Saimaa University of Applied Sciences
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Creation of investment portfolio and comparison of its performance with Dow Jones 30 index

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Abstract

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The purpose of this research paper was to find out if it is possible to create an investment portfolio and outperform an existing index, in order to understand an active or passive investment strategy is more effective in terms of Capital Markets. The phenomenon explanation is based on the theory of economics.

Information gathered for this research was obtained from articles, books, websites and magazines related to the topic of the research. Empirical data was gathered from the website Investing.com, and all the results are based on figures obtained from this source.

As a result, this research paper provides information about the different investing strategies, different factors to pay attention to prior to investing money in some security and suggestions on how and in which manner young investors could invest money. This research paper can be used by anyone who would like to know more about the investment process and about different investment strategies.

Keywords: active investing, passive investing, stocks, investment portfolio, efficient market hypothesis.

Table of contents

1 Introduction 4
1.1 Background 4
1.2 Objective of study 5
1.3 Delimitations of study 5
1.4 Limitations of study 6
1.5 Research questions 7
1.6 Research method 7
2 Investment strategies 8
2.1 Literature review 9
2.2 Active investing strategy 14
2.3 Passive investing strategy 20
2.4 Summary of active and passive investment strategy 25
2.5 Hints to create an investment portfolio 28
2.5.1 Four steps to build a profitable portfolio 28
2.5.2 Diversification of the portfolio 30
2.5.3 Bond credit ratings 31
2.5.4 Summary 32
3 Empirical research 33
3.1 Basic info on stocks and motivation of choice 33
3.1.1 Philips 33
3.1.2 Magnit 34
3.1.3 BMW 35
3.1.4 British Petroleum 36
3.1.5 Alcoa 37
3.1.6 Benchmarking index 38
3.2 Market to book value 40
3.2.1 Philips 41
3.2.2 Magnit 42
3.2.3 BMW 42
3.2.4 British Petroleum 43
3.2.5 Alcoa 43
3.2.6 Summary 43
3.3 P/E ratio 44
3.4 Dividend yield 46
3.5 Compound Annual Growth Rate (CAGR) 47
3.6 Summary 48
4 Conclusion 49
List of Tables 51
List of Figures 52
List of References 53

1 Introduction

1.1 Background

Economics is one of the most ancient sciences in the world. Plenty of theories have been created and explained with progress of time. As economics is a social science, at different times, society needs different theories. In fact, economics answers the question “How?”: How to distribute, produce and consume the resources people have in the most effective and efficient way. In other words, economics gives an answer on how to manage the goods and services in different situations. Economics is divided into different sub-sciences: macroeconomics, microeconomics, international economics and econometrics.

Economics is something everyone deals with on a daily basis on a very basic level: whether it is a student who decides what to buy in a grocery store or it is a millionaire who decides where to invest his capital in order to make some profit on it. Everybody manages resources in order to use them in an effective and efficient way. Every single individual is a gear in an enormous mechanism with the name economics, and the purpose of this study is to focus on one of the aspects of economics related to financial markets – Capital Markets.

The primary goal of the study is to create an investment portfolio and compare its performance with one of the most well-performing indexes – Dow Jones 30 – and to answer the question it is worth implementing an active investing strategy, or not. The overall purpose of the research is not only to share insights about the Capital Markets, but also to give a reader an understanding of what Capital Markets are, how they works, and to provide basic information about investment strategies and main concepts.

The author of the paper already gathered experience of the creation of an investment portfolio while he was doing his exchange in the Netherlands, on a programme of International Financial Markets, and he has a genuine interest in this topic. Thus he uses all the knowledge obtained previously and acquires some more in order to make this study interesting, clear and useful for those who are interested in this particular topic.

1.2 Objective of study

The initial purpose of the study is to create some form of a guide on how to create an investment portfolio and compare the performance of the portfolio with the performance of a chosen index.

The primary objectives are:

1. Evaluation of the efficiency and determining the purposes of different investment strategies (active vs. passive investment)
2. determination and analysis of different financial indicators that affect the decision to pick or not pick up any stock
3. understanding of the investment process from the very beginning till the end.

The sub-objectives are:

1. to find out more about different investment strategies
2. to find out which investment strategy suites the focus group the best (21-30 years old)
3. To determine the investment strategies for people outside of focus group.

1.3 Delimitations of study

The study is to be conducted with certain boundaries that have been established by the author in order to make the research more specific and not to write about everything and nothing at the same time. The first delimitation is to include into the research only stocks. ETF's, mutual, open ended and closed end funds as well as governmental and corporate bonds are not included, as well as hedge funds, as the only decision one needs to do in this kind of investments is to choose the fund to allocate the money to. The purpose is to concentrate on such kind of investments which concern a decision when to buy or sell a security. The second delimitation is to choose securities only of European and American companies, excluding from the sample Latin American and Australian stocks in order to narrow the borders of the research, as well as due to the fact that four out of the five main stock exchanges are located in Europe and the USA. In addition to

that, Asian stocks are also to be excluded from the sample, as these stock markets are very volatile and due to the fact that the Asian stock market could not be understood with no experience of this market. One more delimitation is that the author monitoring the stocks within a time frame of one month, since the moment of choosing the stocks, and at the end the performance of the portfolio is to be compared with the Dow Jones 30 market index. In addition to that, the companies that are listed in the Dow Jones index are excluded, in order to simplify the study, which means, that 30 companies that are placed in the Dow Jones index are not included. One more delimitation is to choose securities of up to a total price of approximately 100,000 euros in order to illustrate allocation of funds available for different securities. Also, one more important delimitation is related to the FOREX rates. As the stocks are picked up from different markets, it is obvious that these are in different currencies. In order to avoid differences in stock prices, the margin is to be calculated in accordance with the exchange rate of the currencies at the moment of the purchase.

1.4 Limitations of study

Every research has weaknesses, this one is not an exception. There are certain weaknesses that are related to real life. It could be forecasted how stocks of a company are going to behave during some time in future, but nobody truly knows what will happen in the world during the next five minutes. A forecast that some stock will rally significantly could be made according to certain data, such outstanding quarterly results of the company, but a fraud case could take place, and the stock would lose a third of its value. By this example, the author tries to explain that nobody knows how stocks will behave in practice. Although this is a significant drawback of the study, such cases take place rarely enough not to be afraid of such a case in this research. One more drawback of the research is the concept of market sentiment. Market sentiment is an attitude of investors to a particular security, which influences the stock price as well. (Investopedia 2018.) Investors can be bearish or bullish regarding a certain security, which will affect the price of this security. However, to have a look at that weakness from a different point of view, there is the Efficient Market Hypothesis that states that all the

information available to people is already included in the price of stocks, and thus market sentiment is not that important. (Investopedia 2018.)

