BEHAVIORAL FINANCE – THE MANAGER'S PAY AND THE INCREASE IN THE VALUE OF A COMPANY

***Ewelina Niedzielska*[1]**

Abstract
This article analyses the influence of the compensation model on the managers' actions, which is related to the increase in the value of companies in the long term. The aim, however, is to highlight the need to consider also behavioral paradigm by researchers and shareholders. The following paper presents both a prospect theory proposed by Daniel Kahneman and Amos Tversky and possible application of this approach to the analysis of the managerial pay, as well as a review of research into this field carried out in recent years.
Keywords: *the structure of remuneration, behavioral finance, prospect theory, behavioral corporate finance, behavioral paradigm.*

1. Introduction – anomalies in neoclassical finance paradigm

Before analyzing how the structure of remuneration affects the manager's decisions regarding behavioral finance, it is necessary to explain fundamental premises of this paradigm, and indicate differences existing between this paradigm and neoclassical economics. Generally speaking, modern finance is based on two interrelated ideas: market efficiency and the concept of the rational man. Currently, this approach is a mainstream academic finance approach (Zielonka, 2003, p. 8), and is also the basis of finance models in the neoclassical paradigm (Gajdka, 2013, p. 20, as cited in Czekaj, Woś & Żarnowski, 2001; Buczek, 2005). Economists and financiers assume, according to the market efficiency premise, that the responses of investors to any incoming information are immediately reflected in stock prices (Zielonka, 2003, p. 6). While seeking to maximize utility, economic agents interpret this information thoroughly and behave in a rational way (Gajdka, 2013, p. 19; Zielonka, 2003, p. 6). Such a vision of human nature resulted, on the one hand, in the possibility of building economic models, but on the other hand – in the axiomatisation of human behaviozr, which is contested more and more often (Giza, 2014, p. 46). The well-known *homo economicus*

1 Ph.D. Student, Department of Finance and Strategic Management, Faculty of Management, University of Lodz, Lodz, ewelina.niedzielska@unilodz.eu.

model seems to be poor as far as the analysis of the dynamics of economic agents' psycho-social characteristics is concerned and therefore does not provide accurate data (Dudziak, 2013, p. 25). In relation to the neoclassical theory, some fundamental questions are put forward. Firstly: Are the markets really effective? Secondly: Do economic agents actually behave in a rational way (Zielonka, 2003, p. 11; Szyszka, 2009, p. 6)? If a phenomenon does not meet the premises of traditional finance, they are considered as the so-called "anomalies" (Mielcarek, 2014, p. 28-29). T.S. Kuhn notes that "*anomalies are revealed only when referred to paradigms. The tighter and more general paradigm is, the more sensitive indicator of anomalies it becomes*"(Kuhn, 2001, p. 122-123). One of the examples is *the subprime* crisis (2008-2010) when the phenomena difficult to explain basing on the neoclassical paradigm were actually accumulated. In fact, it showed that the behavioral "weaknesses" are not only characteristic of economic agents, but also of those who were supposed to support market processes (credit rating agencies) and market regulators (central banks, financial supervision institutions, etc). (Cone, 2009 p. 6). In this context, it seems particularly important to determine the scope of what is called an anomaly on financial markets, and the real motivation of economic agents. Even if this reflection does not help to bring above-average returns, it will certainly facilitate to avoid losses (Pera, 2013, p. 411). It is worth noting that many results considered as anomalies on the basis of the efficient market premise disappear when a methodology different from the one producing the results is applied (Gajdka, 2013, p. 188). Paradoxically, therefore, the recent crisis had an impact on the development of economic sciences in the sense that it prompted the researchers to draw attention to the possibility of an interdisciplinary approach to the analysis of the market. Thus starting to research into such domains as behavioral finance, neuroeconomics, or psychological economics (Walczak, 2014, p. 58). This was partly because explaining these phenomena on the basis of mainstream research was nearly impossible (Zielonka, 2003, p. 15).

Due to the fact that behavioral finance is based on entirely different and sometimes opposing premises than the neoclassical finance, it, therefore, offers an alternative way of analyzing business processes. As it abandons the standard construct of *homo economicus* and accepts the imperfectness of the human mind, it describes the activities of both individual and professional economic agents with psycho-social flaws (Cone, 2009, p. 6). Numerous studies have proved that deviations from rationality can no longer be considered only as anomalies, but as a widespread phenomenon. Therefore, the essence of behavioral finance is an attempt to find the real mechanisms responsible for the economic agents' motivation and decision-making. The behavioral paradigm can be seen as an attempt to build a theory that takes

into account psycho-social agents, which previously were considered as "anomalies" (Graczyk, 2002, p. 19).

