growth for the following five years. It should be noted that most elements of CEO compensation are calculated with relation to the amount of base salary. CEOs cash bonuses are commonly calculated as a percentage of their base salary.

Bonuses are payments of a non-discretionary character, that are related to overall company's success and might depend on annual accounting or non-accounting performance. May be paid in either cash or stock, but normally have limits - minimum and maximum amount to be guaranteed.

Perry and Zenner (1997) have determined, that most of companies assess performance for annual bonus plan using accounting indicators such as revenues, net income, pre-tax income, operating profits and economic value added[22].

This approach is explained by the fact that accounting data are widely understood and auditable, what allows managers to observe influence of their day-to-day decisions on the year-end profitability. At the same time, it can result in a problem when agent concentrated mainly on the increasing current profitability, but avoiding decisions that may

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[22] PERRY, T., M. ZENNER, *Pay for Performance? Government Regulation and the Structure of Compensation Contracts*, 1997, p. 121.

negatively affect present performance, but significantly increase it in a long-term (Dechow and Sloan, 1991)[23].

Salary and Annual Bonuses are considered as *short-term incentive awards* that are paid for achieving predetermined performance objectives have been made in the previous year and rewarded mostly in cash.

Long-term incentive awards are added to encourage agents with a direct concern to enhance value of the firm and, therefore, shareholder value via accomplishment of long-term financial objectives of the firm. Long-term incentives usually come in two forms - Stock Awards and Option Awards - equity grants, that are closely related to long-term financial performance of the firm.

As it was found by Hall and Murphy (2003), Bebchuk and Grinstein (2005), Carola Frydman and Dirk Jenter (2010) the structure of executive compensation has undergone a sustainable transformation from 1936 till to date. The most visible tendency in the development is a growing prevalence of stock options and long-term incentive payments over base salaries and bonuses.

Stock options were not a significant part of executive compensation during the 1970s (Murphy 1999)[24]. However, by the year 2000, about a half of managerial pay was received in the form of options (Carola Frydman and Raven E. Saks, 2003). However, from 2007 till today share of option stock in CEOs compensation shows gradual decline in favor of stock awards, what we consider later.

Stock options, which give the recipient the right to buy a share of stock at a prespecified exercise price for a pre-specified term, have emerged as the single largest component of compensation for US executives (Hall and Liebman, 1998; Murphy, 1999). In fiscal 1998, 97% of S&P 500 companies granted options to their top executives, compared to 82% in 1992.

Stock options encourage agents to stick with the company for the long-term, providing them an ability to buy a fixed number of shares in the future at current market price, no matter to what extent it can change over time since options were issued.

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[23] DECHOW, P., R. SLOAN, *Executive Incentives and the Horizon Problem*, 1991, p. 59.

[24] MURPHY, K.J. *Executive Compensation*, 1999, p. 2511.

Stock options have *vesting period*, what belongs to the period of time when executive owns the shares without any restrictions - it cannot be forfeited and gives the agent ability to dispose it at his or her discretion (selling, transferring, etc.). Vesting schedule and conditions depends on contract between agent and principal. Executive options are normally forfeited if the executive leaves the firm before vesting, what ensure a close relationship between agent welfare and the performance of company stock-prices, thereby alleviating interest conflicts between shareholders and managers (Jensen and Meckling, 1976)[25].

As was also demonstrated by Jensen and Murphy (1990) and Hall and Liebman (1998), literally all of the sensitivity of executive payment to firm performance is almost entirely due to his or her ownership of company shares and stock options, rather than annual changes in other components, such as base salaries or bonuses.

Paying CEOs in stock further props up their pay: When the economy is thriving, stock prices can rise across the board, and thus most CEOs' pay rises too. But even if the market cools off, expectations for what CEOs should be paid tend not to come down when that happens. Moreover, in order to make more money from selling the stock they were given, CEOs can induce a higher share price by having the company buy back its own shares; A share repurchase reduces the number of outstanding shares, which increases both the demand for the shares and the price. It can come at the expense of initiatives that might serve the company better in the long run, including funding research and development or employee training.

Figure 1. shows the executive compensation development among the S&P 500. The chart above demonstrates decreasing in Option Awards share in a CEO compensation structure - from 30% to 17% - and displacement it by Stock Awards, which has grown by 23% from 2009 till 2018 year. This trend is visible also on the levels of S&P MidCap 400, SmallCap 600, and a small number of other non-S&P 500 firms tracked by S&P and included in the ExecuComp database (Economic Policy Institute, 2019).

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[25] JENSEN, M.C., MECKLING, W.H, *Theory of the firm: managerial behavior, agency costs and ownership structure*, 1976, p. 311.

Graph 1. Components of S&P 500 CEO pay in total compensation, %

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Other	12%	11%	10%	13%	7%	12%	7%	8%	8%	4%
Options	30%	28%	27%	20%	22%	19%	18%	18%	19%	17%
Stock	28%	31%	37%	38%	41%	41%	46%	46%	45%	51%
Non-Equity Incentive	17%	18%	16%	17%	19%	18%	18%	18%	17%	19%
Bonus	3%	3%	3%	3%	3%	2%	2%	2%	2%	1%
Salary	10%	9%	8%	9%	9%	8%	9%	9%	8%	8%

■ Salary ■ Bonus ■ Non-Equity Incentive ■ Stock ■ Options ■ Other
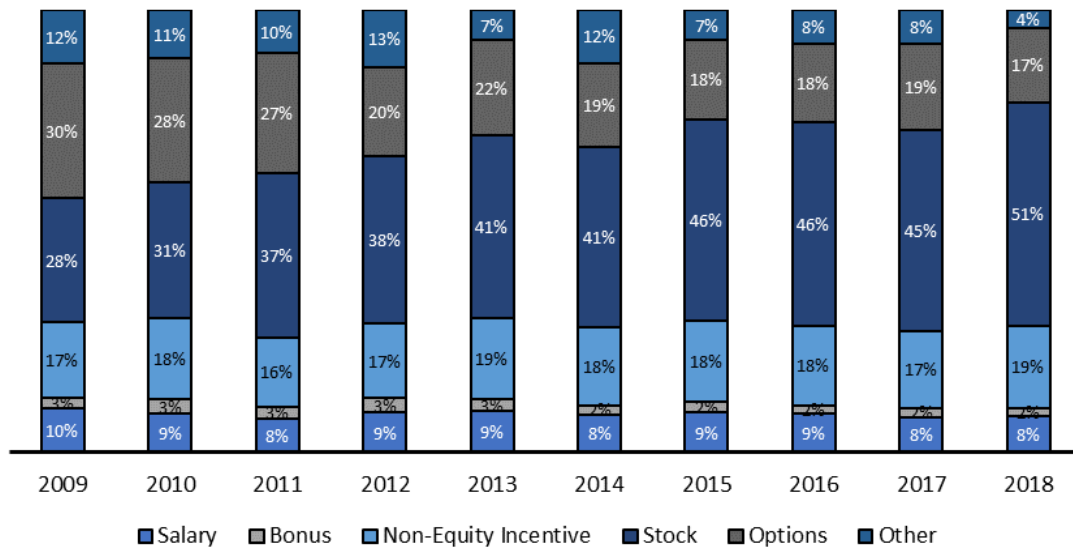
Source: Harvard Law School Forum on Corporate Governance, 2019

Similar to their S&P 500 counterparts, restricted stock has replaced stock options as the primary form of equity-based compensation.

Stock Awards is generally divided into 2 parts - Restricted Stock Units (RSUs) and Performance Share Units (PSUs).

Both of them represent firm's commitment to provide an agent with a number of shares of stock or cash equivalent at specified time in the future, but the difference is that for RSU this number of shares determined in advance, while for PSU it based on the agent performance in targeted tasks. The grants are "restricted" in the sense that shares are forfeited under certain conditions.

Restricted and Performance stock, once vested, give an agent an ownership stake in his or her company via shares of stock. After releasing of shares to the agent, he is given the rights to hold it as a part of his or her portfolio or sell them (outside of any company-imposed trading restrictions or blackout periods).

Through RSUs, CEOs, as well as shareholders, share both the risks and rewards of stock ownership. In addition, RSUs reward total shareholder return, whether delivered through share price appreciation or dividends.

The bottom line of providing compensation in the form of Stock Awards is that agents afterward make decisions like owners when they have a stake in the business in the

form of stock ownership. It helps to align executives' interests with shareholders' interests and drive firm performance.

Most of the USA companies award PSUs to executive officers to stimulate higher long-term shareholder returns by achieving long-term operational and strategic business goals. Size of this payment can be calculated as a percentage of base salary, what makes Performance Units similar to the annual bonus, but in a longer-term version.

One of the most controversial issue faced by researchers is whether to measure the remuneration associated with equity awards as the amount actually realized upon vesting and exercise, or to set the *"ex-ante"* grant-date value[26].

Since the mid-1980s, most research studies on executive compensation have used ex-ante valuation techniques to process the value of stock awards as fair market value at the date of grant, and used variations of the Black and Scholes formula (1973) for this purpose.

In accordance with the applicable accounting standards, Stock awards are reported in DEF 14A (or other financial statements) based on the total grant date *"fair value"* in the grant year. Grant date fair value for RSUs is commonly calculated by multiplying the number of shares granted by the average of the highest and lowest market prices of common company stock on the grant date, in spite of the fact that awards vest years later.

Stock awards have a forfeiture clause invalidating the award if the executive leaves (voluntarily or involuntarily) before the restrictions lapse (Kole 1997)[27]. In one respect, restricted stock is similar to a stock option, since it can be viewed as an option with a zero-strike price (Hayne E. Leland 1998)[28].

However, there are important differences between the two instruments with respect to accounting and tax treatments, dividend protection, and inducement of risk taking.

Non-Equity Incentive Plan Compensation represent 5th column in Summary Compensation Table and as it claimed by Zoltan et.al, (2007) was formally introduced in

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[26] MURPHY, KEVIN J., *Executive Compensation: Where We Are, and How We Got There*, 2012., p. 214.

[27] KOLE, S.R., 1997. *The complexity of compensation contracts,* 1997, p. 83.

[28] HAYNE E. L., *Agency Costs, Risk Management, and Capital Structure*, 1998, p. 71.

2006 by the Securities and Exchange Commission (SEC) in the regulations amending required disclosure of executive compensation in financial statements[29].