1.5 Research questions

The research questions are:

1. Investment strategy for 21 – 30 years old people: pros and cons of passive and active investing. Crucial factors for making a decision on a strategy.
2. What are the factors that affect the decision to pick a particular security?
3. Is it possible to outperform market index Dow Jones 30 within one month?

1.6 Research method

There are plenty of research methods created in order to conduct different types of research. Some methods are quantitative in nature and some of them are qualitative ones. The quantitative research method employs numerical data in order to conduct research. Thus, the most suitable method for the present study is quantitative research method, as the conclusion is drawn according to the data and figures obtained during the study. The design of the research is descriptive, as the main purpose of this research design is to describe the phenomenon, and the hypothesis is not created at the beginning of the research process, but it is drawn after the data is to be collected. (CIRT 2018.)

The research paper is divided into three parts: theoretical background of the research, explanation of the choice of particular securities, and the calculation part. This division is done in order to simplify the outline of the research and to conduct it in an effective and convenient way.

The theoretical background part is mainly about a description of active and passive investing. This part explains the advantages and disadvantages of active and passive investing, and when active investing is worth doing and vice versa. Also, in the theory part, the principles of investment portfolio creation are briefly explained.

The second part of the research paper is about the decision to pick up particular stocks. In this part, the decision-making process is described as well as some

background information about the companies is given. In this part the question "Why?" is answered, why the particular stocks were chosen in order to create an investment portfolio.

The third part is the empirical part of the study. The particular study that is conducted is described in this part. The initial figures that allow one to start calculating are the prices of stocks to be chosen on a daily basis. These figures are collected from the website Investing.com. At the end of the monitoring period, the Compound Annual Growth Rate is to be calculated in order to generate the figures that show the yearly/monthly yield on the securities that were chosen for the study and compare the yield to the figures of the index. In addition to that, after choosing the stocks, such indicators as Profit to Equity ratio (P/E), Earnings per share (EPS) and dividend yield are calculated in order to find out if it was a good or bad idea to pick up that stock from the very beginning. The indicators may show that this stock did not rally or it was tepid during the observation period. It is obvious that the stock price does not depend only on indicators, but probably even more on buying sentiment. Indicators can only help to draw some conclusions, and it is possible to verify them only after some period of time passes.

2 Investment strategies

Nowadays there are two main investment strategies, active and passive ones. The core difference between them is that the active investing strategy involves a constant buy-sell process of different securities in order to obtain the maximum profit. Unlike the active investment strategy. The goal of the passive investing strategy is to invest money in a security or securities and wait for quite a long time to see if this security increases its value. Mostly, investments in index funds are considered as passive investments.

In this chapter, the author discusses the advantages and disadvantages of both active and passive investment strategies to find out, which one is currently more suitable. In addition to that, the author explains certain principles of investment portfolio creation at the different stages of people's lives, as the strategy for how and where to invest substantially depends on the age of the investor.

2.1 Literature review

In order to understand the topic better, it was decided to make a literature review. Several articles about active and passive investing were found and a review of those articles was written.

The disputes whether passive or active investing is better have been continuing for quite a long time. Sorensen, Samak and Miller (1998) discuss these two options in the article “Allocating between Active and Passive Management” from the Financial Analysts Journal. In the article they try to identify the importance of a stock picking skill and which strategy is better to follow in order to get the best possible performance in different market situations. During this research, the authors found out that optimization is essential for asset allocation, for example for pension fund asset allocation. The inputs to the optimization problem include a well-defined objective function, quantified risk preference, asset return, volatility and covariance forecasts. Also, the authors examined the sensitivity of asset allocation to the level of the portfolio manager’s skills and described that increase in the skills of managers leads to certain changes. To increase the skill of large-cap/value from 54% by more than 4% would potentially lead to a higher return of up to 4%. With 54 for large-cap/value and 60 for all others skills allocation, to Index is still relatively substantial – 34.8%. Due to these facts, asset allocation is very sensitive in terms of the particular skills of the portfolio manager and that different skills distribution has an effect on allocation among Large-Cap/Value, Small-Cap/Value and Index. As a conclusion, authors proved that both active and passive investing have the right to exist, because during the tough periods in stock market actively managed portfolios will be more effective, while in bullish years on stock market those who invest passively (indexers) will outperform those who implement the active investing strategy.

In his article “Can You Outsmart the Market?”, Regnier (2010) shares his view on passive investment and tries to identify whether passive investing is worth doing or not. On the one hand, it is better to invest in a cheap and diversified index fund, due to the fact that 60% of the mutual funds invested in blue-chip stocks that tried to outperform S&P 500 failed to beat the market. On the other hand, nobody was insured against a crisis such as the Dotcom bubble in 2000 or the real estate

bubble in 2005. Even though there is such a contradiction Regnier suggests that it is better to stick to the passive investing strategy due to several facts. One of them is that the more stocks are traded, the bigger chance there is to make a crucial mistake. Another reason is that there is not a great chance to beat the market according to the data. Only 37% of Large Cap stock pickers, 32% of Small-Cap stock pickers, and 13% of foreign stock pickers outperformed the Indexes related to those stocks.

Also Malkiel (2003) in his article “Passive Investment Strategies and Efficient Markets”, expresses an opinion that passive investing is better than active one. This opinion is based on the efficient market hypothesis; in other words, it is impossible to beat the market. According to this article even if markets were inefficient, the passive investing strategy would be better than the active one, since all the stocks have to be held by somebody. Therefore, some investors will appear who have more than the average return as well as those who underperformed. However, active investing charges a fee for every transaction, thus it is more complicated to perform above the average. One more advantage of passive investing is that it tends to lower the taxes and minimize turnover. In practice it is possible to beat the market, but this is complicated enough, according to the data from the article: 52% of mutual funds were outperformed by S&P 500 after 1 year, 63% of mutual funds after 5 years and 71% after 10 years. Even during the US stock falling in 2001, when index funds were fully invested and actively managed funds had 5-10% of the assets in cash, more than half of the actively managed funds were outperformed. According to historical data from 1970 to 2001, 86 actively managed funds were outperformed by S&P500, 50 of them were around 0% and the gain was plus/minus 1%, 17 performed 1% better than the index fund and only 2 out of 355 showed better performance than S&P 500 by more than 2%. According to this result, passive investing is worth doing, even if the market is inefficient.

