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DETERMINANTS OF FUNDAMENTAL INVESTMENT ANOMALIES IN THE POLISH STOCK MARKETS—NEWCONNECT AND WSE—FROM THE PERSPECTIVE OF THE CAPITAL MARKET EFFICIENCY HYPOTHESES

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Economics is a social science that concentrates on the production, distribution and consumption of goods and services. It attempts to answer the question: How do clients, investors, corporations and governments make decisions about the allocation of resources for the satisfaction of their needs? From the very beginning of economics, theories, theses, hypotheses and models have appeared that try to answer this question. One of these hypotheses is the efficient market hypothesis that was first formulated in 1970 by Eugenie E. Fama. According to the hypothesis, the prices of financial assets fully reflect all available information. The hypothesis states that investors can achieve higher returns from their assets by undertaking a higher investment risk. However, there is much research that proves the existence of market anomalies that are not consistent with this hypothesis. One group of such anomalies is that of the fundamental anomalies. The fundamental anomalies allow for higher returns from investments in stocks that possess certain characteristics, such as a low price to earnings ratio (P/E) or a low price to book value ratio (P/BV). This thesis aims at finding the determinants of such anomalies in the Polish stock markets—the NewConnect and the Warsaw Stock Exchange (WSE).

Many scientific papers have researched this topic thus far. However, such research has been limited in scope due to the fact that the Polish capital market is still young.

• Previous papers have mostly concentrated on confirming the existence of such anomalies in the Polish stock markets and have omitted to discuss the relations between the different factors that affect them. This dissertation aims to find the factors that affect these fundamental market anomalies.

• Previous papers have used a limited number of indicators to measure investment efficiency. In this dissertation, its author has created his own measure of investment efficiency.

• Previous papers have not conducted heavy research on the NewConnect market, which is a market that lists the smallest companies.

Consequently, it can be concluded that significant research gaps exist in the existing literature and this dissertation aims to address it. Thus, the major objective of this PhD thesis is to identify the factors that determine the fundamental market anomalies in the Polish markets—NewConnect and WSE. These current research gaps and resulting problems have enabled to formulate the following hypotheses:

The main hypothesis:

There are relationships between selected fundamental factors and anomalies P/E and P/BV.

The auxiliary hypotheses:

1. The P/E and P/BV anomalies are more explicit among the small (sWIG80) and very small (NCI) cap companies than they are among the large (WIG20) and medium (mWIG40) cap companies.

2. There exist economic factors that affect the P/E and P/BV market anomalies.

3. There are differences in the intensity of the P/E and P/BV market anomalies in different sectors of the economy.

4. The effect of "adding anomalies" exists, which means that an investor can use the P/E and P/BV market anomalies together with other market anomalies to achieve abnormal investment returns.

5. Due to the convergence of the Polish economy with the economies of more developed countries, the determinants of the market anomalies in the Polish stock exchanges are becoming similar to those that already exist in the developed markets.

The research method concentrated on analysing the historical results of created investment strategies that are based on fundamental anomalies and select factors. The results of such strategies were compared using risk and investment efficiency measures. In this paper, the author created a new indicator that measures investment efficiency. It comprises of both normative analysis (how investors should behave) and descriptive analysis (how investors really behave). The method utilizes the standard semi-deviation from the initially invested amount as a measure of risk. The time-frame of work mainly covers the 2008–2017 period. The research group consisted of companies listed on the Polish stock exchanges, namely, on the NewConnect and the Warsaw Stock Exchange (GPW).

This doctoral dissertation is organized into an introduction, six chapters, a summary with the results of research, a list of abbreviations used, literature, and lists of drawings and tables.

Chapter one of this thesis is a theoretical one and presents the main concepts related to the research topic. This part of the dissertation introduces the capital asset pricing model (CAPM) and the efficient market hypothesis. Moreover, it also presents the main market anomaly groups.

Chapter two presents the research methodology used. It describes different methods for calculating the P/E and P/BV ratios. Advantages and disadvantages of each method are also presented. Moreover, different methods for measuring investment performance are discussed. Some methods are based on the macroeconomic risk, while others are based on the total risk (macroeconomics and microeconomics). Furthermore, the author also presents a new method for measuring investment efficiency. The decisions of individuals do not meet the classical theory of rational choice criteria. Human beings are not homo oeconomicus, because they break the classical axioms of preference and are unable to discard emotions, especially in the face of risk or uncertainty. New research suggests that investors are not risk averse but loss averse. Consequently, the author's investment efficiency measure takes this fact into account.

Chapter three focuses on the existence of fundamental market anomalies in different market indices. The presence of P/E and P/BV anomalies is examined in the entire research group. The subchapters of this section of the dissertation examine the existence of these anomalies in the WIG20, mWIG40, sWIG80 and NCI indices. This examination allows for the conclusion that the anomalies do not exist in the large and medium cap indices (WIG20 and mWIG40) and do exist in the small-cap indices (sWIG80 and NCI). Thus, membership in market indices determines the existence of market anomalies. The companies listed on the WIG20 and mWIG40 indices are analysed by numerous analysts, which increases the information efficiency of those indices.

Chapter four analyses the microeconomics factors that could determine the existence of market anomalies. The microeconomics factors analysed include the debt level, financial liquidity, dynamic of the net profit and sales growth, profit margin on sales, operating profit and cash flow levels.

• The debt level has a negative influence on investment efficiency. This means that investors are not able to achieve superior investment results by investing in strategies that focus on companies with low P/E and P/BV ratios and high levels of debt.

• High financial liquidity has a positive effect on investment efficiency. An investment strategy that focuses on selecting companies with high liquidity levels outperforms other strategies.

• The high dynamic growth of net profit and sales can be used together with the P/E and P/BV anomalies to achieve higher investment results.

• Companies with high profit margins usually exist in less competitive markets (monopoly, oligopoly and monopolistic competition). The analysis suggests that investors can achieve abnormal returns by investing in companies with high profit margins.

• Many companies manipulate their financial statements by inflating the current period earnings with artificial revenues or by deflating the current period expenses. The efficient market hypothesis states that such manipulations should be recognized by investors and abnormal returns should not be possible. After examining the strategies for investment in companies with high levels of operating profit and cash flow, it can be concluded that investors do not recognize such manipulations in financial statements.

According to the efficient market hypothesis, the above factors should be taken into account by investors. Thus, abnormal returns should not exist.

Chapter five analyses whether market anomalies exist in different sectors of the economy and examines the influence of macroeconomic events on investment and information efficiency. The economic sectors analysed include banking, construction, development, real estate development, chemical, wood and paper, metallurgical, petroleum and food. The main factors that determine the existence of market anomalies in these sectors are foreign investors and macroeconomic events. Companies that have low P/E and P/BV ratios are more sensitive to macroeconomics factors, hence, the bull markets allow for the existence of market anomalies. Additionally, information efficiency depends on the connection of a given industry to the global markets. The sectors that have a high share of foreign investors also have higher information efficiency levels; thus, fundamental anomalies are less explicitly seen. At the end of this chapter, the author presents a model that describes how the macroeconomics factors and connections to the global market determine the existence of fundamental anomalies in various sectors.

Chapter six examines the relations between different market anomalies. The main goal of the chapter is to find whether investors can construct investments strategies that are based on different market anomalies in order to achieve abnormal investment returns. It can be concluded that investors should use different investment anomalies jointly to construct investment strategies. However, not all market anomalies can be used together to achieve abnormal returns.

This summary of the dissertation presents the research results and the conclusions drawn on their basis. The positive verification of the auxiliary hypotheses allows for positive verification of the main hypothesis of the dissertation.