This new category was intended to reflect CEOs pay awarded in cash which are rely on specific pre-established performance-based goals.

Performance targets typically based on the growth in earnings per share, sales, return on equity and other measures, rather than company stock performance. These plans reward longer-term corporate performance, usually over a three-to-five-year period and can be defined at a divisional or corporate level, or relate to firm competitors. Unless cash payments are not specifically linked to specific pre-established performance-based incentives, they should be recognized as annual bonuses.

For Summary Compensation Table purposes, many have struggled with distinguishing between Bonuses and Non-equity incentive plan compensation. Non-equity incentive plan compensation must comply with following requirements:

1. The award aims to serve as an incentive for performance over a *specified period of time*,

2. While performance is established, amount of *award* for goals accomplishment stays *uncertain*.

3. Executive officer is completely *aware* of the target has to be reached.

In the case any of these three rules are unsatisfied, then cash awards should be reported as a discretionary bonus.

All Other Compensation include another important components of CEO payment that were honoured with less attention in the literature. The most frequent of them are perquisites, pensions, and severance pay.

Obtaining comprehensive information on these forms of pay has been difficult until recent years. Because of the insufficient disclosure, perquisites, pensions, and severance pay have often been labeled "stealth" compensation that may allow executives to extract rents surreptitiously (Jensen & Meckling 1976, Jensen 1986, Bebchuk & Fried 2004).

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[29] ZOLTAN M., YAOWEN S. V., SEETHAMRAJU M., *The timing of changes in CEO compensation from cash bonus to equity-based compensation: Determinants and performance consequences*, 2007, p. 78.

Executive perquisites, also known as "perks", are additional compensation for senior executives that are unobtainable for other company employees.

Some perks are structured to maximize executive work time including car allowance, installation of home communications systems, and the use of company airplanes. Others recognize the unique positions of executives, especially CEOs, by providing security both at home and when traveling, insurance premium, club memberships, loans at below-market rates. As a rule, executive perks account for a modest percentage of executive payment.

In accordance with Yermack (2006), aircraft use plays the most significant role in the perquisites pay, as far as the SEC requires perk disclosure only above certain fixed dollar thresholds, and these cutoff levels are generally too high to be triggered by perks other than aircraft[30].

Jensen and Meckling (1976) emphasized dependence of perk consumption by a CEO on his or her fractional ownership, agent's personal tastes and the difficulty of monitoring his or her actions. Later, in 1980, Fama also suggests that managerial tastes and the difficulty of monitoring affect agents' perquisites.

As long as executive perquisites continue to grow, and since the gap between managers and average workers payment, this problem become widely discussed.

For instance, Yermack (2006) states negative market reaction on perks disclosure, according to public opinion on excessive use of pay.

Rajan and Wulf (2006) in their research argue that private aircrafts and catered lunches may represent rational expenditures by firms if their consumption renders top executives more productive, and much of their paper provides an empirical analysis of this theory[31]. This view of corporate amenities characterizes them as value-increasing business expenses rather than a form of private consumption.

Pension plans, along with perquisites, are an important component of contemporary executive payments. Pensions represent the executive right to receive a series of periodic

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[30] YERMACK, D. *Flights of fancy: Corporate jets, CEO perquisites, and inferior shareholder returns*, 2006, p. 233.

[31] RAJAN R. AND WULF J., *Are perks purely managerial excess?* 2006, p. 767.

payments of a given size from the future retirement date and continuing throughout his lifetime.

The annual payments size available under these plans is typically based on the number of years an executive has served with the company and the executive's pre-retirement base salary and bonuses.

This retirement normally greater in monetary form and do not demand explicit ongoing fees from participants. In general, executive's annual pension benefits increase correspondingly.

As of December 15, 2006, the SEC requires firms to disclose in proxy statements the annual accrual of pension benefits and the present value of accrued pension benefits for each of a firm's top five executives. Consequently, scientists in the field of agency theory expressed an interest to the role and significance of pensions plan in executive annual compensations.

Sundaram and Yermack (2007) found that companies often award CEOs with pensions which guarantee life annuities equal to around 60% of agent's final average salary plus bonus[32].

Sundaram & Yermack (2007) and, later, Edmans & Liu (2010) justified pensions as a form of "inside debt" that softens risk-shifting problems by aligning executives' incentives with those of other unsecured creditors. Brian Cadman & Linda Vincent (2015) stated in their research, that there is no evidence that CEO pension benefits contribute to the pay-for-performance sensitivity of the annual pay[33].

Severance pay is provided to agents in cases when they are forced to leave their position due to downsizing or job elimination.

Literature provide concepts such as golden handshakes and golden parachute. Golden handshakes represent the CEOs award ensuring payments when executives lose their position through firing, restructuring, or, sometimes, scheduled retirement. Yermack (2006) finds that golden handshakes are common, but usually moderate in value. Bettis, J.,

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[32] SUNDARAM, P.K.; YERMACK, D.L., *Pay me later: Inside debt and its role in managerial compensation*, 2007, p. 1557.

[33] CADMAN B. & VINCENT L. *The Role of Defined Benefit Pension Plans in Executive Compensation*, 2015, p. 779.

et al. (2005) shows that ex-ante separation agreements signed when CEOs are hired are also common and are equivalent to two years of cash compensation for the typical CEO[34].

Many CEOs receive also a special severance payment, called a golden parachute, if they lose their job as a result of their firm merger or takeover. The stock market tends to react positively to the adoption of golden-parachute provisions (Lambert & Larcker 1985), and such provisions became widespread during the 1980s and 1990s (Hartzell et al. 2004).

The literature is full with assumptions on which methods of compensation are most effective for agency problem solution and which of them cause issues in implementation and outcomes. The main objective of this to find the mix of compensation that would be appropriate to attract, retain, and motivate executives in the short and long terms.

3.4 Firm performance indicators

The study of Merchant (2006) classifies performance measurement into three categories: accounting performance measurements, market performance measurements and combination performance measurements[35]. *Accounting performance measurements* can be residual terms, such as operating profit, net income after tax, residual income and economic value added (EVATM), as well as ratio terms such as return on investment (ROI), return on equity (ROE) and return on net assets (RONA). *Market performance measurements* reflect changes in shareholder returns and movements of stock price.

The combination measurements involve a combination of one or both of the accounting measures and market measures, as well as a combination of disaggregated financial measures (e.g. revenue, net income and expense) with nonfinancial measures (e.g. sales growth, inventory turnover and customer satisfaction).

Most economists use accounting based measures of financial performance in order to estimate influence of CEO compensation on firm performance. Among them the most commoly used are Return on Assets and Return on Equity.

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[34] BETTIS, J., J. BIZJAK, M. LEMMON., *Exercise behavior, valuation, and the incentive effects of employee stock options*. 2005, p. 450.

[35] MERCHANT K.A, *Measuring general managers' performances Market, accounting and combination-of-measures systems,* 2006, p. 894.

Return on Assets (ROA) shows management efficacy at using company's assets to generate income and calculated by dividing the firm's net income by its total assets (annually as well as quarterly). Its value generally expressed as a percentage. ROA's formula is as follows:

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

Simply put, ROA represents the number of cents earned on each dollar of assets. Therefore, the higher value of ROA means the higher business profitability.

The favor of the ROA application is explained by its property to compare companies in the same sector or industry as well as its current performance with results of previous periods. This indicator gives the Board information about the value added to the firm by its CEO, that in response has an impact on his or her compensation. This dependence affects executives to make corporate decisions, which increase ROA.

The similar relationship is appropriate for return on equity (ROE) – the higher its value, the higher efficiency of income generating on new company's investments. ROE shows how well management of the firm serves its shareholders' economic interests and calculated by dividing company's net income on shareholder's equity (annually or quarterly, in percentage - is analogous with ROA). ROE formula is provided below:

$$ROE = \frac{Net\ Income}{Shareholder's\ Equity}$$

Return on equity measures a corporate's profitability by showing the profit of the company generated by the money invested by the shareholders.

One more accounting measurement which is commonly taken in the field of agency theory for CEO payment power analysis is firm's annual Earnings per Share.

Since Earnings per Share is a value which investors always take into account when making investments decisions, it is generally considered most important factor to determine firm value and make conclusions about its annual performance.

A higher EPS indicates greater value because investors will pay more for a company's shares if they think the company has higher profits relative to its share price. Most researchers in their work use following formula for calculating EPS.

$$Earnings\ Per\ Share = \frac{Net\ Income - Preferred\ Dividends}{Wheited\ Average\ Shares\ Outstanding}$$

Basic earnings per share is computed by dividing income available to common stockholders after the allocation of dividends and undistributed earnings to the participating securities by the weighted average number of common shares outstanding for the period.

As the most of companies stated in their annual Proxy Statements, CEO compensation is linked to the amount of Earnings Per Share (EPS). On the one hand, EPS-based bonus plans help to resolve agency conflicts between managers and shareholders in the form of ownership dilution. But its application is controversial due to its possibility to create powerful incentives for top executives to change EPS realizations through repurchases.

Reduction in the number of outstanding shares leads to increase in the demand for remaining shares and its price. It also affects firm's total assets making it lower, what in turn improve return on assets, return on equity, and other metrics. Linking executive compensation to EPS growth provides management with a means of manipulating reported performance (through repurchases). A share repurchase reduces a company's available cash, which is then reflected on the balance sheet as a reduction by the amount the company spent in the buyback.

In their work "The Folly Of Making EPS Comparisons Across Companies: Do Accounting Textbooks Send The Correct Message?" Timothy P. Kelley and Judith A. Hora stated that "While ROE comparisons across companies can be useful, cross-company EPS comparisons are meaningless due to the arbitrary number of shares outstanding across companies"[36]. At the same time, they notice there, that it does not mean that EPS figures are not important, because their values can be used to compare one company's performance over time.

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[36] KELLEY T. P. & HORA J. A., *The Folly Of Making EPS Comparisons Across Companies: Do Accounting Textbooks Send The Correct Message?*, 2008, p. 53.

However, they also say that it can be useful for carrying out intercompany comparison, If EPS growth rates would be taken into account, but not its raw figures themselves. "For example, a company with a 15% EPS growth rate can be said to be doing better than a company with a 4% EPS growth rate."[37]

As a market-based performance indicator is commonly taken Market Value, which represents a good barometer of the wealth of shareholders. Market value is usually used to describe how much an asset or company is worth in a financial market.