2. The essence of behavioral finance

It must be noted that what is today called behavioral economics or behavioral finance has been developing since the very beginning of economics. The starting point for Adam Smith was actually the analysis of human nature and the search for answers to the question about what guides man in the economic life (Giza, 2014, p. 47). However, it was Herbert Simon that was the first person to question the concept openly of the rationality of human nature in the 1950s. He proposed the theory of bounded rationality[2], which was an alternative to the then binding Morgenstern and Neumann's theory. However, the most intellectual conception of man and his activities regarding financial actions was proposed by Daniel Kahneman and Amos Tversky in their *Prospect Theory* (Kahneman & Tversky, 1979). This theory takes into account empirical data associated with the decision-making under uncertainty, thus indicating that human behavior is not consistent with the model of expected utility (Zielonka, 2003, p. 23).

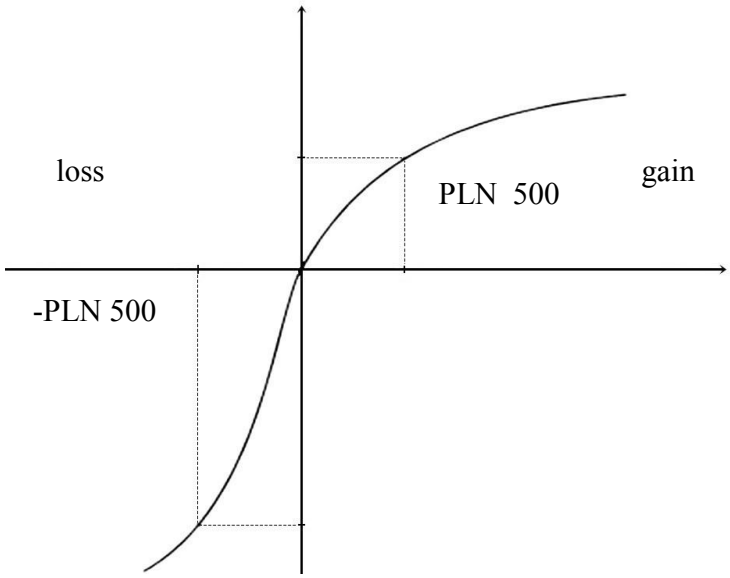

Figure 1. The gains and losses function. The prospect theory

Source: Zielonka (2003, p. 22).

2 In his view, the achievement of full rationality by a human is not possible due to the limited information processing, insufficient amount of time, lack of knowledge about all the alternative decision-making possibilities and inadequate computing concepts (Kotlarek, 2014, p. 106–108, as cited in Simon, 1955).

The prospect theory (Figure 1), which is the reflected upon in this paper, consists of two parts. In the beginning, Kahneman and Tversky proposed replacing the function of expected utility with the function of value. The former function focused on the category of wealth (Zielonka, 2003, p. 23), while the latter also included losses, which seems to be fundamental for the theory itself. In the presented theory, profit and loss are not mirror images. The curve for gains is convex and less steep than the concave curve for losses, which is commonly explained by the following saying: "losses loom larger than gains" (Kahneman & Tversky, 1979, p. 279), (see Table 1). This difference reflects people's attitude to risk (Zielonka, 2003, p. 23). The prospect theory centers around loss aversion, and not around risk aversion, as it used to be considered widely (Martin, Gomez-Mejia & Wiseman, 2013, p. 453). Gains and losses are relative to a "neutral point of reference" which, according to the creators of the theory, corresponds mostly to the current state of human wealth. To understand the point of reference, it is crucial to take into account the fact that its location may be affected by the decision-making perspective (Kahneman & Tversky, 1979, p. 274). Kahneman and Tversky described this point as some kind of status quo, which precisely does not allow to define this element of the theory. It is absolutely crucial for the researchers on the structure of remuneration in the behavioral paradigm, as they try to answer the question of how managers define the point of reference, and, as a consequence, what they will regard as a loss and what as a gain. In the second part, the authors of the prospect theory focused on the problem of estimating the probability of events outcome and proposing subjective decision-making value function (Kraciuk, 2013, p. 373). Because, as the authors say, people have limited cognitive abilities under extreme circumstances, events of low probability are either ignored or overvalued (Kahneman & Tversky, 1979, p. 282-283), unlike events of high probability which usually remain undervalued (Kahneman & Tversky, 1992, p. 298). Therefore, human reactions form a matrix in which, depending on the context of a decision situation, either risk aversion or risk seeking is revealed.