In the article “Economic implications of passive investing” published in the Journal of Asset Management, Woolley and Bird (2003) focus on the consequences of long run passive investing in index funds. They found out that the fight to index investing creates more volatility in returns across the whole market. Woolley and

Bird confirmed that index investing would be a natural consequence of an efficient market due to the fact that it becomes tougher to outperform the market with time. But the main purpose of their paper, as they believe, is to make market participants aware of such wasting of investments as investment in indices in which companies have privileged access.

Blitz (2014) in the article “The Dark Side of Passive Investing” published in The Journal of Portfolio Management doubts if passive investing is a good idea for a few further years, as when it becomes more and more popular, actively managed portfolios are becoming unpopular, and those who make passive investment actually do nothing in order to get yield. In fact, he believes that if everyone adopted passive investing, the prices would crash and such a concept as market liquidity would disappear. He also states why people do active investing. The reason is that it ensures effective capital allocation, and crucially it is a positive sum game, while passive investing is a zero-sum game. Some investors perform above the index and some of them under it. As a consequence, Blitz figured out three sustainability dimensions of successful passive investing: *«1) acknowledge that large-scale active investing is a prerequisite for passive investing, as well as for an efficient allocation of capital; 2) describe how largescale passive and large-scale active investing can coexist in a macro-stable equilibrium; and 3) identify who should invest actively in this equilibrium, as well as their own roles and responsibilities. »*

In the article “Thinking about Indices and "Passive" versus Active Management” Fuller, Han and Tung (2010) discuss the indexing investing and the processes inside those indices, for example how stocks should be chosen for indices, the frequency of portfolio rebalancing and when it should be implemented, and tried to construct their own index.

When it comes to the methodology of choosing the stocks for the index, there are several approaches, Regarding Dow Jones the method is decided by a committee decision by the employees, while in S&P 500 there is a strict set of guidelines followed by a special committee in order to remove or add some stock from or to the index. At the same time, Russel indices use a set of rules that use the market value of companies (Fuller et al. 2010.)

According to Fuller et al. (2010), Dow Jones index has very few stocks to be representative of the major market segment, compared to for example S&P 500 or R1000, because it is quite enough diversified and represents companies from various industries. Indices such as Dow Jones and S&P 500 do not rebalance their portfolios until some company is replaced. Unlike these two, R1000 re-balances its portfolio once a year in an annual meeting, when some companies are excluded from the index and others take the free places. (Fuller et al. 2010.)

The main thought the authors tried to verify is that even passive investing is not that passive as it seems to be. It deals with many different elements related to the decision making process in paper indexing. They believe that there is no such process as passive investing, there is active investing with decision outsource to index funds managers. (Fuller et al. 2010.)

In the book "Full View Integrated Technical Analysis: A Systematic Approach to Active Stock Market Investing", Xin Xie (2011) discusses Efficient Market Hypothesis and the evidence of that. Efficient Market Hypothesis is a theory which states that it is not possible to outperform the market, due to the fact that the share prices already include all the available and relevant information about the particular security. (Investopedia 2018.) Xie (2011) describes three possible forms of Efficient Market Hypothesis or EMH. These three forms are the weak form, semi strong form and strong form. According to Xie, the weak form cannot help to predict the future movements of the stock price, and cannot be used to forecast the future in any way. In the case of the semi-strong form, Xie claims that there is no any kind of publicly available information that can help to predict the future movements of stock price; in other words, publicly available information cannot help to generate any kind of profit. In terms of the strong EMH, Xie claims that even private information cannot be used for making a forecast of stock price movements and generation of any kind of returns. According to Xie, the semi-strong and weak Efficient Market Hypothesis are the most popular ones, especially among academic circles, while the strong Efficient Market Hypothesis is not generally accepted. Xie focuses on evidence of empirical nature and analysis of theoretical considerations and explains some evidence for EMH, such as small firm effect, Price-to-Earnings ratio effect, the January effect, weekend effect, turn of

the month effect, pre-holiday effect, and dividend yield effect. The small firm effect refers to the period of time between 1936 and 1975 when it was documented that higher returns could be generated with investments in the companies with low capitalization. When it comes to the Price-to-Earnings ratio effect, in 1977 it was discovered that higher returns could be generated by investing in the companies with low price-to-earnings ratio. As regards to the weekend effect, evidence was found that returns tend to be high at the end of the week, while at the beginning of the week they tend to be rather negative in most of the cases. The turn-of-the-month effect works exactly the same way as the weekend effect, but the most profit is generated at the end of month, whereas at the beginning of the month profit is rather negative. Also the January effect is quite similar to the weekend and turn-of-the-month effect, but higher profit is generated at the beginning of the year due to the end of the year selling.

Also, the topic of market activism against Efficient Market Hypothesis is discussed. Xie (2011) firstly explains with an example of a professor, student and a 100-dollar bill, the theory in more detail. Xie states that when Efficient Market Hypothesis is used to attempt to analyse the stock market direction or to dismiss an attempt of active investing, arguments of supporters of the EMH suffer from logical inconsistencies. According to Xie, the rationality concept is not used accurately in the arguments. Rationality concepts explain that actions of investors who look for profit would lead to market equilibrium. When market equilibrium is reached, opportunity to trade in order to generate profit would not exist. However, if the trader has a clear opportunity to generate profit by managing investments actively, this would be considered as irrational. Even if everybody acts rationally and invests only passively, the market does not reach equilibrium. Thus it will be rational to invest actively in the case of clear profit opportunity.

Market equilibrium is a concept which involves the absence of opportunity for profitable trading. The concept is not used accurately, as when people see an opportunity to trade and generate profit from it, equilibrium is not reached. This explains, why actively managed investments still exist. In other words, if the market is efficient, there will be no point to manage investments actively. However, if

everybody invests only passively, the market is not efficient anymore as it does not generate profit. (Xie 2011.)