That indicator calculated using following formula:

Market Value = Market Value per Share * Total Number of Outstanding Shares

The above-mentioned indicators are chosen as firm performance criteria for following analysis based on the previous researches and their representativeness of companies' annual outcomes.

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[37] KELLEY T. P. & HORA J. A., *The Folly Of Making EPS Comparisons Across Companies: Do Accounting Textbooks Send The Correct Message?*, 2008, p. 53.

4 Practical Part

4.1 Compensation Policy analysis

4.1.1 Citigroup Inc. Compensation Policy analysis

Before the analyzed time period Citigroup Inc. had CEO incentive plan based on deferred cash awards. Performance share unit awards (PRUs) were introduced by Citigroup Inc. as a component of new compensation program, which they applied in 2012 [38].

The target value of each executive's performance share unit award is based on prior year performance, with the actual number of performance share units earned at the end of a three-year period based on pre-set financial metrics. Performance share unit awards supposed to become a key element of Citi's executive compensation program, and for 2012 represent 30% of the total incentive award."

The proportion of incentive types for 2012 year were determined as follows: 40% in immediate payable cash bonus, 30% in deferred stock awards with four-year vesting that also results in cancellation of nonvested amounts in the event of Citi losses, and 30% in performance share units.

That structure had changed in 2016, when amount of cash bonus became 30%, but PSUs and Deferred Stock Awards 35% for both.

Performance share units deliver value to executives according to pre-determined financial metrics. The performance evaluation, according to Proxy Statements 2013-2019, based on financial and non-financial goals, divided for pre-determined categories.

Table 1. Financial goals evaluation for calculating CEO payment in Citigroup Inc

Category	Financial Goal (Glossary on Page A-1)	2015 Result[1]
Profitability	Citigroup Core Income from Continuing Operations Before Taxes	$24.6 billion
Expense Management	Citicorp Core Efficiency Ratio	57.1%
Use of Capital	Citigroup Return on Tangible Common Equity (Core)	9.2%
	Citigroup Core Return on Assets	0.94%
Risk	Citicorp Risk Appetite Ratio	154%
	Citicorp Risk Appetite Surplus	$7.63 billion

Source: CitiGroup Inc 2016 Proxy Statement, p. 64.

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[38] CitiGroup Inc 2013 Proxy Statement, p. 71.

Their financial goals Citigroup Inc. divided on Profitability, Expense Management, Use of Capital and Risk. More detailed information on that parameters provided below. Among non-financial: Strategic direction, Risk and controls management, Personnel management and Relations with external stakeholders.

As it has done the past several years, the Compensation Committee evaluated 2019 CEO performance using their executive compensation Framework, which measures results against financial and non-financial goals after the end of each year.

Citigroup Inc. use a rating system of 1 to 5 to assess performance against goals, with 1 being the highest (Significant Outperform) and 5 being the lowest (Significant Underperform).

Table 2. Summary of CEO Scorecard 2018 Results in Citigroup Inc

SUMMARY OF CEO SCORECARD RESULTS

Quantitative Goal (Glossary on Page 127)	2018 Result[1][2]	Rating[2]	Qualitative Goal	Rating[2]
Citigroup Income from Continuing Operations Before Taxes	$23.4 billion	3	Protect and enhance our reputation	3
Citigroup Efficiency Ratio	57.4%	3	Develop client-relevant value propositions	2
Citigroup Return on Tangible Common Equity	10.9%	2	Produce extraordinary client experiences	2
Citigroup Return on Assets	0.93%	3		
Risk			Deliver our financial commitments	3
Citigroup Risk Appetite Ratio	151%			
Citigroup Risk Appetite Surplus	$7.61 billion	1		

Source: CitiGroup Inc 2019 Proxy Statement, p. 77.

In accordance with the relative weightings established in 2017, financial goal ratings were averaged and weighted 70% and non-financial goals were averaged and weighted 30% in arriving at an overall scorecard rating for each chief and named executive officer.

Consequently, in Proxy statement chapter "Linking Performance to Compensation" overall scorecard CEO rating calculated as weighted average:

$$[2.4 \times 0.7] + [2.5 \times 0.3] = 2.43$$

4.1.2 Bank of America Compensation Policy analysis

All Bank of America senior executives are paid a mix of salary, cash bonuses (excluding CEO) and stock awards that vest over time and are tied to the long-term performance of the company. Equity-based compensation part can gain or lose its value, based on the company's stock. The executives are also often provided with pension benefits and other perks that are not included in the above calculations.

According to company compensation philosophy, following factors are accountable in the process of making annual payments decision:

- Individual performance, including financial and non-financial measures
- The manner in which results are achieved, adherence to risk and compliance policies, and the quality of earnings
- Accountability in driving a strong risk management culture and other core values of the company
- Performance relative to primary competitor group[39].

Key Changes to Executive Compensation Program was made in 2012. Compensation and Benefits Committee adjusted firm's CEO compensation program to further emphasize sustainable performance over time aligned with our strategic plan. That year company made a decision to provide equity incentives in performance restricted stock units (PRSUs) at least 50% of the whole package[40].

Through the analyzed period the structure of CEO Incentive Pay Mix remained unchanged:

- Performance Restricted Stock Units (PRSUs) - 50%
- Cash-settled Restricted Stock Units (CRSUs) - 30%
- Time-vested Restricted Stock Units (TRSUs) - 20%

Providing and exercising that incentive awards should comply with specific conditions, described below.

PRSUs vest based on achievement of specific return on assets (ROA) and growth in adjusted tangible book value (TBV) goals over 3-year performance period. If both

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[39] Bank of America 2019 Proxy Statement, p. 49.

[40] Bank of America 2013 Proxy Statement, p. 29.

threshold goals are not achieved, the entire award is forfeited. If performance goals are achieved, the amount granted for 2017 will be re-earned at the end of the performance period[41].

CRSUs track stock price performance over 1-year vesting period. TRSUs track stock price performance over 3-year vesting period, that help to align with sustained longer-term stock price performance[42]. The difference in exercising that incentives is following:

For example, If CRSUs granted in February 2020, they will be vested in 12 equal installments from March 2020 –February 2021. TRSUs, granted in February 2020 – will be vested in three equal annual installments beginning in February 2021.

TRSUs include the right to receive dividend equivalents and are paid in shares of common stock or cash at vesting or, in certain circumstances, after termination of employment. CRSUs do not include the right to receive dividend equivalents and are paid in cash. PRSUs include the right to receive dividend equivalents and vest subject to attaining pre-established performance goals.

Amounts of payments, provided in tables of Proxy Statements, show the aggregate grant date fair value of CRSUs, PRSUs, and TRSUs granted in the year indicated. Grants of stock-based awards (excluding CRSUs) include the right to receive cash dividends only if and when the underlying award becomes vested and payable[43].

«The grant date fair value is based on the closing price of our common stock on the applicable grant date (for 2019, $29.11). For the PRSUs granted in 2019, the actual number of PRSUs earned (0% up to the maximum level of 100%) will depend on our company's future achievement of specific ROA and growth in adjusted TBV standards over a three-year performance period ending December 31, 2021. » - stated in 2020 Proxy Statement of Bank of America.

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[41] Bank of America 2020 Proxy Statement, p. 50.

[42] Bank of America 2019 Proxy Statement, p. 46.

[43] Bank of America 2020 Proxy Statement, p.60.

4.2 Difference in CEO compensation structure

With a quite comparable amounts of total CEO compensation, analyzed banks have significantly different structure of payment, that is clearly visible on the Graph 2.

Graph 2. CEO compensation structure from 2012 till 2019
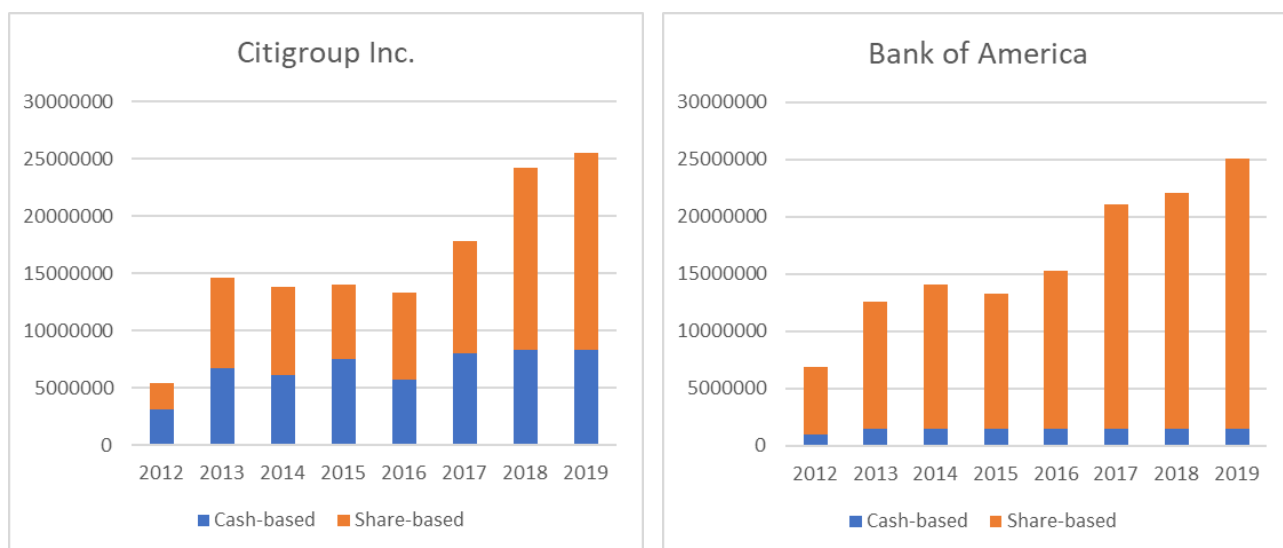
Source: own elaboration, 2020

The dynamic of CEO compensation from 2012 till 2019 for chosen Banks has shown that through this period of time Brian Moynihan - CEO of Bank of America - was paid with comparatively fixed amount of cash-based incentives, while share-based component (stock awards) experienced upward trend.

For the whole observed period Brian Moynihan was not given any cash bonuses, therefore his cash-based component of payment consists only of base annual salary.