Table 1. Risk attitude – prospect theory

	Gain	**Loss**
Medium and high probability values	Risk aversion	Risk seeking
Very low probability values	Risk seeking	Risk aversion

Source: Zielonka (2006, p. 87).

By incorporating psychological agents into the economic model of a human, it became possible to prove that it has only a limited rationality,

and the axioms of neoclassical concept were refuted and replaced by a new concept – the emotional human (Dudziak, 2013, p. 26).

3. The structure of a manager's salary in the behavioral paradigm

As standard economics is said to describe human behavior in an unrealistic manner, behavioral finance aims at finding alternative answers to the questions related to the functioning of the entities in the economic context (Solek, 2010, p. 24). This approach calls for a repeated reflection on three questions: who is the manager, what affects his motivation to work and how does his decision-making process look like?

The consequence of a shift in thinking about the capital market is a totally new way of reflection on the financial management of companies and corporate governance. The studies conducted in recent years have indicated that behavior is deviating from what is defined as a rational one, is a characteristic of not only ordinary economic agents but also of managers. The study carried out by Andriy Bodnaruk and Andrei Simonov in 2015 tried to answer the question whether finance experts make better investment decisions than non-experts. The subject of the analysis was the disposition effect, i.e. the mistake of too rapid selling off of shares whose prices are rising while keeping the shares whose prices are falling (Zielonka, 2005). Due to the fact that managers could have had greater knowledge (through professional relationships) about some investment funds than average economic agents. The researchers excluded them from managers' portfolio, and tested only those funds with which managers were not connected to in any way; it turned out that statistically there is not a discernible difference between the behavior of the control group (non-experts) and experimental one (managers). The risk diversification analysis yielded similar results. Managers showed a level of portfolio concentration similar to the group of non-experts, and therefore the Sharpe ratio of these two groups did not differ significantly. The researchers were not able to prove that managers are less prone to behavioral errors than "non-experts" (Bodnaruk & Simonov, 2015). Hersh Shefrin lists 3 groups of psychological inclinations, which managers are particularly burdened with: (1) systematic deducing errors (excessive optimism, overconfidence, selective perception, confirmation and illusion of control), (2) heuristics (representativeness heuristic, affect heuristic, availability heuristic, and anchoring heuristic), (3) the effect of presentation (framing heuristic)[3] (Gajdka, 2013, p. 36-37, as cited in Sherfin, 2007). Paying attention to these phenomena sheds new light on the issue of corporate governance, agency theory and constructing the optimal compensation model. In recent years, the issue of skillful planning

3 It should be noted that this division is not arbitrary in behavioural finance.

a compensation model has become more valued for two reasons. Firstly, it is a result of the abovementioned financial crisis. According to EU experts, inappropriate compensation model, which was used in many institutions, was one of the reasons for taking an excessive risk by the decision makers (Mikołajek-Gocejna & Podedworna-Tarnowska, 2013, p. 362).[4] Secondly, the appropriate compensation model is thought to be a key motivational agent for managers who not only would, using the language of agency theory, make the interests of agents and principals coincide but would also contribute to gain a competitive advantage. Therefore, both Polish and pan-European institutions pay attention to the issue of managers' pay. In 2009, the Commission Recommendation on remuneration policies in the financial services sector made companies implement the "reasonable remuneration policy", where bonuses are correlated with long-term objectives of the company (Klepczarek, 2014, p. 170). A year later, the European Parliament issued a Directive (2010), as a result of which the Polish Financial Supervision Authority introduced an obligation to pay a minimum of 50% of the variable remuneration in shares or other financial instruments, as well as the distribution of bonus payments (at least of 40%) in the period from 3 to 5 years (Polish Financial Supervision Authority [PFSA], 2011). One of the points of Stock Exchange Best Practices of 2016 (2016, VI.Z.2) reads as follows: "In order to link the remuneration of board members and executives with a company's long-term business and financial objectives, the period between options or other instruments connected to a company's shares granted under the incentive program and the possibility of their exercising should be at least 2 years" (Stock Exchange Best Practices, 2016, VI.Z.2). Similarly, the government's proposed amendment to the so-called "Public Sector Salary Cap Act" stresses the need to optimise the compensation model, in which variable remuneration of the managers from state-owned companies should be established at a level from 50% to 100% of fixed remuneration (Ministry of Treasury Republic of Poland (MOT), 2016).