In order to draw some conclusions and to summarize the literature review, it could be concluded that there are different opinions about the active and passive investing strategies, but both need to exist in order to exercise an opportunity to generate profit on trading. All the cited authors have different opinions on how it is more profitable to invest money in securities. There are studies that prove that in the long run passive investing in most of the cases, generates higher returns than active one. Despite this fact, an actively managed portfolio is more effective during the economic downturns, such as the Dotcom or real estate bubbles, during which actively managed funds generated more profit that passively managed or, in other words, index ones. However, some studies claim that passive investing would not be so profitable if actively managed portfolios did not exist. As a conclusion, passive investing cannot exist without active one and vice versa.

2.2 Active investing strategy

In this chapter, the active investing strategy is discussed. As it was previously described, this investing strategy has own its advantages as well as drawbacks. This chapter attempts to discuss the active investing strategy in as many detail as it is possible.

In the article named “The end of active investing?” written by Charles D. Ellis for the Financial Times newspaper, advantages and disadvantages of active investing are discussed as well as compared to the passive investing strategy over a period of time. Ellis divides the period of time since 1960 until 2017 into four main phases and describes the main changes characteristic of the financial market over the last half century. (Ellis 2017.)

The first phase, according to the author took place between 1960 and 1980. The main characteristic of this period of time was that active managers competed with single individuals, trust funds and mutual funds that were managed in a conservative manner. The outcome was superior: 200 to 300 basis points of return, while no attention was paid to Index funds. (Ellis 2017.)

The second phase took place since 1980s until 2000. During these years the market was strongly bullish. It pleased the clients, however the returns could only cover the taxes and fees of the managers. Index funds started to attract attention. (Ellis 2017.)

The third phase started in 2000 and finished in 2010. Active managers started to lose money, in a way of not earning enough to offset their operating fees and costs. Interest in Index funds as well as the demand increased. Investors started to switch from the active to the passive investing strategy. (Ellis 2017.)

Phase four started in 2010 and continues today. The number of active managers increases as large companies must invest in securities with large capitalisation. Stocks that are widely owned and in most of the cases, correctly priced under-perform the market with a gain of only 7%. The operating costs can no longer be called “inconsequential”. Demand for Index funds grows significantly because of low costs. (Ellis 2017.)

Also, Ellis (2017) mentions that actively managed portfolios are mostly deficient according to the statistics the author refers to. According to the statistics, 83 per cent of active funds in the USA in over ten years failed to match the benchmarks of their choice, while 40% of the funds performed inefficiently enough to terminate their operations before the 10-year period was completed. In addition, 64% of the funds changed the style of investing. Even though this statistics is based only on the US funds, this data could be applied worldwide as the US stock market is dominating and other markets are moving in the same direction.

In addition, Ellis (2017) refers to the statistics indicating that over the last 50 years the trading volume on NYSE (New York Stock Exchange) has changed drastically from 3 million shares traded per day to 1.5 billion shares per day, while the leading companies in the field of securities have a team of approximately 300 analysts in different fields, such as FOREX, industry analysists, demographers, political analysts, economics and commodities. The number of the financial analysts also increased significantly, from zero to 135 000 and some 200 000 study for exams.

In addition to that, Ellis (2017) describes the reason why active managers lost the advantage of the first call. Due to the fact that technologies have developed

quickly enough, information is communicated instantly via different means of communication: Bloomberg terminals, the internet, and faxes. This fact allows to all the investors worldwide to have immediate and equal access to all the available information. According to statistics, the number of professionals who are engaged in the price discovery is one million of single individuals. The most intensive participant on the market are hedge funds; they produce almost half of all trading on the market. Hedge funds use algorithmic trading, early versions of artificial intelligence and different computer models. These are the factors that do not allow active managers to outperform the market. According to Ellis, the only way for active managers to outperform the market not just randomly, but constantly is to discover the pricing error by other professionals and experts, while everyone has the same information and the same computer models, the same team of experts.

Also, Ellis refers to the fact that *the most powerful force of change* was unnoticed. Over the last half of the century institutional trading rose from 9% of market share to 95%. As the market became strongly professionalised, professionals trade with other professionals; all of them have almost the same information, the same technologies of price prediction and it makes too difficult to outperform the market.

Ellis (2017) presents the statistics of the funds that trade securities in different sectors of the Capital Markets, and the result is not satisfactory for active managers. The best performance was shown by the active managers who trade stocks of international companies with small capitalization. The worst performance was shown by the traders on the emerging markets. The full statistics can be found in table 1 below.

PERCENTAGE OF INTERNATIONAL FUNDS THAT LAG BEHIND BENCHMARKS		
Fund category	Benchmark index	10-year percentage
Global	S&P Global 1200	79.2%
International	S&P International 700	84.1%
International small cap	S&P Developed Markets, ex-US SmallCap	58.1%
Emerging markets	S&P/IFCI Composite	89.7%
Source: S&P Dow Jones Indices. Data periods ending December 31, 2015		

Table 1. Percentage of international funds that did not outperform the market (Ellis 2017)

In the article ”Active management’s many benefits are poorly understood” published on the Financial Times website and written by the managing director of the CFA Intitute for Europe, the Meddle East and Africa, Nitin Mehta (2015) discusses some benefits that could be obtained by managing the portfolio in an active manner. In this article the author tries to explain the advantages of the active managers that are not understood broadly.

Mehta (2015) refers to empirical evidence indicating that the performance of the most active managers is below that of the market. Mehta describes that it is a tricky challenge to outperform the market; it is always tricky for long-time proven outperformers to separate skill from luck and vice versa. Much of the negative comments concerning the active management focuses on difficultness to match or outperform the market benchmark, and the high cost of these attempts, but according to Mehta the investment performance is not just to buy and sell securities and beat the benchmark. The investment professionals try to understand the objectives of the investments and the risk tolerance of the investors, in other words how much a risk investor is able to take in order to generate the profit. Active investment managers translate information into an investment policy with defined goals for risk and returns, as well as an appropriate index to follow and an asset mix that would satisfy the needs and goals of an investor, adjusting it in accordance with results and changes in the goals of an investor. Obviously quite many factors influence the management decisions on how to invest money.

