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Summary of the doctoral dissertation

Topic: Excessive optimism in valuations of companies listed on the Warsaw Stock Exchange (WSE) based on reports of stock exchange analysts

Opinions and recommendations published by institutions analysing capital markets and brokerage houses are a popular source of information for both institutional and individual investors. One of the roles of stock market recommendations is to focus attention on specific securities, attract new, potential investors and attract people looking for opportunities to increase their capital. Recommendations are intended to encourage investors to buy (recommendations to buy) or sell (recommendations to sell) financial instruments[1]. In a process of creating stock market recommendations, fundamental and indicator methods are used and should be based on objective market data and contain an analyst's rational assumptions regarding analysis being prepared.

The basic assumptions of modern financial theory are those concerning efficiency of markets and rationality of decisions made by participants of these markets. The market rationality hypothesis was the basis for formulating theories determining a standard of making decisions about buying or selling, and forecasting share prices. However, the rational theory of investing and forecasting prices in the capital market turned out to be inadequate in a descriptive sense . Understanding behaviours of capital markets has therefore become impossible due to failure to consider psychological aspects of investment and forecasting behaviours[2]. Based on these assumption, a trend separated from behavioural economics arose and concerns behaviours of participants in the capital market. This trend considers as principal two

[1] P. Dąbrowski, *Huraoptymizm rekomendacji maklerskich w okresie giełdowej dekoniunktury*, „Studia Ekonomiczne" 2013, t. 174, s. 88.

[2] T. Zaleśkiewicz, *Psychologia ekonomiczna*, Wydawnictwo Naukowe PWN, Warszawa 2020, s. 34.

assumptions adopted in the modern theory of finance: about market efficiency and about rationality of decisions and it is called behavioural finance.

The essence of this trend is a search for psychological mechanisms of behaviour of financial market participants. It focuses on explaining behaviours of financial market participants that are perceived as irrational from the point of view of assumptions of classical economic theories. Explaining causes of this kind of phenomena seems to be crucial for a better understanding of operation of the capital market. While observing prices of assets on the capital market in comparison to their prices in stock exchange recommendations and the result of the analysis of research on the accuracy of stock market recommendations in different time periods it was noticed that this difference could not be explained on the basis of the neoclassical theory. In this process, the analysts who create recommendations are guided not only by rational assumptions used in valuation methods, but are also exposed to the influence of emotions, opinions and other psychological aspects. However, we can never be sure which behavioural tendencies were triggered, nor can we conclude that they were a cause of certain market phenomena. We cannot either observe how analysts reasoned and made decisions when making valuations in stock exchange recommendations. Besides that, the tendencies could only be activated by some analysts. Considering the above-said and relying on scientific publications, it was found that the most important factors influencing the process of valuation of shares performed by stock market analysts in recommendations are behavioural factors, such as optimism and self-confidence, which are very often related to each other and equated. On the other hand, a knowledge about the behavioural inclinations experienced by people preparing stock market recommendations, such as excessive optimism and overconfidence, can be used to discount and bridge the value gap between a recommended price and a market price. The area of behavioural tendencies of financial market participants and behaviours of the entire market are fairly well documented in scientific research. However, there are still relatively few studies that allow to combine specific behaviours of individuals (analysts who prepare stock market recommendations) with effects observed at the level of the entire financial market.

In order to fill the research gap due to the small number of scientific studies addressing the issue of behavioural tendencies, such as optimism and over-optimism among stock market analysts, this dissertation attempts to investigate the occurrence of the phenomenon of over-optimism in valuations made by analysts in stock market recommendations, manifested by one-sided errors in valuation of securities in relation to the real price achieved by individual shares on the maturity date of the recommendation. In the literature on the subject, there is no clear definition of behavioural tendencies related to positive or negative predictions of the future, i.e.

optimism and pessimism. In scientific publications, the most frequently used terms to describe optimism and pessimism are: attitude (D. Kahneman[3]; P. Gasparski[4]; S. Singh and S. Mishra[5]; K.A. Matthews et al.[6]), orientation (T. Plich[7]; M.F. Scheier and C.S. Carver[8]; G.V. Caprara, G. Alessandri, and M. Caprara[9]), approach (B. Wyżnikiewwicz[10]; M. Zadworna[11]; D. Fijałkowska et al.[12]). Therefore, in the dissertation, the words: attitude, orientation and approach towards the above-mentioned emotional errors will be used interchangeably.