In 2012 Brian Moynihan was given with a base salary amounted $950,000 and from 2013 to 2019 that part of compensation was increased for him to $1,500,000. According to Proxy statement of 2014 year «The Committee believes that these increases reflect market trends, our improved financial performance, resolution of several legacy issues and the additional responsibilities that Mr. Moynihan assumed over 18 months before this change»[44].

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[44] Bank of America 2014 Proxy Statement, p. 49.

Moynihan's stock bonus fell to $11.8 million in 2015, down from $12.5 million in 2014. A drop of $0.7 million from the 2014 year explained by the Bank's attempts to boost its profitability. Bank of America's share price dropped nearly 6% over the course of 2015.

In 2017 the relatively sharp increase in shared-based (in the form of stock awards) and, consequently, in total compensation provided to Mr. Moynihan is linked to the company's annual performance. Firm's pre-tax earnings were up significantly that year. In 2017, expenses fell 1 percent and profit increased 3 percent. In the proxy, the bank pointed to an increase in mobile users and upgraded long-term debt ratings as among Moynihan's accomplishments in 2017.

All that had led to increase in CEO's stock awards compensation from $13,8 million in 2016 to $19,5 million in 2017. In 2018 the amount of stock awards assigned for Brian Moynihan increased by $1 million, while in 2019 that difference tripled and final amount of share-based payment has reached $23.5 million.

The bank's board gave Moynihan $23.5 million in restricted stock and a base salary of $1.5 million for his performance, according to a Securities and Exchange Commission Justifying the pay, the bank pointed to a 42% rally in the bank's stock price, as well as an increase in dividends per share. The filing also cited the bank's "strong returns" and net earnings of $27.4 billion last year.

Graph 2 demonstrates that the CEO compensation plan of Citigroup executive Michael Corbat experienced smooth growth in dollar terms, while its relation to the total payment gradually declined. Total incentive award and annual bonus are based on the overall achievements of Citi and individual performance.
Through the observed period of time the base salary amount of Michael Corbat was continuously equal $1.5 million (besides 2012 year, when it amounted $1,049,188), but bonus part of cash component had fluctuations.

According to Citi's Proxy Statement in 2013 Citigroup CEO Michael Corbat received compensation valued at $14.7 million – that payment included a $1.5 million salary, $5.2 million bonus, $7.9 million stock award. In 2012 he was totally paid $5.4 million, that consisted of $1 million salary, $2 million bonus, $2.3 million stock award.

Corbat in 2014 got a 10% pay cut to about $13.8 million from $14.6 million in 2013.In 2015 Michael Corbat received a $14 million pay package, according to a

regulatory filing. He received $6 million in cash and a $1.5 million salary. The remaining $6.5 million represented by stock awards.

According to a 2017 Proxy Statement Citigroup Inc. cut Mike Corbat's total compensation by 6.1% for 2016 to $15.5 million after the firm's profit declined[45]. Corbat got a $4.2 million cash award and $7.6 million in shares that vest and pay out over a number of years depending on the bank's performance. He also received a $1.5 million salary. The structure of his payment has changed that year: stock award grant increased on $1.1 million, while bonus compensation decreased on $1.8 million in comparison with 2015 year. Corbat got a pay cut for 2016 year due to the fact that profit fell 14% and return on assets failed to meet his 2016 target.

Finally, The Compensation Committee awarded Mr. Corbat $24 million in total annual compensation for 2018, consisting of a base salary of $1.5 million and a total annual incentive award of $22.5 million, an increase of 4% over his total annual compensation for 2017 of $23 million.

"Mr. Corbat's compensation was above market median for the CEO role based on a comparison to CEO pay in our 13-firm compensation peer group, consistent with the results produced by our executive compensation Framework, while at the same time was below the median of CEO pay at other U.S.-based global banks"[46].– claimed in the conclusion. With a purpose to compare amounts of total CEO compensation and identify trends that are specific for each of the bank, average payments for the analyzed period were calculated.

Graph 3. Average Executive Payments from 2012 to 2019, $M
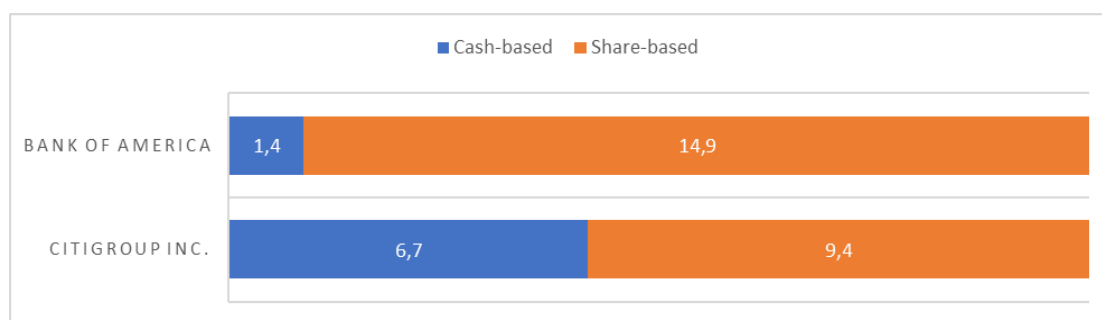
Source: own elaboration, 2020

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[45] CitiGroup Inc 2017 Proxy Statement, p. 49.

[46] CitiGroup Inc 2019 Proxy Statement, p. 85.

Citigroup Inc. and Bank of America executives - Michael Corbat and Brian T. Moynihan - with identical amount of total compensation (around $16,3 million for both) but dramatically different structure of it. It is better noticeable on the Graph №, where renumeration information provided in percent.

Graph 4. Proportion of average payment from 2012 to 2019, %
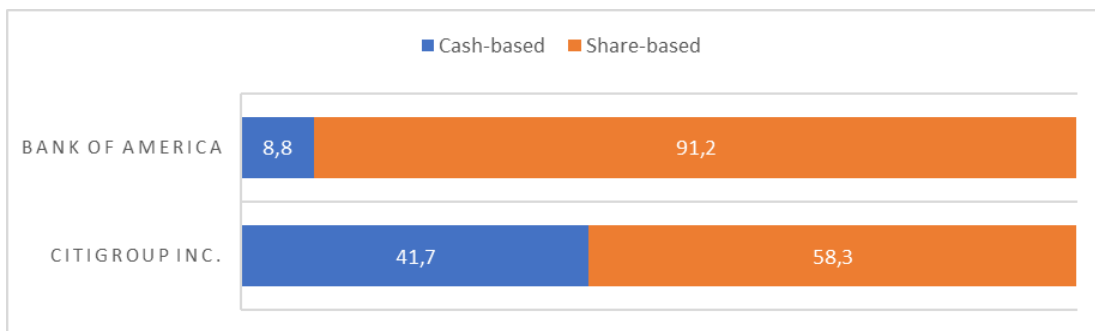
Source: own elaboration, 2020

In Bank of America the amount of cash-based incentives accounts just for 8,8% of total compensation, while for Citigroup Inc. this figure estimated in almost half of total payment – 41,7%.

4.3 Payment structure and firm performance

4.3.1 Return on Assets and CEO compensation

Return on Assets is one of the most commonly used firm performance indicators, that researchers take for evaluation interdependence between executive payment and company results. The favor of the ROA application is explained by its property to compare companies in the same sector or industry as well as its current performance with results of previous periods.

Scientists find the amount of ratio dividing annual company Net Income on its Total Assets. Based on data from Annual Statements of Citigroup Inc and Bank of America the following values of ratio were found:

Table 3. ROA of Citigroup Inc. and Bank of America, 2012 – 2019

Year	ROA	
	Citigroup Inc.	**Bank of America**
2012	0,40	0,19
2013	0,73	0,54
2014	0,40	0,26
2015	0,99	0,74
2016	0,83	0,81
2017	0,84	0,80
2018	0,94	1,20
2019	0,99	1,13
average	0,61	0,71

Source: own elaboration, 2020

Table 3 shows, that average values of ROA and ROE for Citigroup Inc. and Bank of America are almost identical. Following trends shows that Citigroup Inc had prevailing values of its Return on Assets and Equity through sample period from 2012 till 2017 years, and then decreased its growth, what could be explain Tax reform occurred in 2017. It is visible clearly on the Graph 5, shown below.

Graph 5. Dynamic of ROA of Citigroup Inc. and Bank of America, 2012 – 2019
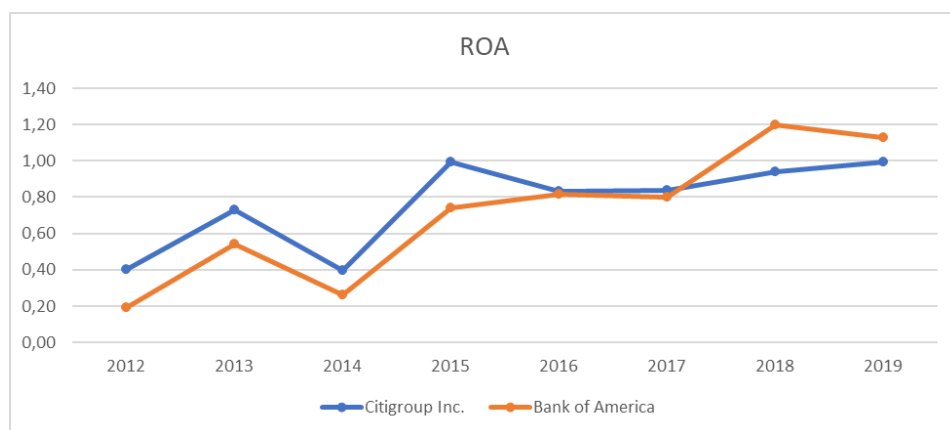
Source: own elaboration, 2020

On February 23, 2018, Citi announced that it was adjusting downward its fourth quarter and full year 2017 financial results. The financial impact of this adjustment

lowered Citi's fourth quarter and full year net income by an aggregate of $594 million due to refinements of original estimates[47].

However, in the Annual Report for 2017 year is stated that ROA for that year amounted 0.84% - excluding the impact from Tax Reform are non-GAAP Financial measures. «The firm generated nearly $16 billion in net income excluding the impact of tax reform, almost $1 billion more than in 2016»[48].