Mehta (2015) also mentions in the article that the active investors, in most of the cases, underperform the chosen benchmark due to the fact that they do not save and invest regularly because of not matching the investment risk of the portfolio. In addition to that, the active investors do not diversify the portfolio in a sufficient way. When it comes to passive investing, most of the challenges passive managers face cannot be referred to this way of investing unlike active one. Active managers look for opportunity to outperform the market by seeking and analysing the information and, based on that information, to conduct a selection process of the securities. Unlike the active investors, passive ones resemble free riders, as the only action passive managers are supposed to take is to pay marginal costs. As a result, according to Mehta, wealth and benefits are transferred from active investors to passive ones, giving the opportunity for passive investors to charge lower fees for their services.

Active portfolio management can produce some benefits for individual investors, while the passive investors do have great value in controlling the cost of the selection of securities. In fact, according to Mehta (2015), active investors help the economy to produce additional value as well as provide the market with necessary liquidity; otherwise the market would not work in a way it should work. In order to give a short summary about the article, Mehta (2015) claims that active investments have certain strong sides whereas the passive investing strategy has its drawbacks. The advantages of active investing are as follows: Risks can be managed in an easier manner by investing in securities taking into consideration risk tolerance. One more advantage of active investing is that it allows to tailor the strategy of investing as it requires objectives of investments, such as to save money for retirement. One more advantage is that all the securities can be transferred over the time. All these features are common to actively managed portfolios while passively managed investments do not possess such characteristics.

In the article “Advantages of active investing” written by Anuj Gangahar (2007), the advantages of active investing, with the example of long/short investments, is discussed. To begin with, a long/short investment is the type of investment in which long positions in securities are expected to appreciate and short positions that are expected to depreciate (Investopedia 2018). According to Gangahar, one

of the advantages of this strategy is that professional investors and wealthy individuals can adjust their risks in a better way with a truly active manager. Unlike the active managers of hedge funds, the semi-passive managers of mutual funds try to construct the portfolio according to the shares of each company on the chosen benchmark, thus mutual funds underperform the indices. According to a study by Martijn Cremers and Antti Petajisto of Yale School of Management, the mutual funds that track indices as close as it is possible underperform the chosen benchmark considerably. In addition to that, Laurence Russian, principal of ABS Investment Management, concludes that a long/short investment strategy is flexible enough to generate superior returns adjusted in accordance to the risk tolerance of an investor. Gangahar mentions also that an actively managed portfolio is mainly advantageous during the time of negative returns on the market and extremely high volatility. Active management of securities enables choosing which strategy to follow and how to behave on the market whether being bullish or bearish, keeping in mind what the objective of investments is. (Gangahar 2007).

Deborah Nason (2016) in the article “Weighing pros and cons of active portfolio management” for CNBC, makes claims about the pros and cons of active investing. According to Nason, an active investing strategy possesses with such advantages as flexibility, diversification and allocation maintenance. The market is agnostic to the needs of an investor, but with passive investments an allocation is maintained for a long term. One more advantage of active investing is flexibility, which allows purchasing securities at a better opportunity. Also, active investing has such an advantage as diversification; in other words, diversification is investments in different companies with different life cycles, from different industries and from different countries in order to eliminate the risk of industry damage that would lead to losses. One more advantage of active investing is the possibility to avoid market downturns, as active investing allows to withdraw the money away at any moment.

Among other advantages of active investing, hedging and tax management are commonly mentioned. Also on the website of Wharton University of Pennsylvania, in the article “Active vs. Passive Investing: Which Approach Offers Better

Returns?”. Hedging is referred to as the ability to use put options, short sales and other strategies to insure against losses. One more advantage of active investing, but not yet discussed in this paper is tax management. Tax management is an advantage due to the fact that a tax strategy can be tailored for an individual investor in order to decrease tax payments. As an example, money-losing securities could be sold in order to offset taxes on securities that generated the real profit. Among the other advantages of active investing mentioned in this article are flexibility and risk management, which were discussed already. (Wharton University of Pennsylvania 2018.)

2.3 Passive investing strategy

On the website of BRI Wealth Management PLC, the article “The pros and cons of active and passive investments” is published. The core difference between active and passive managers is that the manager of a passively managed fund, such as ETF or Index fund, seeks an opportunity to reach, as close as possible, the return of a benchmarking index. In fact, passively managed funds mostly own the same securities with the same proportions and weightings as the benchmark. No active decisions are applied in order to generate the profit, just mirroring of an index. As passive investing does not involve any actions to generate extra profit over the index, it means that passive investing would always exercise all the ups and downs of a particular index. (BRI Wealth Managements PLC 2016.)

The passive investment strategy is quite simple to understand. This is one of the reasons investors feel comfortable with passively managed funds, as the only thing investors need to know is that the fund follows some index. One drawback is that indices mostly focus on large companies within one major industry, as it was in the 1990s when the telecoms stock were the major parts of the FTSE 100 index. Although at the beginning of the 1990s the index experienced a stable growth, afterwards, when the telecom companies started to experience problems, the index value declined as well as the stocks of telecom companies. Unlike the passive managers, the active managers look for an opportunity to outperform the market. (BRI Wealth Managements PLC 2016.) All the characteristics of active management were discussed in the section about active investing strategy.

In the article “Passive investing defenders make case for ETFs” published on ft.com, by John Authers (2017) discusses the advantages of passive investments on the example of Exchange Trade funds. Passive investing started to attract attention and followers after the Black Monday crash that took place in 1987. This boosted the development of the market-cap weighted indexing, which means that funds started to purchase stocks in a proportion to the market value. This fact attracted much attention in terms of fear of over-valuation of stocks that are already over valued and keep growing even more. These are the characteristics of an investment bubble. Such an opinion makes sense as the passive sector becomes more and more popular and enormous amount of money are involved. The most popular, thus the most traded securities on the market are ETFs, flow of money goes into the US equities, which creates a situation when the winners keep winning, while the losers keep losing money. Therefore the stocks are valued unfairly. As a result, index funds allocate the majority of the resources into expensive companies, while the undervalued companies do not attract very much attention from passively managed funds. (Authers 2017.)

Although the crisis has passed, even positive financial innovations could be the reason for a problem on the market. Headlines are puzzled if index tracking funds are “*evil”* or not, and the sentiment towards indexers changes due to challenges that the market faces. One of the main players in both active and passive investments has published a paper named “Index Investing Supports Vibrant Capital Markets”. (Authers 2017.)