Additionally, in order to confirm the occurrence of optimism among analysts issuing recommendations, a survey was conducted consisting of two psychological tests: *Life Orientation Test* (LOT-R), invented by Michael F. Scheier and Charles S. Carver, and *Positive Orientation Scale* (POS) by Gian V. Caprera. These tests accurately and reliably measure the level of optimism.

The main purpose of the dissertation was to verify the occurrence of excessive analysts' optimism in valuations of enterprises on the basis of stock exchange reports. The main verification tool will be an investigation of analysts' attitudes in the valuations of enterprises understood as the deviation of the target price from the market price at the end of the analysed period, i.e. after 3, 6, 9, 12 months from the moment of issuing a stock exchange recommendation.

In order to perform an in-depth analysis regarding the occurrence of excessive optimism of stock market analysts in valuations of enterprises, partial goals aimed at characterising socio-demographic factors, i.e. experience, gender, licence, position and composition (one-person,

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[3] D. Kahneman, *Pułapki myślenia: o myśleniu szybkim i wolnym*, przeł. P. Szymczak, Media Rodzina 2012, s. 341.

[4] P. Gasparski, Myślenie szybkie i wolne a optymizm dotyczący osobistych zasobów pieniężnych, Studia Ekonomiczne, Nr 1, 2016, s. 115- 134.

[5] S. Singh, S. Mishra, Optimism – Pessimism among Adolescents- a gender based study, International Journal of Science and Research, No. 3/6 2014, pp. 1530- 1532.

[6] K.A. Matthews et. al., Optimistic attitudes protect against progression of carotid atherosclerosis in healthy middle-aged women, Psychomatic Medicine, No. 66(5), 2004, pp. 640- 644.

[7] T. Plich, Optymizm i pesymizm– dwie orientacje życia indywidualnego i dwie strategie budowania świata społecznego, Pedagogika społeczna, Nr. 4(62), 2016, s. 9- 25.

[8] M.F. Scheier i C.S. Carver, *Optimism, coping, and health: Assessment and implications of generalized outcome expectancies.*, „Health Psychology" 1985, vol. 4, no. 3, pp. 219–247.

[9] G.V. Caprara, G. Alessandri, i M. Caprara, *Associations of positive orientation with health and psychosocial adaptation: A review of findings and perspectives*, „Asian Journal of Social Psychology" 2019, vol. 22, no. 2, pp. 126–132

[10] B. Wyżnikiewicz, *Usytuowanie ośrodka prognostycznego a optymizm lub pesymizm prognoz makroekonomicznych dla Polski*, [w:] praca zbiorowa, *Badania koniunktury – zwierciadło gospodarki. Część II*, s. 205–216.

[11] M. Zadworna, Zachowania zdrowotne osób w wieku senioralnym – rola optymizmu, Psychogeriatria Polska, Nr. 10(4), 2013, s. 145- 156.

[12] D. Fijałkowska, K.M. Klimczak, M. Pakua, Nadmierny optymizm w listach do akcjonariuszy wybranych spółek GPW w Warszawie, Finanse, Rynki Finansowe, Ubezpieczenia, Nr. 71/1, 2015, s. 35- 45.

group) of analysts preparing recommendations, having an impact on the studied phenomenon. For this purpose, 5 partial goals have been set:

1) Verification of the relationship between gender of analysts and the attitude in the valuations of companies listed on the Warsaw Stock Exchange (WSE), based on reports of stock exchange analysts.

2) Verification of the relationship between the analysts' experience and attitude in the valuations of companies listed on the WSE, based on reports of stock exchange analysts.

3) Verification of the relationship between a licence held by the analyst and the attitude in the valuations of companies listed on the WSE, based on reports of stock exchange analysts.

4) Verification of the relationship between position of analysts and attitude in the valuations of companies listed on the WSE, based on reports of stock exchange analysts.

5) Verification of the relationship between personal composition and attitudes in the valuations of companies listed on the WSE, based on reports of stock exchange analysts.