4. Managers' compensation components and long-term actions

The compensation of managers can be divided into fixed and variable ones. Fixed compensation is the basis for payment, and stems from the very fact of being employed. The second type of compensation can depend on the internal indicators of the company (accounting ones) or external indicators

4 The managers' compensation model at Lehman Brothers was changed in in 2007. On the one hand, contrary to the bank policy, managers' remuneration was focused primarily on short-term goals. On the other hand, part of the remuneration such as "contingent shares" that would motivate managers to pursue long-term goals, was granted free of charge to managers (Klepczarek, 2014, p. 164). From the perspective of behavioural finance, this means that the bank did not try to put managers in the area of potential losses, which meant they did not have to demonstrate their loss aversion because every stock price higher than zero would be a gain.

(e.g. share prices). It is worth noting that the cited regulations concentrate on the payroll variables conditioned by external indicators. In this case, the manager may have to deal with two types of salaries, which differ in the level of liquidity, i.e., the possibility of converting the security for cash. If the compensation package includes shares, such a possibility is immediate, but in the case of stock options, it is deferred. From the point of view of a manager, compensation can be divided into two kinds of cash inflow: the certain and predictable, as well as uncertain and unpredictable ones. In the context of long-term action, such separation becomes particularly significant. Research and development projects, for example, have the following characteristics: high capital investment, long lead times, and agents' skills that are difficult to identify (Kisielnicki, 2013, p. 20-25). Therefore, the implementation of these projects can lead to an increase in the value of the company in the long term and gain a competitive advantage, but it is also burdened with high risk. Firstly, the financing of such activities could endanger the liquidity of the company (Woźniak, 2012, p. 221). Secondly, they are associated with uncertainty as to the expertise necessary to complete the project. Thirdly, the implementation time has an impact on the instability of internal and external parameters of the project (Kisielnicki, 2013, p. 86-89). In such a situation, the only predictable inflow into managers' private portfolio is their base pay. The studies conducted so far show that managers include in advance their not received, yet possible to count, base pay into their current wealth. Wiseman and Gomez-Mejia also show that the base pay is usually allocated by the manager for the expenses to maintain the current standard of living (e.g. current bills) (Wiseman & Gomez-Mejia, 1998, p. 140). However, it is not the case for the other remuneration components. It is assumed that variable remuneration as such should motivate managers to invest in the projects aimed at increasing the wealth of shareholders, due to the fact that they themselves will benefit from such actions (Sanders, 2003, p. 479). The additional deferred instrument of variable remuneration should be motivating manager to take action to increase the value of company shares in the long term (Woźniak, 2012, p. 213-214; Borkowska, 2012, p. 424). This is due to the fact that stock options are subject to a fixed (usually several years) redemption time, i.e. the exercise of options (Borkowska, 2012, p. 424). In connection with the subject of this article, the author considers the above as crucial.

Under the behavioral paradigm, the variable remuneration is regarded by managers as a "bonus". It is not possible, at least in theory, to predict shares price, so funds from cashing them are spent by managers on luxury goods like holidays, which are not necessary to maintain the standard of living (Wiseman & Gomez-Mejia, 1998, p. 140).

5. The impact of the variables related to a company on receiving incentives by managers in the long run

Adopting the manager's perspective, while analyzing the optimal compensation model, indicates two phenomena. Firstly, it seems that the natural reference point for managers will be the calculable base pay, which they should receive during the term of the contract. Therefore, loss aversion, a characteristic of prospect theory, should manifest itself in managers for fear of losing the base pay by being made redundant or when a company goes bankrupt. Secondly, the implementation of long-term projects, which are by definition burdened with high risk, provokes a conflict between generating "a gentle income stream," and taking risky actions by managers (Wiseman & Gomez-Mejia, 1998, p. 139). Not only will the former solution not provide the company with a significant increase in value in the long term and managers with additional income, but also it will reduce the likelihood of losing the base pay. The latter solution, in turn, can increase a company's value, and thus managers' income, but also worsen a company's liquidity or lead to the loss of managers' permanent source of income. Under this approach, the assumption about the positive effects of variable remuneration determined by share prices on the willingness of managers to undertake projects to raise the value of the company should be regarded as invalid. Both the creators of the prospect theory and today's researchers studying the remuneration according to the behavioral current pay attention primarily to the context of decision-making that affects the setting of the reference point of the manager's portfolio. It should also be noted that a large role in receiving incentives is played by managers themselves. Therefore, in the context of the influence of remuneration on managers' actions to increase the value of the company, the author of this paper proposes to review both the business operation variables (profitability, availability of financial resources, industry) and those linked to managers' personality (disposition, seniority).