According to Authers (2017), the key points are as follows:

1. *Correlations, both between different stocks, and between stocks and other asset classes, have reduced somewhat during the years that passive investing has boomed — and they were as high in the 1930s, long before passive investing was even thought of, as they were in the worst of the turmoil in 2008-09. The adage that “when the markets go down the only thing that goes up is correlation” appears to be true.*

2. *Trading in ETFs remains low — by BlackRock’s estimates, index tracking funds turn over $460bn per year (7 per cent of their assets under management) against $10tn (80 per cent of assets) for active funds. Even if*

flows into passive are far greater, this suggests they are not yet setting prices at the margin.

3. *ETFs do help with price discovery. For example, international ETFs can trade when the markets they track are closed. Famously, a Greece ETF managed to trade in the US during the two weeks when Greek markets and banks were closed during the 2015 Grexit crisis.*

4. *Diversification of indices should deal with the issue that market cap-weighting leads to overcrowding in the biggest stocks. The popularity of "Smart Beta" funds, which use indexes that are weighted by measures other than market cap, should be seen as a positive counterweight to the problems caused by passive indexing. These days, there is indeed a continuum from active to passive with plenty of degrees in between.*

So, in fact these four positions point out that the market is dominated by just a few huge index funds that keep track of well-known indices. Thus market cap funds are valued in a total of more than 2.6 trillion dollars against 630 million dollars in smart beta funds. Thus it was concluded that indexing is mostly about market cap-weighting. ETF trading is so efficient, that on one day one sector is in demand, and all the stocks of this sector will grow, despite the other factors that can affect the price. (Authers 2017.)

The industry of Exchange Traded Funds grew considerably over the past several years; it opened new markets, especially the Emergency Market world, and even created a new investment class of asset allocation. Because of ETFs, passive investing becomes even more available for understanding due to its simplicity, and deals mostly with a top-down decision without worries about the skills of the manager. (Authers 2017.)

In the article published by BlackRock, named "Index Investing Supports Vibrant Capital Markets", different investment strategies are discussed. At the very beginning the authors note the fact that over the last 50 years index investing lowered the costs of maintenance and simplified the process of management.

The article explains different active and passive investing strategies. There are three types of strategies: active – absolute return, active – relative return, and index. (BlackRock 2017.)

The absolute return strategy strives to achieve a positive return on investment not depending on the performance of asset class. This strategy mostly is about the performance and operations of hedge funds. Hedge funds use such asset classes that are not traditionally available to other market participants. Examples of these techniques are long/short selling, trading on leverage, physical positions in commodities, and complicated financial contracts. This investment strategy involves the highest fees for investment research, thus it is the most expensive way of investing. (BlackRock 2017.)

The goal of the active-relative return strategy is to beat the market, by outperforming a chosen benchmarking index. There are two types of portfolio within this category: portfolios with fewer stocks in comparison to benchmark, but with high tracking error, and more diversified portfolios that generate returns quite close to the chosen benchmark. The fees of the active-relative investing strategy are higher than in the index investment strategy, due to the fact that it takes more resources for analysis and investment research on particular stocks. (BlackRock 2017.)

The index strategy, also known as “index investing”, could give the wrong impression of automated investment management. The index strategy strives to follow the chosen index and keep the performance of the portfolio as close as possible to the performance of the index, but an expert is required to do so. Index strategies are used by both separate accounts and collective investment funds (CIFs). The index funds always look for transparent, investable and strictly rules-based benchmarks in order to keep track on them. Transparency is about the disclosed rules of the index, its components, and risk-return profile. Investible is about a possibility to invest material amounts in the index constituents and the published return of index can be tracked. Strictly rules-based means that the manager of the portfolio cannot intervene in the determination of the investment universe, apart from management in order to minimize the tracking error and transaction costs. The management of the portfolio relies on maintenance of economies of scale that strives to minimize the costs of facilitation and does not employ fundamental analysis as a whole. (BlackRock 2017.)

BlackRock (2017) draws a figure of continuum of active and index strategies. The most index centric investment options are Exchange Traded Funds and index funds, while the less index centric options are hedge funds and actively managed funds. As figure shows in the middle there are actively managed Exchange Traded Funds and "Smart beta".

The three main strategies are Active – absolute return, Active – relative return, and index investment strategy. (BlackRock 2017.)

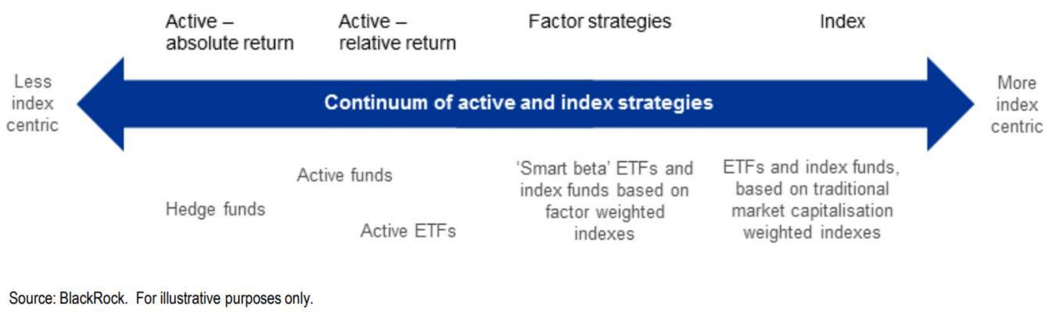

Figure 1. Continuum of investment styles (BlackRock 2017)

	$ trillions of market cap owned	Percentage of total market cap owned
Index	**11.9**	**17.5%**
Mutual funds	2.3	3.4%
ETFs[17]	2.7	4.0%
Institutional indexing*	5.4	7.9%
Internal indexing*	1.4	2.1%
Active	**17.4**	**25.6%**
Mutual funds	8.0	11.8%
Institutional	7.5	11.0%
Hedge funds*	1.9	2.8%
Assets not managed by an external manager (excl. internal index investing)	**38.7**	**57.0%**
Corporate (financial and non-financial)**	25.2	37.0%
Insurance and pensions (defined benefit and defined contribution)*	8.5	12.5%
Official institutions*	5.0	7.4%
Total	**67.9**	**100%**

Table 2. Ownership of global equity stocks (BlackRock 2017)

In Table 2, the ownership of the global equity stocks, by indexing, active and non-asset managed, are shown. As it is seen from the table, the share of the index

investments is slightly less than the share of active investments. According to this data, the following conclusion can be drawn: even though the share of index investing is quite significant on the global market, it is still not as popular as active investing. However, based on the observations made in this chapter, it is obvious that the share of index investing will grow constantly, as the popularity of such kind of investments rises significantly. The second conclusion that could be drawn based on the data presented in this thesis, is that the share of active management will decrease in the future, as the demand for active investing has significantly fallen over the last 50 years. (BlackRock 2017.)