The distribution of ROA values over that period of time changes in a following way:

Graph 6. Changes in CEO compensation structure and ROA of Citigroup Inc. and Bank of America, 2012 - 2019
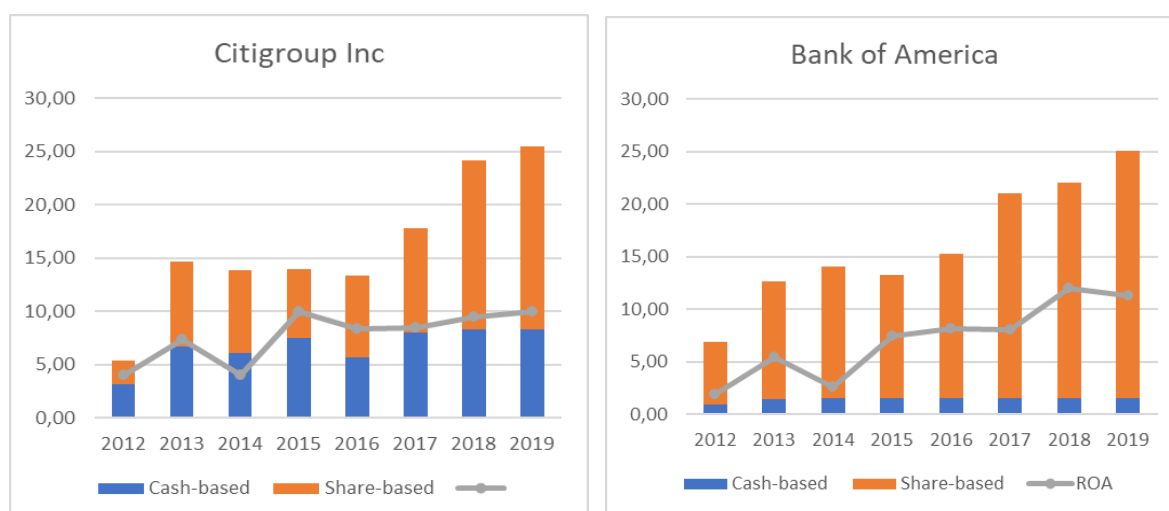
Source: own elaboration, 2020

It is evident from the Graph 6, that for Citigroup Inc. the trend of ROA demonstrates direct relationship with changes in total CEO compensation and specifically with its cash-based part. Since amount of annual salary is stable for the whole period, it is assumed that cash bonus component is to some degree linked to that parameter of firm performance.

The results show that CEO compensation is linked to and influences firm performance simultaneously when compensation is determined as bonus and firm performance is defined as ROA. Firms tie bonus to accounting-based measures, and this performance-based pay enhances firm results.

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[47] Citigroup.com. 2020. Fourth Quarter 2017 Results And Key Metrics.

[48] Citigroup Inc. 2017 Annual Report, p. 85.

In the case of Bank of America CEO compensation, it is noticeable, that there is no direct relationship between ROA and size of payment – for the half of the year's downturn changes in Return on Assets are accompanied by upward changes in stock awards compensation.

From that, it is possible to conclude that in the frameworks of Citigroup Inc. compensation system, the accounting profitability (ROA) is positively associated with total cash compensation, while for Bank of America, who has only equity-based part as a variable payment component, the amount of stock granted is not based on company's annual Return on Assets.

Nevertheless, I cannot rule out the possibility of inverse relationship – higher CEO compensation may improve company performance in general and Return on Assets among others accounting-based results.

With a purpose to estimate the interdependence between ROA and different components of CEO compensation deeper, I used Simple linear regression. I took each of the CEO payment components separately and run regression for its values with ROA amounts, applying Excel tool called Regression. Firstly, I chose Cash-based component as dependent variable and ROA as independent, and then swapped them around. The outcome of that procedure is shown in Table 4.

As a following step, I carried out an analysis on BLUE assumptions of the model, where ROA represented as dependent variable and cash-based amount as dependent. This analysis included checks of autocorrelation, heteroskedasticity and normality.

P-value for Breusch-Pagan test equals 0.29 and it is more than 0.05, what mean that the model fits heteroscedasticity requirements. Similarly for testing autocorrelation (Breusch-Godfrey test) – p-value (0.7188) more than 0.05, what tells that there is no serial correlation. Results of normality test (Jarque-Bera) show that t-statistic (3.904) > p-value (0.14198), which means that we fail to reject Ho that the residuals are normally distributed.

For the model with Cash-based part as dependent variable BLUE assumptions were satisfied as well.

Findings lead to conclusion that obtained values can be used for dependence interpretation ant that for this model it is appropriate to use parametric tools such Pearson's correlation coefficient.

**Table 4. SRA results for ROA and cash-based compensation
in Citigroup Inc.**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,795975935
R Square	0,633577689
Adjusted R Square	0,572507304
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	13,334095	13,334095	10,37454878	0,018115411
Residual	6	7,711619243	1,285269874		
Total	7	21,04571424			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2,356065363	1,406554664	1,675061356	0,144942273	-1,085649914	5,79778064
ROA	5,669478286	1,760185697	3,220954638	0,018115411	1,362459043	9,976497529

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0,017369556	0,239128935	0,072636779	0,944456022	-0,567757869	0,60249698
Cash-based	0,11175238	0,034695422	3,220954638	0,018115411	0,026855741	0,196649018

Source: own elaboration, 2020

First of all, to be able to make following conclusions it is necessary to assess Significance F value, since this indicator gives an idea of how reliable (statistically significant) my subsequent results are. In ANOVA part that value is demonstrated to be equal 0,018, what is less that $\alpha = 0,05$. That allows me to conclude that the regression model is a significantly good fit and dependence between cash-based component in Citigroup Inc. and its Return on Assets takes place.

One more indicator that confirms the statistical significance of the model is a confidence interval, which represented by two last columns – Lower 95% and Upper 96%. That values shows the borders of confidence interval, and according to econometric theory if the confidence interval contains 0 (zero), the parameter is *not statistically significant*.

For each of the characteristics in the table above there is a statistically significant difference in means between ROA and cash-based compensation part, because none of the confidence intervals include the null value. ROA, as an independent variable, has a confidence interval from 1.36 to 9.98, Cash-based compensation payments – from 0.02 to 0.19, what shows that both of them excludes zero, and consequently parameters are statistically significant. The column Coefficients, as one of the most useful components in

this section, gives us more comparable data, based on which following formulas were created:

$$Cash\text{-}based\ Amount\ (\$M) = 2{,}3562 + 5{,}6695 * ROA\ (\%)$$

$$ROA\ (\%) = 0{,}0174 + 0{,}1118 * Cash\text{-}based\ Amount\ (\$M)$$

The estimated coefficients tell us that an increase in ROA by 1% will lead to increase in executive cash-based payment on *$ 5,669 million.* From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual ROA by *0,1292%.*

A similar procedure was applied to run Regression for Share-based compensation part and Return on Assets in Citigroup Inc. and following results were obtained:

Table 5. SRA results for ROA and Share-based compensation in Citigroup Inc.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,647236291
R Square	0,418914817
Adjusted R Squ	0,322067286
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	71,91389945	71,91389945	4,325508502	0,082759324
Residual	6	99,75321896	16,62553649		
Total	7	171,6671184			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,70825883	5,058797386	-0,140005377	0,89323738	-13,0866901	11,67017244
ROA	13,16642116	6,330662456	2,079785686	0,082759324	-2,32415183	28,65699415

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0,467623618	0,159996586	2,922709972	0,026537542	0,076126075	0,859121161
Share-based	0,031816908	0,015298167	2,079785686	0,082759324	-0,00561636	0,069250174

Source: own elaboration, 2020

As it was for model with cash-based compensation, all the assumptions of OLS regression are satisfied for that models as well. But the results obtained via Excel Regression analysis demonstrate that Significance F is equal to 0,082759, what higher than α = 0,05. This value let us make a conclusion about statistical insignificance of that model.

This is also confirmed by borders of confidence intervals, that are ranged from -2.32 to 28,6 for ROA and from -0.006 to 0.069 for payment amount, and therefore obtain zero.

Consequently, it is inappropriate to create a formula based on the Coefficients obtained in the last rows of that table and make any assumptions on its basis.

Results obtained in regression analysis is supported also by Pearson correlation coefficients, which were obtained using following formula:

$$r_{XY} = \frac{\sum_{i=1}^{n}(X_i - \overline{X})(Y_i - \overline{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \overline{X})^2}\sqrt{\sum_{i=1}^{n}(Y_i - \overline{Y})^2}}$$

According to calculations, Pearson correlation coefficient between ROA and cash-based compensation part equals 0.7959759. That value approaches 0,8. what indicates about relatively strong dependence of that parameters. For share-based payment this coefficient equals to 0.6472363.

It is possible to conclude that the values of return on assets of Citigroup Inc. have a stronger interdependence with a cash-based part of CEO compensation, rather than with share-based package.

Pearson's correlation coefficient (r) is a measure of the strength of the association between the two variables. This test is useful since two variables can be measured in entirely different units, what is applicable for economic theory tests, such this investigation, where ROA expressed in percentage points and compensation parts in million dollars.

The disadvantage of this tests is that outcome of this test shows the same value even when dependent and independent variables change places. Consequently, it is impossible to access which of the variables has an influences on changes in another one. It means that using value of Pearson correlation coefficient I can say just about presence of dependence between variables, but cannot conclude how exactly they affect each other.

According to compensation policy of Citigroup Inc Performance Share Units deliver value to executives according to pre-determined financial metrics, one of which is company's Core Return on Assets. It says about anticipated ROA influence on executive share-based compensation part, but as demonstrated at Graph 6 and proved by regression analysis and Pearson correlation coefficient, firm's Return on Assets value linked mostly to cash-based incentive plan component.

Similar procedure was conducted for Bank of America CEO payments and its ROA values from 2012 till 2019.