However, the analysis of the problem undertaken cannot be carried out only with the use of existing data, i.e. valuations in analytical reports and market prices, therefore the dissertation uses a holistic approach, where the second objective of the research was to verify the presence of a high level of available optimism among stock analysts who prepare analytical reports using Psychological tests Life Orientation Test (LOT-R) and the Positive Orientation Scale (POS). The analysis will be carried out in two ways, separately for each test. A combination of these two research techniques gives the complete picture of the current phenomenon.

The added value of the dissertation is the verification of partial hypotheses relating to socio-demographic factors, such as gender, experience, licence (education), age affecting the attitude in company valuations and psychological research using the Life Orientation Test and the Positive Orientation Scale.

The own research was divided into two parts - research on the occurrence of optimism understood as the accuracy of recommendations in a static perspective, as well as research on the presence of optimism among analysts, tested with the use of psychological tests: the *Positive Orientation Scale* (POS) and the *Life Orientation Test* (LOT-R). The data necessary to achieve the objectives of the dissertation in quantitative terms were collected from analytical reports from 2005-2018 published on the financial portals Bankier.pl and Stockwatch.pl. The sample totalled 3,245 recommendations. Data for the achievement of the dissertation goals related to psychological tests were collected in a survey conducted among a group of active stock market analysts in Poland from September 2019 to March 2020. The content of the queries was taken from the psychological tests (presented in the appendix). The research was financed by grants

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The dissertation consists of five chapters. The first contains a description of assumptions adopted in classical theory of finance starting from classical theories based on perfect rationality and maximization of utility by weakening them and moving towards limited rationality, and a critique of classical theory of finance from the point of view of a strictly mathematical (normative) approach in favour of allowing social sciences, such as psychology and neurobiology. Moreover, behavioural economics has been characterised in a wide range as a response to classical economic theories which have not been fully effective in practice. Behavioural finance is also presented as one of the areas distinguished from behavioural economics. The next part of the chapter describes emotions that accompany financial market participants when making investment decisions. In addition, the chapter describes the heuristics occurring in the decision-making processes of market participants, as well as an impact of these heuristics on "theoretical" rational decision models.

The second chapter recalls definitions and divisions of optimism and self-confidence in terms of psychological and economic and financial sciences, as well as the impact of optimism and self-confidence on decisions made by financial market participants. This chapter also indicates Polish and international research on the occurrence of optimism and self-confidence both in the psychological and economic context. Moreover, the static accuracy of stock exchange recommendations was defined, which may be treated as optimism or pessimism of the issuers of recommendations.

The third chapter presents the division and structure of brokerage activities, with particular emphasis on institutions issuing stock exchange recommendations. The legal acts and ethical principles regulating the issuing of recommendation reports were discussed. The definitions and classification of the stock exchange recommendations were also presented, as well as a description of the factors that make up the stock exchange recommendation.

Chapter four describes fundamental analysis as an introduction to stock valuation. The following section presents stock valuation methods, with particular emphasis on Discounted Cash Flow (DCF) as the most commonly used in stock market recommendations, as well as the most popular comparative methods. Due to the nature of the dissertation, valuation methods not applicable in a given research area were skipped. This chapter presents errors of analysts and dilemmas they face in the process of stock valuation. These errors were divided into deliberate ones, which should not take place in the light of legal acts and ethical principles, and those committed under influence of behavioural tendencies, such as optimism and self-confidence.

The fourth chapter is completed with a detailed description of forecasting as the main element of the DCF method, which is particularly vulnerable to the occurrence of optimism and self-confidence.

Chapter five of this dissertation is devoted to the author's own research. It mainly focused on researching optimism, understood as the accuracy of stock exchange recommendations issued on the WSE in various time horizons. For this purpose, a static approach was used. In the further part of the research, for the in-depth analysis, socio-demographic characteristics were distinguished, such as gender, experience counted in years of employment in an analytical position and education of analysts, understood as licenses related to the capital market, such as Stockbroker , Investment Advisor , Chartered Financial Analyst (CFA), Certified International Investment Analyst (CIIA) relating to optimism. Additionally, the presence of optimism among stock market analysts was examined using the psychological tests – the *Positive Orientation Scale* (POS) and the *Life Orientation Test* (LOT-R).

The summary of the dissertation presents conclusions from the conducted empirical research along with assessment of the verification of the adopted research hypotheses and further directions of research proposed by the author.

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