In 2003, Greve conducted a study to verify the applicability of the behavioral theory to R&D spending. The studies validated two hypotheses: (1) the relatively lower company's performance to managers' aspirations, the more intensive company's R&D action; (2) the relatively higher company's performance When the performance of the company to the aspiration level, the lower rate of starting R&D actions. In this case, the point below which the results will be considered a failure is called "the aspiration level" (Greve, 2003, p. 686, as cited in March & Simon, 1958). Also, defined as "the smallest satisfactory result in the decision maker's opinion" (Schneider, 1992, p. 1053). The interpretation of the results is consistent with the predictions of the prospect theory. Poor performance increases tolerance for risk-taking because

managers consider profit below their level of aspiration as a loss. Therefore, to avoid it, they are willing to take risky actions (Kahneman & Tversky, 1979). However, the Wu and Tu researchers received quite different results when they included the variable of stock options as a form of remuneration in their study. The hypothesis, validated, later on, was as follows: compensation in the form of stock options will play a positive role in spending on research and development activities when business performance is high than when it is low (Wu & Tu, 2007).

Hence, the relationship between the deferred variable remuneration and the willingness to undertake long-term innovation projects by managers is moderated by business performance (see Figure 2), which affects the perception of managers and their decision-making process. When business performance is poor, managers may feel forced to seek immediate solutions to the situation. Therefore, they focus on short-term actions. In this context, the potential loss is significant, as managers may lose income already included in their standard of living if the trend remains negative. Numerous researchers (Wu & Tu, 2007; Martin et al., 2013) also indicate that even unsold shares carry a potential loss represented by their current price. Thus, the poor financial situation of the company is correlated with managers' income in two ways: by the said possible loss of the base pay and by the decrease in the shares or options prices.

Therefore, only when the performance is at a high level and the company has accumulated available funds[5], can the manager focus on the potential benefits associated with an increase in the shares price in the long term. In such a situation, granting managers a large portfolio of stock options can bring the expected results (Wu & Tu, 2007). The situation is complicated, however, if we consider the company's business activity. The increase in the value of the company, also in the long term, does not necessarily make managers motivated to start projects with a several-year deadline. In the technology business, works on innovative solutions that help to achieve competitive advantage can be regarded as permanent and critical ones for assessing the success of the manager. The study carried out by American researchers (Balkin, Markman & Gomez-Mejia; 2000) showed that technology companies prefer to reward their managers with shares than stock options, which means that they are put in the situation which relatively quickly may lead to a loss for them. If we refer to the Wu and Tu's studies, it may mean that the manager should be motivated to short-term action because the value of both the base pay and shares is endangered.

5 Interestingly, the study did not show statistical significance for the relationship between the available funds of the company and undertaking research and development investment by managers (Wu & Tu, 2007).

6. The impact of the variables focused on managers on their reception of incentives in the long term

Unfortunately, research on the impact of the compensation model on managers' decision-making despite taking into account external variables, i.e. in the corporate context, cannot be considered as complete, and the completion of the analysis at this level as satisfactory. Managers themselves are also crucial – their seniority and disposition, which is the most difficult to grasp by financiers.

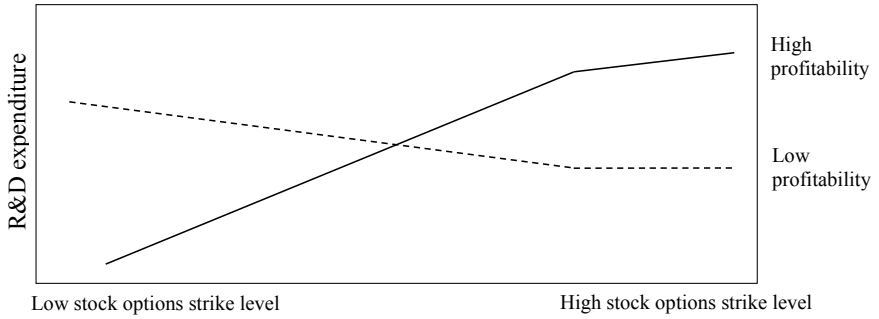

Figure 2. Moderating role of the company's performance
Source: Wu & Tu (2007, p. 488).