Table 6. SRA results for ROA and Cash-based compensation in Bank of America

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,596339931
R Square	0,355621313
Adjusted R Square	0,248224865
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0,092541038	0,092541038	3,311294925	0,118670228
Residual	6	0,167682505	0,027947084		
Total	7	0,260223543			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1,20165127	0,136487117	8,804136932	0,000119154	0,867679325	1,535623215
ROA	0,315719534	0,173501216	1,819696383	0,118670228	-0,108822646	0,740261715

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,89660591	0,889424981	-1,008073676	0,352329061	-3,072950436	1,279738616
Cash-based	1,126383623	0,618995363	1,819696383	0,118670228	-0,388243467	2,641010712

Source: own elaboration, 2020

Results of testing the model on BLUE assumption are following: p-value for Breusch-Pagan test equals 0.9757 and it is more than 0.05, what mean that the model fits heteroscedasticity requirements. Similarly for testing autocorrelation (Breusch-Godfrey test) – p-value (0.1826) more than 0.05, what tells that there is no serial correlation. Results of normality test (Jarque-Bera) show that t-statistic (2.318) > p-value (0.14198), which means that we fail to reject Ho that the residuals are normally distributed.

From here it is possible to conclude that applying OLS model and using parametric tools are appropriate in order to assess dependence of ROA on CEO compensation parts and vice versa.

Due to the fact that Significance F is higher than $\alpha = 0,05$ (0.1187), and borders of confidence intervals obtain zero (-0.1088 till 0.7402 for ROA and -0.3882 till 2.641 for Cash-based part) we can conclude that this model is statistically insignificant and prove the findings, that was done in correlation analysis about absence of influence relations between mentioned characteristics.

But in contrast to that findings, the results of regression model for Share-based compensation part and ROA in Bank of America are strongly differ, what is visible in the Table 7.

Table 7. SRA results for ROA and Share-based compensation in Bank of America

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,864968444
R Square	0,74817041
Adjusted R Squ	0,706198811
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	179,4469243	179,4469243	17,82563539	0,005548722
Residual	6	60,40073875	10,06678979		
Total	7	239,8476631			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	4,992258449	2,590412395	1,927206054	0,102239499	-1,34625234	11,33076924
ROA	13,90280014	3,29290931	4,222041614	0,005548722	5,84534132	21,96025895

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,09008855	0,201740657	-0,446556245	0,67086082	-0,58373015	0,403553054
Share-based	0,053814368	0,012746054	4,222041614	0,005548722	0,022625899	0,085002838

Source: own elaboration, 2020

As it was for model with cash-based compensation, all the assumptions of OLS regression for that model are satisfied. The Significance F value equals to 0.005549 (less that $\alpha = 0,05$), what allows to conclude about statistical significance of the model and presence of dependence between Share-based component of payment and annual Return on Assets in Bank of America. None of the obtained confidence intervals for analyzed parameters include the null value. ROA, as an independent variable, has a confidence interval from 5.85 to 21.9, Share-based compensation payments – from 0.02 to 0.09, what allows to confirm that chosen parameters are statistically significant.

The column Coefficients, as one of the most useful components in this section, gives us more comparable data, based on which following formulas was created:

*Share-based Amount ($M) = 4.9922 + 13.9028 * ROA (%)*

*ROA (%) = -0,0901 + 0,0538 * Share-based Amount ($M)*

The estimated coefficients tell us that an increase in ROA by 1% will lead to increase in executive share-based payment on *$13.9028 million.* From the other side, growth in the

share-based compensation part by $1 million would lead to increase in annual ROA by *0,0538%.*

Results of Pearson correlation also prove strong relationship between share-based compensation part in Bank of America and its annual ROA and its amount consists 0,864968444. While for its chare-based payment component it equals 0,596339931.

4.3.2   Return on Equity and CEO compensation

Similarly with a ROA dependence analysis, I used Simple linear regression for ROE dependence analysis for both banks. I took each of the CEO payment components separately and run regression for its values with ROE amounts, applying Excel tool called Regression. Firstly, I chose Cash-based component as dependent variable and ROE as independent, and then swapped them around. The same procedure was carried out for share-based compensation. For each of the models I carried out an analysis on BLUE assumptions, which included checks of autocorrelation, heteroskedasticity and normality. Results showed that for all of the following models created for Citigroup Inc. assumptions of OLS regression are satisfied.

**Table 8. SRA results for ROE and Cash-based compensation
in Citigroup Inc.**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,835923775
R Square	0,698768558
Adjusted R Square	0,648563317
Standard Error	1,388741583
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	26,84276096	26,84276096	13,91823947	0,009728447
Residual	6	11,57161911	1,928603185		
Total	7	38,41438006			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,583514079	2,086409556	-0,279673795	0,789118948	-5,688774348	4,521746189
Cash-based	1,129358324	0,302718948	3,730715677	0,009728447	0,388631743	1,870084905

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2,378887667	1,2135893	1,960208174	0,097666963	-0,590658375	5,348433709
ROE	0,618730604	0,165847697	3,730715677	0,009728447	0,212915908	1,024545299

Source: own elaboration, 2020

Values of R Square, Significance F and confidence interval borders prove the goodness of fit of created models and allow to use obtained Coefficients with a purpose to express changes in dependent variables through values of independent variables. Using its amount following formulas were obtained:

ROE (%) = 2,3789 + 0,6187 * Cash-based Amount ($M)

Cash-based Amount ($M) = -0,5835 + 1,129358 * ROE (%)

Consequently, for Citigroup Inc. an increase in ROE by 1% will lead to increase in executive cash-based payment on *$0,6187 million*. From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual ROE by *1,129358%*.

Two models were constructed also for share-based compensation part in Citigroup Inc., summary outcome for that regression are provided below.

Table 9. SRA results for ROE and Share-based compensation in Citigroup Inc.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,803865705
R Square	0,646200072
Adjusted R Square	0,587233417
Standard Error	1,505047337
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	24,82337515	24,82337515	10,95873718	0,016196706
Residual	6	13,59100491	2,265167486		
Total	7	38,41438006			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	3,416042247	1,201373156	2,843448124	0,029433469	0,476388033	6,35569646
Share-based	0,38026544	0,114869995	3,310398342	0,016196706	0,099188689	0,661342191

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-2,487534021	3,75631654	-0,662226943	0,532422211	-11,67890948	6,703841437
ROE	1,699339471	0,513333833	3,310398342	0,016196706	0,44325683	2,955422112

Source: own elaboration, 2020

Summary output for that models shows that based on R Square value, Significance F and confidence interval borders, it is possible to stay that OLS regression is adequate for estimation of dependence between parameters.

Using amounts of Coefficients following formulas were created:

$$ROE\ (\%) = 3{,}4160 + 0{,}3803 * Share\text{-}based\ Amount\ (\$M)$$

$$Share\text{-}based\ Amount\ (\$M) = -2{,}4875 + 1{,}6993 * ROE\ (\%)$$

Therefore, for Citigroup Inc. an increase in ROE by 1% will lead to increase in executive share-based payment on *$0,3803 million*. Growth in the share-based compensation part by $1 million would lead to increase in annual ROE by *1,6993%*.

Pearson correlation coefficients demonstrate that for Citigroup Inc interdependence between ROE and cash-based payment package (0,8359) is stronger than between ROE and share-based component (0,8039).

Simple linear regression was used analogically for the Bank of America. First of all, the testing model on autocorrelation, heteroskedasticity and normality was carried out. Results showed that for that models all the assumptions of OLS regression are satisfied. However, for cash-based compensation part R Squared consisted only 0.32332 and Significance F is 0.141367 what I more than 0.05 and says about statistical insignificance of the constructed model. Consequently, it is impossible to make meaningful conclusions based on that data. For share-based compensation part following results were obtained.

**Table 10. SRA results for ROE and Share-based compensation
in Bank of America**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,878858905
R Square	0,772392975
Adjusted R Square	0,734458471
Standard Error	1,67695052
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	57,25908467	57,25908467	20,36122505	0,004050396
Residual	6	16,87297828	2,812163047		
Total	7	74,13206295			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-1,051442448	1,713839683	-0,613501052	0,562066013	-5,245057078	3,142172183
Share-based	0,488601116	0,108281061	4,512341416	0,004050396	0,223646905	0,753555328

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	5,042206809	2,421163222	2,08255551	0,082442828	-0,882166172	10,96657979
ROE	1,580825236	0,350333694	4,512341416	0,004050396	0,723589569	2,438060904

Source: own elaboration, 2020

High value of R Square (0.77239) and Significance F value (0.00405) which is less than 0.05 allow to conclude that that the regression model is a significantly good fit and dependence between share-based payment in Bank of America and its Return on Equity persists. The hypothesis about parameters insignificance is rejected because their confidence intervals do not contain 0 (zero).

Based on the column Coefficient following formulas of parameters dependence were created:

Share-based Amount ($M) = 5,0422 + 1,5808 * ROE (%)

ROE (%) = -1,0514 + 0,4886 * Share -based Amount ($M)

The estimated coefficients tell us that an increase in ROE by 1% will lead to increase in executive share-based payment on *$1,5808million.* From the other side, growth in the share-based compensation part by $1 million would lead to increase in annual ROE by *0,4886 %.*

Pearson correlation coefficients demonstrate that for Citigroup Inc interdependence between ROE and cash-based payment package amounted only 0.5686 what says about weak dependence between criteria, while for share-based component it consisted 0.8789. It is also noticeable that correlation between share-based payment and ROE in Bank of America is stronger than its value in Citigroup Inc.

Based on the Coefficients results it is possible to conclude that in Citigroup Inc the influence of share-based compensation part is higher than in the Bank of America (increase on *1,6993%* and *0,4886% respectively).* While backward dependence is opposite - Increase in ROE by 1% will lead to increase in share-based payment on *$0,3803 million* in Citigroup Inc and *$1,5808million* in Bank of America.

4.3.3 Earning per share and CEO compensation

As it was mentioned in theoretical part, company EPS comparison across companies (even among firms in the same field) cannot be useful, because of arbitrary number of outstanding shares. But for analyzing company's performance over time that parameters work effectively. In the case of comparing several companies Growth rate of EPS is better to take into account. That scientific conclusion is supported in this Thesis on the example of chosen banks. The dynamic of Earning per Share for both banks through chosen period of time provided in Table 11.

Table 11. EPS of Citigroup Inc. and Bank of America, 2012 – 2019

Earnings per share, $		
Year	Citigroup Inc.	Bank of America
2012	2,44	0,25
2013	4,34	0,90
2014	2,20	0,42
2015	5,40	1,31
2016	4,72	1,49
2017	5,33	1,56
2018	6,68	2,61
2019	8,04	2,75
average	3,855	1,41125

Source: own elaboration, based on annual statements, 2020

The average value of EPS for period from 2012 to 2019 is amounted 3.855 for Citigroup Inc. and 1.411 for Bank of America. While Citigroup Inc. has EPS average value 3 times more than Bank of America, the difference explained primary by the amount of annual Shares Outstanding – the average value of that indicator consisted 2,888 for Citigroup Inc. and 10,585 for Bank of America.