2.4 Summary of active and passive investment strategy

	Active management	Passive management
Advantages	1. An opportunity to outperform the market: as the goal of active investing is to beat the benchmark, it offers the potential to ouperform the market. 2. Research insights: Research is conducted in order to identify in which company to invest in, this gives an opportunity to outbeat the market. 3. Risk avoidance: losses are avoided by managers, by picking up or not picking up particular securities.	1. Diversification: Passive investing provides investors with the possbility to well-performed diversification, as index consists of many companies. 2. Low costs: index funds keep track of the chosen benchmark, and strives to keep the weightings of the securities as close to benchmarking index as possible; thus the fees of passive managers are lower than of those who are active. 3. Simplicity: Index funds offer to invest in a simple way, as these track the index, and there is no need to monitor the performance of

		particular manager or security type.
Risks	1. Expences: Active managers have high fees, as the research requires time and resources in order to analyze which security is worth of investing, all the transactions are objects of fees and taxes. 2. Style of investing: the managers' style of investing could vary: some prefer to invest into securities that provide value for money; while some pick up securities that have potential for growth. 3. Volatility: There is no any guarantee to pick up constantly the winner securities, there is always risk, when manager picks up a loser stock.	1. Total market risk: index funds track entire market, thus if the market falls, the index funds also fall. 2. Lack of flexibility: It is not possible to move to another stocks, as the index funds track the index, thus managers have no possibility to pick up other securities, than thos manager thinks are going to decrease in price. 3. Performance constraints: Index funds are created with the purpose of keeping track of the chosen benchmark, not for outperformance of the market; the index funds generate slightly less return than the chosen benchmarking index.
In essence	Active managers pick up some securities that they believe would generate the profit in order tp beat the market.	Passive managers track the particular index in order to generate the profit, no decision mking process is employed.
Techniques	Active managers pick up the securities in accordance with their analysis, such as	1. The replication approach: the way to match an index, the stocks are purchased

	technical analysis and fundamental analysis, in order to identify which securities are undervalued, and would generate the profit.	exactly in the same proportion as it is weighted in the chosen index. 2. The sampling approach: commonly used when the index is large or complex (Russel 3000, with 3000 companies to monitor)Managers uses mathematical models in order to buy the range of securities that reflect the index performance and risk factors.

Table 3. Active and passive investing strategy summary (Vanguard 2017)

In order to sum up, it needs to be mentioned that both investing strategies have certain advantages and disadvantages Each of them is good for a certain goal, and in fact both of them could be used in investment portfolio creation. The passive strategy is better for those who intend to save the capital for retiremnet and reduce the costs of investments, while the active one is to be used by those who can take a risk by purchasing undervalued, in their opinion, stocks or other securities. However, it is better to mix these strategies, as it is a part of the diversification process and allows to eliminate some risks. Both of these strategies use different tools and methods to obtain the returns, and both ways are good for diffrerent goals. Also, based on the literature review, index funds and the passive investing strategy attracts the attention of investors more than it attracted ten years ago, for example. However, if everybody only invests in index funds, the market is not going to be efficient anymore, according to the Efficient Market Hyppothesis. This is the question which has puzzled people for a couple of decades, and there are different theories and hypothesises that are also believed in by investors.

2.5 Hints to create an investment portfolio

Today maintenance of the investment portfolio is a very crucial part of the investment process in order to succeed in terms of generating profit. Every single individual investor is supposed to determine the risk tolerance and the way of asset allocation, as they are crucial factors that affect all the investment process. There are four main steps to build the investment portfolio successfully.

2.5.1 Four steps to build a profitable portfolio

The first step is determination of the asset allocation appropriately. There are two main factors to consider upon the first step: the time to grow the investments and the age of the person. Besides these two main factors related to time issues, the amount of the capital is also important. It is an obvious fact that a 50 years old person needs a significantly different investment strategy comparing to a young man who just started his career, as they have different needs. (Investopedia 2018.)

Besides the importance of asset allocation, the significance of risk tolerance is also vital for investments. Different people invest every day, but not all of them are willing to risk money for greater returns by investing in more volatile securities. (Investopedia 2018.)

Risk tolerance and asset allocation are the factors that determine the proportion of the different asset classes in a portfolio. A portfolio can be conservative and aggressive. The aim of a conservative portfolio is to protect the value of the investments, and mostly is used by those who are close to their retirement, while the aggressive strategy is used by those persons who want to generate profit and achieve the growth of capital. (Investopedia 2018.)

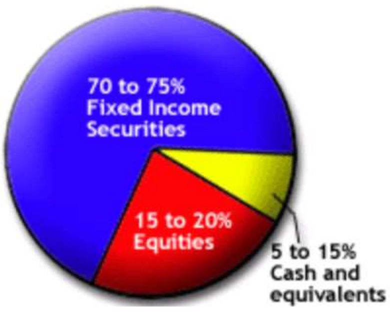

Figure 2. Conservative portfolio (Investopedia 2018)

As it is shown in Figure 2, the asset allocation for a conservative portfolio most likely looks almost the same. The major part of the assets are fixed income securities, such as bonds or blue-chip stocks with a high bond credit rating. 15 to 20 percent of the assets are equities such as stocks or real estate, and the rest 5 to 15 percent is cash and equivalents. (Investopedia 2018.)