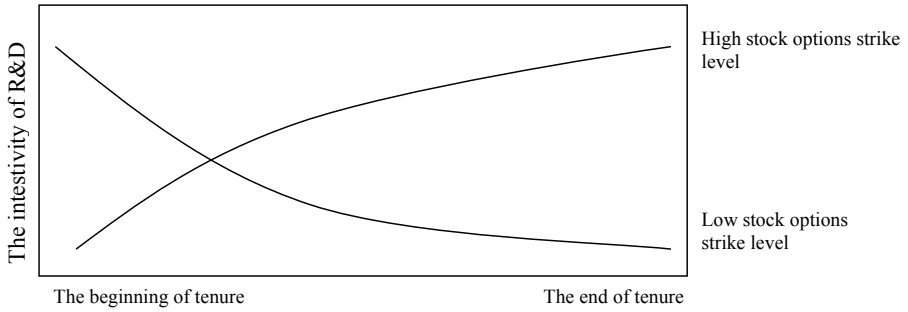

Figure 3. The manager tenure and his pay juxtaposed with R & D activities
Source: Zona (2016, p. 571).

In 2016, Zona conducted a research, which yielded two conclusions. Firstly, the stage of managers' tenure significantly affects the impact of the remuneration on their taking risky actions (Figure 3). Secondly, the remuneration stimulates managers' actions differently in the initial and the final stage of their tenure. Zona showed that if the managerial compensation

model was complemented by a relatively large number of stock options, the intensity of a company's research and development investment will increase, but will decrease in the final stage of the phenomenon. However, while analyzing actions from the beginning of the tenure at the same options strike level, the reverse effect was observed.

Paradoxically, the greater intensity of research and development was at those companies whose managers were given a relatively small number of stock options at the beginning of their tenure. Similarly, a large share of stock options in the general remuneration of novice managers decreased the intensity of their research and development investments (Zona, 2016, p. 571). To explain this mechanism, it is necessary to refer to the problem of the reference point again and to how managers can define a loss at the beginning and, at the end of their tenure. According to the author's research, managers can take the expectations of shareholders as the reference point at the beginning of the tenure. Therefore, if the remuneration is based on the external financial indicators, managers feel that it is expected from them to increase the company's value as a result of their actions. However, due to the fact that they are at a potential loss at the beginning of the tenure because they have included the future remuneration in the current wealth) (Wiseman & Gomez-Mejia, 1998, p. 140), it can be assumed that they will be more willing to choose a short-term risk. By doing so, they will demonstrate their ability to meet the shareholders' expectations, thus averting the possibility of being dismissed. However, the later stage of the tenure is, the smaller potential losses are. Then, managers' deferred pay can fulfil their function (Zona, 2016, pp. 562-563). Nevertheless, what must not be neglected is the fact that the exercising of stock options becomes more and more real in the final stage of the tenure, which undoubtedly can be considered as a major stimulator of managers' behavior.

It is worth considering, though, whether the level of the individual compensation elements is objective. In 2014, Clemens Otto conducted a study on the influence of managers' optimism on their compensation[6]. Using data on remuneration from American companies, he proved that the managers who are characterized by a higher level of optimism receive fewer stock options as part of their remuneration, lower bonuses and, consequently, lower overall remuneration than the managers without such a trait[7]. The optimistic CEO regards the positive performance of the company as more likely than in reality

6 It should be noted that the researcher focuses on optimism and not on overconfidence. This means that the study involves managers' belief in higher than real internal quality of their projects, and not overvaluing their forecasted results (Otto, 2014, p. 366).

7 Optimism was measured in two ways in this study. Firstly, the optimistic managers were thought to be those who kept the derivative shares to the very end, i.e. to the stock options maturity date. This meant they have positive beliefs about the development of the company. The second way was to compare the forecasted EPS indicators published by companies with their subsequent actual value. This is due to the assumption that the CEO affects the making of forecasts, and the public are often not given information that the CEO would firmly disagree (Otto, 2014, p. 369).

and therefore overestimates the value of compensation claims, which are related to the success of the company. Thus, he is willing to accept a smaller number of variable remuneration components, i.e. a smaller number of incentives. Then the author of this paper poses an open question as to what extent the psychological characteristics of the manager should be taken into consideration by business owners when hiring managers and structuring their compensation model.

4. Conclusions

The assumptions of the rationality of human nature and the efficiency of the market have become increasingly difficult to sustain recently. Dynamically developing behavioral finance allows for the analysis of this part of the phenomena and the behavior of economic agents, which previously were regarded only as anomalies. As a result, science opens itself to new sub-disciplines that shed a different light on the issues related to corporate governance or construction of the optimal managers' compensation model.