Due to the fact that the raw values of Earnings per Share cannot be taken for comparison firms' performance, the EPS Growth Rates were calculated.

Table 12. EPS Growth Rate of Citigroup Inc. and Bank of America, 2012 – 2019

EPS Growth Rate, %		
Year	Citigroup Inc.	Bank of America
2013	77,87	260,00
2014	-49,31	-53,33
2015	145,45	211,90
2016	-12,59	13,74
2017	12,92	4,70
2018	25,33	67,31
2019	20,36	5,36

Source: own elaboration, 2020

Besides the fact, that Citigroup Inc. shows 3 time more average value of EPS, it is noticeable, that through period of time from 2012 to 2019 the Bank experienced serial

coefficient decline and, consequently, its dynamic in general is less financially attractive for investors, than dynamic of EPS in Bank of America. Nevertheless, the last mentioned also demonstrates value fluctuations, which are better remarkable on the graph provided below.

Graph 7. Changes in CEO compensation structure and Earnings per Share of Citigroup Inc. and Bank of America, 2012 – 2019
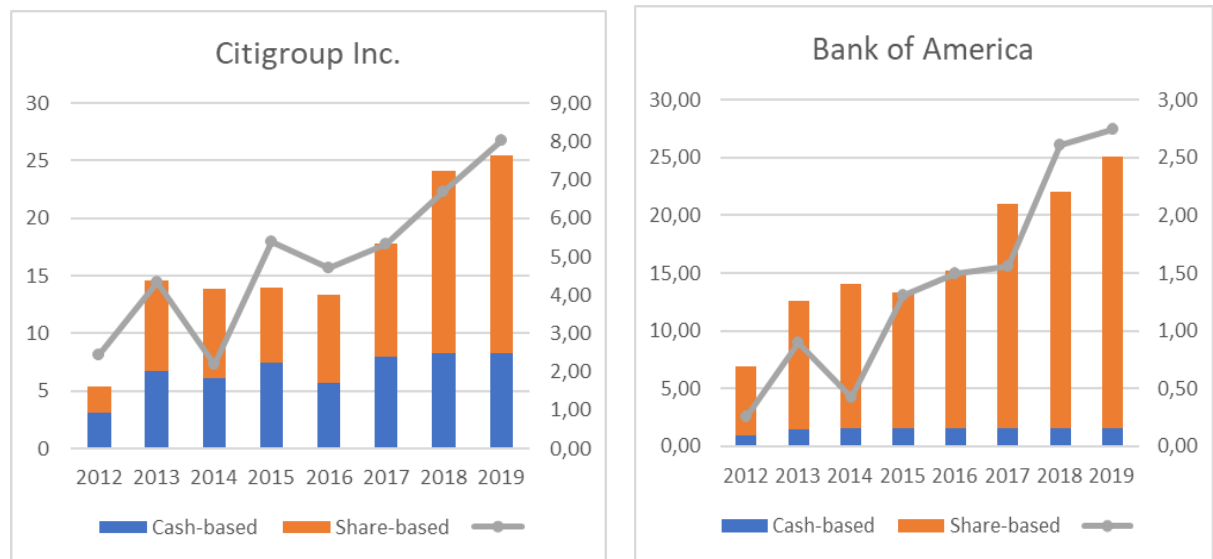
Source: own elaboration, 2020

The sharp reduction in EPS for both banks are explained by decline in Net Income due to the increase in interest rates that occurred in the spring of 2013. "U.S. banks' earnings declined 7.7 percent in the January-March quarter from a year earlier, as higher interest rates dampened demand for mortgage refinancing and reduced banks' revenue from the mortgage business"[49]. For Bank of America it is explained additionally by decrease in Annual Shares Outstanding from 11,491 (Millions of Shares) in 2013 to 10,585 (Millions of Shares) in 2014.

In that year Michael Corbat experienced decline in his total compensation and its cash-based part. In 2016 joint decline in both parameters is visible as well. From here it is

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[49] AP NEWS. 2020. US Bank Earnings Decline 7.7 Percent In 1Q. [online] Available at:
<https://apnews.com/article/4faa00ae7ff24d7a9a3d7352df69a71e> .

possible to make an assumption about influence of ROE on CEO cash-based payment in Citigroup Inc.

With a purpose to analyze independence of parameters better, OLS models was created. The whole procedure duplicate steps which were taken for analysis ROA and ROE dependence. Models appropriateness was tested and models' assumptions were satisfied.

Table 13. SRA results for EPS and Cash-based compensation in Citigroup Inc.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,799980546
R Square	0,639968875
Adjusted R Square	0,579963687
Standard Error	1,276382424
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	17,37527494	17,37527494	10,6652258	0,017124728
Residual	6	9,774912559	1,629152093		
Total	7	27,1501875			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-1,19281845	1,917604052	-0,622035841	0,55680118	-5,885026531	3,499389631
Cash-based	0,90862359	0,278226813	3,26576573	0,017124728	0,227827105	1,589420076

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	3,25186447	1,127741139	2,883520301	0,027928949	0,49238131	6,011347629
EPS	0,704327822	0,215670039	3,26576573	0,017124728	0,176602248	1,232053397

Source: own elaboration, 2020

Due to the BLUE assumption's tests and values of Significance F and confidence interval borders it is possible to say that model is correct and it is appropriate to create formulas based on obtained coefficients.

Cash-based Amount ($M) = 3.2519 + 0.7043 * EPS ($)

EPS ($) = -1.1928 + 0.9086 * Cash -based Amount ($M)

The estimated coefficients tell that an increase in EPS by \$1 will lead to increase in executive cash-based payment on *\$0.7043million.* From the other side, growth in the cash-based compensation part by \$1 million would lead to increase in annual EPS by *\$0.9086.*

**Table 14. SRA results for EPS and Share-based compensation
in Citigroup Inc.**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,852250357
R Square	0,72633067
Adjusted R Square	0,680719115
Standard Error	1,112817267
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	19,72001389	19,72001389	15,924269	0,007196299
Residual	6	7,430173614	1,238362269		
Total	7	27,1501875			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1,71569941	0,888283551	1,931477184	0,101635832	-0,457852137	3,889250957
Share-based	0,33893003	0,08493375	3,990522396	0,007196299	0,131104631	0,546755428

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-1,110642596	2,808110464	-0,395512431	0,706144225	-7,981841369	5,760556176
EPS	2,143010671	0,537025096	3,990522396	0,007196299	0,8289576	3,457063742

Source: own elaboration, 2020

Summary output is adequate for estimation of dependence between parameters, since Significance F value equals to 0.007196 (less that $\alpha = 0,05$), R square amounts 0.72633 and confidence intervals do not include zeros. All that findings allow to conclude about statistical significance of the model and presence of dependence between Share-based component of payment and annual Earnings per Share in Citigroup Inc.

This dependence was expressed using Coefficients from summary output and has the following relationship:

$$\text{Share-based Amount (\$M)} = -1.1106 + 2,1430 * EPS (\$)$$

$$EPS (\$) = 1.7157 + 0.3389 * \text{Share-based Amount (\$M)}$$

The estimated coefficients tell us that an increase in EPS by \$1 will lead to increase in executive share-based payment on *\$2,1430 million.* From the other side, growth in the share-based compensation part by \$1 million would lead to increase in annual EPS by *\$0.3389.*

Pearson correlation coefficients demonstrate that for Citigroup Inc interdependence between EPS and share-based payment package (0,85225) is stronger than between EPS and cash-based component (0,79998). This also proved by the coefficients – an increase in

EPS on 1$ leads to increase on just *$0.7043 million* in cash-based part and on *$2,1430 million* in share-based compensation.

Following results were obtained for Bank pf America after testing models on BLUE assumptions and confirmation in its goodness to apply.

**Table 15. SRA results for EPS and Share-based compensation
in Bank of America**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,906459294
R Square	0,821668452
Adjusted R Square	0,791946527
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	4,815213358	4,815213358	27,64519664	0,001905306
Residual	6	1,045074142	0,174179024		
Total	7	5,8602875			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,692910079	0,42652832	-1,624534754	0,155387428	-1,736587279	0,350767
Share-based	0,141690268	0,026948226	5,257869971	0,001905306	0,075750335	0,20763

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	6,666516262	1,820385025	3,662146289	0,01055244	2,212194572	11,12084
EPS	5,799046493	1,10292695	5,257869971	0,001905306	3,100281467	8,497812

Source: own elaboration, 2020

For Bank of America share-based compensation formulas are calculated in the following way:

$$Share\text{-}based\ Amount\ (\$M) = 6{,}6665 + 5{,}7990 * EPS\ (\$)$$

$$EPS\ (\$) = -0{,}6929 + 0{,}1417 * Share\text{-}based\ Amount\ (\$M)$$

The estimated coefficients tell us that an increase in EPS by $1 will lead to increase in executive share-based payment on *$5,7990 million*. From the other side, growth in the share-based compensation part by $1 million would lead to increase in annual EPS by *$0,1417*.

Summary output for models constructed for cash-based compensation in Bank of America showed low values of R Square (0.287), high value of Significance F (0.171 > 0.05) and confidence interval contained zero amounts. From that model it is inappropriate

to make comclusions about variables influence on each other. Changes in EPS do not explain changes in cash-based compensation part and vice versa.

Low dependence between Bank of America EPS and cash-based CEO compensation is proven by Pearson correlation coefficient which equals 0,536171. While for share-based payment its value amounts 0,90646 and tells about strong interdependence between parameters.

4.3.4   Market Value and CEO compensation

It is intuitive, from an incentive point of view that the higher the market value for a company, the higher the CEO salary should be. The trends of Market value for both banks were compared to changes in its compensation components and results are shown below.