The study above results highlights two important issues in the context of corporate financial management. Firstly, managers' and other economic agents' decisions may be burdened with behavioral errors, which indicates the need to take into account in non-financial factors in their thinking. Secondly, the impact of variable remuneration components on the motivation of managers to undertake projects desired by shareholders is not clear. It can be stated quite firmly that the introduction of variable components determined by external indicators into managers' compensation, puts them in a situation of permanent conflict seen differently depending on such factors as the personality of the manager, tenure, the very decision-making situation and the company's situation (performance or business activity). The author of this paper also considers that it would be wrong to reject the incentive value of the analyzed forms of remuneration. It should be noted, however, that it is limited.

In Poland, according to the author's knowledge, there is no ongoing research in the behavioral paradigm on the impact of the compensation model for operations managers' operations in order to increase the value of the company in the long term. The analyses we can rely on come from other business specifics. Therefore, there is doubt as to the value of the application. Moreover, Polish research in the area of behavioral corporate finance is still preliminary, and it does not allow for drawing definitive conclusions (Gajdka, 2014, p. 203). Due to the fact that the incorrectly constructed managers' compensation model is given as one of the causes of the *subprime* crisis, and because as a result of which many Polish and European institutions create recommendations to which companies must or will have to adopt. It is

necessary to carry out analysis in the field, taking into account the nature and way of functioning of Polish enterprises and managers.

References

Balkin, D.B., Markman, G.D., & Gomez-Mejia, L.R. (2000). Is CEO Pay In High-Technology Firms Related To Innovation?. *Academy of management journal*, *43*(6), 1118-1129.

Bodnaruka, A., & Simonov, A. (2015). Do financial experts make better investment decisions?. *Journal of Financial Intermediation*, *24*, 514–536.

Borkowska S. (2012). *Skuteczne strategie wynagrodzeń – tworzenie i zastosowani*. Warsaw, Poland: Oficyna a Wolters Kluwer business.

Czekaj, J., Woś, M., & Żarnowski, J. (2001). Efektywność giełdowego rynku akcji w Polsce: Z perspektywy dziesięciolecia. Warsaw, Poland: Wydawnictwo Naukowe PWN.

Dobre Praktyki Spółek Notowanych na Giełdzie Papierów Wartościowych w Warszawie 2016. (2016, Styczeń 01). Retrieved from https://www.gpw.pl/dobre_praktyki_spolek_regulacje

Dudziak S. (2013). Ekonomia behawioralna – interdyscyplinarne podejście do zachowań ekonomicznych. *Studia I Prace Wydziału Nauk Ekonomicznych i Zarządzania*, *32*, 23- 36.

Dyrektywa Parlamentu Europejskiego i Rady 2010/76/UE z 24 listopada 2010 r. w sprawie zmiany Dyrektyw 2006/48/WE oraz 2006/49/WE w zakresie wymogów kapitałowych dotyczących portfela handlowego i resekurytyzacji oraz przeglądu nadzorczego polityki wynagrodzeń. (2010, Grudzień 14). Retrieved from http://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX%3A32010L0076

Gajdka J. (2013). *Behawioralne Finanse Przedsiębiorstw. Podstawowe Podejścia i Koncepcje*. Lodz, Poland: Wydawnictwo Uniwersytetu Łódzkiego.

Giza W. (2014). Normatywny wymiar koncepcji homo oeconomicus. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, *180*(1), 46-54.

Graczyk, A. (2009). Teoria perspektywy i hiperboliczna funkcja dyskonta – implikacje dla teorii konsumpcji. In: D. Kopycińska (Ed.), *Wybory konsumentów i przedsiębiorstw w teorii i praktyce* (pp. 19-27). Szczecin, Poland: Katedra Mikroekonomii Uniwersytetu Szczecińskiego.

Greve, H.R. (2003). A behavioral theory of R&D expenditures and innovations: evidence from shipbuilding. *Academy of Management Journal*, *46*(6), 685-702.

Kahneman, D., Tversky, A. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty*, *5*(4), 297-323.