Graph 8. Changes in CEO compensation structure and Market Value of Citigroup Inc. and Bank of America, 2012 – 2019
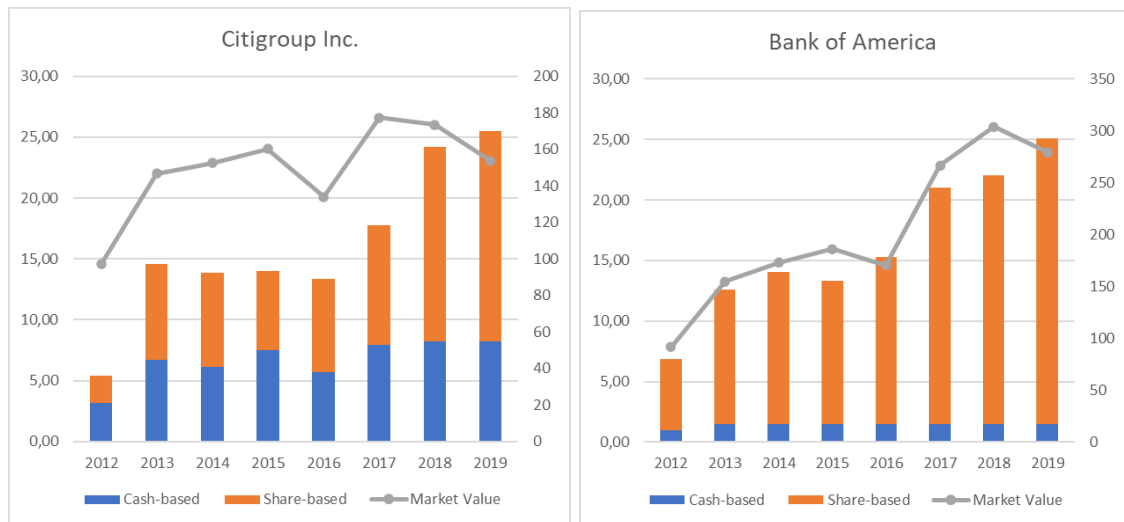
Source: own elaboration, 2020

From the Graph 8 I make an assumption about presence of dependence between Cash-based compensation part and Market Value in Citigroup Inc. and Share-based payment and Market Value in bank of America. For Citigroup Inc. it is visible that for most of the year's growth in Market Value is accompanied by increase in cash-based compensation part, as it also works for share-based payment in Bank of America.

In order to prove or deny these assumptions based on the constructed figure, regression analysis was constructed for each of the pairs of Market Value amounts and

compensation parts sequentially for each Bank. For each of the models all the assumptions of OLS regression are satisfied. Consequently, it is appropriate to apply regression analysis.

Table 16. SRA results for Market Value and Cash-based part in Citigroup Inc.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,934907566
R Square	0,874052157
Adjusted R Square	0,85306085
Standard Error	9,697200257
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	3915,530343	3915,530343	41,63876742	0,000656273
Residual	6	564,214157	94,03569283		
Total	7	4479,7445			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	57,9685993	14,5688237	3,978948507	0,007291997	22,31997194	93,61722666
Cash-based	13,63997148	2,113803096	6,452810815	0,000656273	8,467681633	18,81226133

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-2,870956797	1,501519352	-1,912034496	0,104412965	-6,545042294	0,803128699
Market Value	0,064080204	0,009930588	6,452810815	0,000656273	0,039780931	0,088379477

Source: own elaboration, 2020

Using Coefficients of regression analysis following formulas were created:

Cash-based Amount ($M) = -2.8709 + 0.064 * Market value ($B)

Market value ($B) = 57.9686 + 13.640 * Cash -based Amount ($M)

For Citigroupn Inc. results are following - the estimated coefficients tell that an increase in Market value by $1billion will lead to increase in executive cash-based payment on *$0.064 million*. From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual Market value by *$13.640 billion*.

For the share-based compensation summary models output showed Sifnificance F value more than 0.05 (0.0818), low R squared (0.42083) and zeros among borders of confidence interval. That leads to conlusion about statistical insignificance of that models. Identical results were obtained during regression analysis for Market Value and cash-based compensation in Bank of America.

For share-based package it nevertheless demonstrated strong dependence between parameters and following summary output:

**Table 17. SRA results for Market Value and Share-based part
in Bank of America**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,962272726
R Square	0,9259688
Adjusted R Square	0,913630267
Standard Error	21,37509715
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	34288,54129	34288,54129	75,04691001	0,000130478
Residual	6	2741,368669	456,8947781		
Total	7	37029,90996			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	25,61959559	21,8453015	1,172773724	0,285334947	-27,83393154	79,07312273
Share-based	11,95657409	1,380194688	8,662961965	0,000130478	8,579359347	15,33378882

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0,884697809	1,915492159	-0,46186449	0,660450581	-5,571738273	3,802342655
Market Value	0,077444324	0,008939705	8,662961965	0,000130478	0,055569654	0,099318994

Source: own elaboration, 2020

Using Coefficients of regression analysis following formulas were created:

Share-based Amount ($M) = -0.885 + 0.0774 * Market value ($B)

Market value ($B) = 25.6196 + 11.9566 * Share-based Amount ($M)

Dependence between estimated parameters in Bank of America described with following numbers - an increase in Market value by $1billion will lead to increase in executive share-based payment on *$0.0774 million*. From the other side, growth in the share-based compensation part by $1 million would lead to increase in annual Market value by *$11.9566 billion*.

5. Results

This chapter represents the overall summary for the analysis provided in Practical part. It consisted of creating Simple regression models, testing them on BLUE assumptions and building formulas based on obtained coefficients. Additionally, variables interdependence was tested using Pearson correlation coefficient. Calculated amounts which describe interrelationship between CEO compensation parts and firm performance indicators provided below.

5.1 Pearson correlation coefficients

In Bank of America values of Pearson correlation coefficients more than 0.85 for all the cases where analyzed firm performance indicator was measured with share-based compensation part. Amount of correlation equals 0.8789 between company's ROE and share-based executive payment, for EPS this value account for 0.9065.

For Citigroup Inc. highest values of Pearson correlation coefficients were shown conversely in measuring dependence with cash-based component of CEO payment for all of the firm performance criteria and additionally between ROE and share-based part (0.8039) and EPS and share-based part (0.8523).

5.2 SRA results for Citigroup Inc.

Based on the summary outputs for every constructed Simple linear regression model following results were obtained. The estimated coefficients tell us that an increase in ROA by 1% will lead to increase in executive cash-based payment on *$ 5,669 million.* From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual ROA by *0,1292%.*

Consequently, for Citigroup Inc. an increase in ROE by 1% will lead to increase in executive cash-based payment on *$0,6187 million* and in share-based payment on *$0,3803 million*. Growth in the cash-based compensation part by $1 million would lead to increase in annual ROE by *1,129358%*, while increasing of share-based compensation part by $1 million would lead to increase in annual ROE by *1,6993%.*

The estimated coefficients tell that an increase in EPS by $1 will lead to increase in executive cash-based payment on *$0.7043 million* and in share-based payment on*$2,1430 million.* From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual EPS by *$0.9086,* while increasing of share-based compensation part by $1 million would lead to increase in annual ROE by*$0.3389.*

For Citigroupn Inc. results are following - the estimated coefficients tell that an increase in Market value by $1billion will lead to increase in executive cash-based payment on *$0.064 million*. From the other side, growth in the cash-based compensation part by $1 million would lead to increase in annual Market value by *$13.640 billion*.

5.3 SRA results for Bank of America.

Growth in the share-based compensation part by $1 million would lead to increase in annual ROA by *0,0538%,* in annual ROE by *0,4886 %,* in annual EPS by *$0,1417* and to increase in annual Market value by *$11.9566 billion*.

Opposite dependence is foollowing: increase in ROA by 1% will lead to increase in executive share-based payment on *$13.9028 million,* 1% increase in ROE will cause increase in CEO share-based payment on *$1,5808million.* EPS growth by $1 will lead to increase in executive share-based payment on $5,7990 million. Market value increase by $1billion will cause increase in share-based payment on $0.0774 million.

6. Conclusion

Study on the subject of agency problem showed rapidly growing application of stock options and stock awards in firms in order to align interests of companies' CEOs (agents) and their shareholders (principals). Scientists in the field of agency theory investigated changes in executive renumeration applied by firms in varied industries and sectors, and observed significant proportional advantage of share-based part in CEO pay over its cash-based part.

The essential idea behind that is a principals' desire to make agents behave as shareholders and focus on long-term development. With that concept in mind firms' governance could determine for their CEO fixed amount of cash-based compensation, while all other payment would be paid in shares, that typically vest over a few years. Cash compensation including basic salaries and bonus plans is mostly used as an entitlement program rather than a motivation program for stimulating performance.

My main intention was to compare different approaches to structure of executive compensation and determine if cash-based component have influence on core characteristics of firm performance or should it be universally replaced by share-based compensation.

In this research I examined the relationship between CEO compensation parts (cash payments and share-based renumeration) and different criteria of firm performance (accounting and market-based). For that analysis I chose two USA Banks, which both belong to The Big 4 US banks. They were chosen for the analysis due to the fact, that they have relatevely identical amount of total CEO compensation, but different structure of it - Citigroup Inc., which has relatively equal relationship between non-equity and equity-based payment, and Bank of America, which has incentive plans, where equity-based compensation is extremely dominant.

For this analysis I created Simple regression models, which allowed me to assess influence of CEO compensation parts on companies' performance values and vice versa. As firm performance criteria I chose Return on Assets, Return on Equity, Earnings Per Share and Market Value.

As expected, all of the indicators appears to be a significant explanatory and explained variables in every regression analysis, with the difference in its linkage to executive payment component in each bank. For Bank of America, as it was predicted, accounting

and market-based performance criteria have high interdependence with share-based compensation part – stock option and stock awards. While for Citigroup Inc. regression provided mixed results – all of the analyzed indicators are influenced by changes in cash-based compensation part and two of them (ROE and EPS) are linked to share-based component as well.

In Citigroup Inc. the coefficients of Return on Assets and Earnings Per Share are statistically significant in every model as an explanatory and explained variable for both cash and share-based compensation. Strong interdependence of that values with cash-based compensation part provide an evidence of its presence reasonableness in executive compensation package.

Most of the studies in this field put emphasis on total CEO comensation on firms' performance without separation between cash-based and share-based payment. This Thesis raised a question about implementation significance of each part and provided a proof of meaning of both of them. Future studies may extend this research by constructing a model using panel data, which include more analyzed companies.

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