Kahneman, D., Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica, 47*(2), 263-292.
Kisielnicki, J. (2013). *Zarządzanie projektami badawczo-rozwojowymi*. Warsaw, Poland: Oficyna a Wolters Kluwer business.
Kotlarek, P. (2014). Racjonalność w ujęciu ekonomii behawioralnej. *Studia Ekonomiczne. Uniwersytet Ekonomiczny w Katowicach, 180*(1), 106-116.
Kraciuk, J. (2013). Kryzysy finansowe w świetle ekonomii behawioralnej. *Research Papers of Wrocław University of Economics*, *305*, 370-379.
Kuhn, T. S. (2001). *Struktura rewolucji naukowych*. Warsaw, Poland: Fundacja Aletheia.
March, J. G., & Simon, H. (1958). *Organizations*. New York, USA: Wiley.
Martin G., Gomez-Mejia L., & Wiseman R. (2013). Executive stock options as mixed gambles: revisiting the behavioral agency model. *Academy of Management Journal, 2*(56), 451-472.
Mielcarek, J. (2014). Istota nowego paradygmatu finansów. *Paradygmat finansowy w obliczu współczesnej ekonomii. Zeszyty Naukowe Wyższej Szkoły Bankowej w Poznaniu, 54*(3), 25-36.
Mikołajek-Gocejna, M., & Podedworna-Tarnowska, D. (2013). Wynagrodzenia menedżerów a kreacja wartości spółek. *Zeszyty Naukowe Uniwersytetu Przyrodniczo-Humanistycznego w Siedlcach, 98*(25), 353-371.
Pera, J. (2013). Wpływ teorii finansów behawioralnych na współczesne zarządzanie ryzykiem. *Zarządzanie i Finanse, 1*(4), 407-422.
Solek, A. (2010), Ekonomia behawioralna a ekonomia neoklasyczna. *Zeszyty Naukowe Polskiego Towarzystwa Ekonomicznego*, *8*, 21-34.
Sanders G. (2003). Behavioral responses of CEO's to stock ownership and stock option pay. *Academy of Management Journal*, *3*(44), 477-492.
Simon H.A. (1955). A Behavioral Model Of Rational Choice. *The Quarterly Journal of Economics*, *1*, 99-101.
Shefrin H. (2007). *Behavioral Corporate Finance. Decision that Create Value.* Boston, USA: McGraw Hill/Irwin.
Schneider, S. L. (1992). Framing and conflict: Aspiration level contingency, the status quo, and current theories of risky choice. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *18*, 1040–1057.
Szyszka, A. (2009). Behawioralne aspekty kryzysu finansowego. *Bank i Kredyt, 40*(4), 5–30.
Otto, C.A. (2014). CEO optimism and incentive compensation. *Journal of Financial Economics, 114*, 366–404.
Uchwała nr 258/2011. (2011, Październik 04). Retrieved from https://www.knf.gov.pl
Uchwała nr 259/2011 (2011, Październik 04). Retrieved from https://www.knf.gov.pl
Ustawa o zasadach kształtowania wynagrodzeń osób kierujących niektórymi spółkami. (2016, Czerwiec 09). Retrieved from http://orka.sejm.gov.pl/

Walczak, M. (2014). Neuroekonomia – w drodze do mainstreamu. In J. Ostaszewski & E. Kosycarz (Eds.), *Rozwój Nauki O Finansach. Stan Obecny i Pożądane Kierunki Jej Ewolucji.* (1st ed., pp. 57-70). Warsaw, Poland: Szkoła Główna Handlowa w Warszawie – Oficyna Wydawnicza.
Woźniak J. (2012). *Współczesne systemy motywacyjne. Teoria i praktyka*. Warsaw, Poland: Wydawnictwo Profesjonalne PWN.
Wiseman R., & Gomez-Mejia L. (1998). A behavioral agency model of managerial risk taking. *Academy of Management Beview*, *1*(23), 133-153.
Wu J., & Tu R. (2007). CEO stock option pay and R&D spending: a behavioral agency explanation. *Journal of Business Research*, *60*, 482-492.
Zalecenie Komisji Europejskiej z dnia 30 kwietnia 2009 r. w sprawie polityki wynagrodzeń w sektorze usług finansowych 2009/384/WE. (2009, Kwiecień 30). Retrieved from http://eur-lex.europa.eu/
Zielonka, P. (2003). Czym są finanse behawioralne, czyli krótkie wprowadzenie do psychologii rynków finansowych. *Materiały i Studia NBP, 158.*
Zielonka, P. (2005). Efekt dyspozycji a teoria perspektywy. *Decyzje, 3*, 55-77.
Zielonka, P. (2006). *Behawioralne aspekty inwestowania na rynku papierów wartościowych*. Warsaw, Poland: Wydawnictwo CeDeWu.
Zona F. (2016). Agency models in different stages of CEO tenure: The effects of stock options and board independence on R&D investment. *Research Policy*, *45*, 560–575.

Biographical note

Ewelina Niedzielska is a Ph.D. student at Department of Finance and Strategic Management with particular interests in company behavioral finance. She graduated ethnology at Faculty of Philosophy and History (bachelor degree). She also holds a master's degree in business management from Faculty of Management University of Lodz (thesis topic: Effectiveness analysis of discriminatory models in predicting bankruptcy in SME).