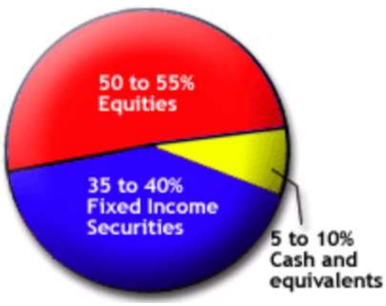

Figure 3. Moderately aggressive portfolio (Investopedia 2018)

When using the aggressive investment strategy, unlike the conservative one, the assets are allocated in a different way. Equities and fixed income securities are purchased in almost the same amount, and there is a small part of the cash (Figure 3). (Investopedia 2018.)

After the asset allocation is done, the capital is to be divided into different asset classes. This is the second step named achieving the portfolio. Capital could be divided in different ways, for example in different sectors, domestic and foreign stocks, different market capitalization, long and short term. Such securities can be chosen as stocks, bonds, ETFs and mutual funds. Stocks can be chosen from various industries, with different market capitalization, preferred stocks and stocks with dividends. Bonds also have different characteristics to consider, such as coupon rate and maturity. Mutual funds allow to hold stocks and bonds that

are picked up and researched by professionals. ETFs are almost the same as mutual funds, but they are traded like stocks. They have a range of different asset classes, but they are passively managed unlike the mutual funds. (Investopedia 2018.)

The third step is reassessing of the portfolio weightings and the process of reassessment. The portfolio is supposed to be rebalanced within a certain period of time, as the market movements change the weightings of the portfolio. For instance, at the beginning of the year stocks were just 15 percent of the portfolio and the rest 85 percent were bonds, while at the end of the year stocks weighted 25 percent and the rest 75 percent were bonds. This means that weighing of the stocks in that portfolio grew significantly, and according to the investment strategy, the portfolio is to be reassessed, part of stocks is to be sold and some bonds are to be purchased. In most of the cases, portfolios are reassessed once in a year since the moment of purchase; however this depends only on the portfolio holder. (Investopedia 2018.)

The fourth step is rebalancing of the portfolio. Rebalancing of the portfolio weightings is not about keeping the same percentage of different asset classes as they were initially purchased, but about a change in the strategy. For example, after five consecutive years of investments with weightings 85 percent bonds and 15 percent stocks it is obvious that the person has become older; thus the portfolio is to be rebalanced towards a safer investment strategy. Therefore the weighting of stocks is to be lowered, while the weighting of bonds is to be increased. Another factor to be considered in the process of rebalancing is tax implications, as tax is to be paid after some securities were sold. (Investopedia 2018.)

2.5.2 Diversification of the portfolio

Diversification of the portfolio is a crucial part of the risk elimination process. The idea of diversification is to choose different securities, the performance of which will depend on different factors. The portfolio can be diversified in different ways: bonds, stocks, ETFs, mutual funds, index funds, and hedge funds, for example. ETFs, mutual and index funds provide investors with broad market categories, while stocks and bonds are to be analysed. Stocks can be diversified by picking

up stocks with different market capitalization, different sectors, preferred and non-preferred stocks, with dividends and without dividends, while bonds are chosen by such criteria as maturity and coupon rate. Even though there are different types of stocks and bonds, these securities have such a similarity as bond credit rating (trustworthiness) varies for these securities; some of them generate higher profits with the higher risk to lose everything, while some are stable and are good for long-term investments. The credit ratings of securities are defined by different companies, by producing an analysis of different factors. (Investopedia 2018.)

2.5.3 Bond credit ratings

There are three main agencies that provide bond credit ratings: Fitch, Moody’s and S&P also known as Standard & Poor’s. This is the scale of S&P rating and the meanings of it.

<table>
<tr><th colspan="2">S&P</th><th>Meaning</th></tr>
<tr><td>Long-term</td><td>Short-term</td><td></td></tr>
<tr><td>AAA</td><td rowspan="4">A-1+</td><td>Prime</td></tr>
<tr><td>AA+</td><td rowspan="3">High grade</td></tr>
<tr><td>AA</td></tr>
<tr><td>AA-</td></tr>
<tr><td>A+</td><td rowspan="2">A-1</td><td rowspan="3">Upper medium grade</td></tr>
<tr><td>A</td></tr>
<tr><td>A-</td><td rowspan="2">A-2</td></tr>
<tr><td>BBB+</td><td rowspan="3">Lower medium grade</td></tr>
<tr><td>BBB</td><td rowspan="2">A-3</td></tr>
<tr><td>BBB-</td></tr>
<tr><td>BB+</td><td rowspan="6">B</td><td rowspan="3">Non-investment grade speculative</td></tr>
<tr><td>BB</td></tr>
<tr><td>BB-</td></tr>
<tr><td>B+</td><td rowspan="3">Highly speculative</td></tr>
<tr><td>B</td></tr>
<tr><td>B-</td></tr>
<tr><td>CCC+</td><td rowspan="2">C</td><td>Substantial risks</td></tr>
<tr><td>CCC</td><td>Extremely speculative</td></tr>
</table>

CCC-		In default with little prospect for recovery
CC		
C		
D	/	In default

Table 4. S&P bond credit ratings (MN LCPR 2012.)

Table 4 presents the level of trustworthiness of stocks and governmental debts, also known as bonds. The higher the level of trustworthiness, the less yield the security generates and vice versa: the lower the trust rate, the higher returns can be generated. In fact Table 4 presents the volatility of assets, thus the most preferable bonds and stocks are from AAA level to A- level for those who invest in a conservative way, as these are not volatile assets. (MN LCPR 2012.)

2.5.4 Summary

There are plenty of pitfalls to be considered during the investment portfolio creation. As various information was read and discussed in this thesis study, certain conclusions about the portfolio creation and management can be drawn. First, which securities to be chosen and in which proportion is to be discussed. It is an obvious fact that the younger the portfolio holder is, the higher the risk tolerance, thus more risky investments could be made. During the years, risk tolerance decreases, as the needs change. At the young years of life people strive to increase the capital, and do not usually think of retirement. When people get older, they start to think about the future, life after the retirement, and the investment strategy slightly changes year after year, from growth of the capital towards saving of capital for retirement. In other words, risky investments are mainly for those who are young and can take the risk of losing some money, while people at the age of 40-55 think about saving the money for their further life and cannot take such a risk as some 20-25 years old persons do.

The second factor to consider is diversification, as it concerns risk management. A well-diversified portfolio eliminates the risk of losing all the money invested in certain securities, For example the damage in the case of such a company as

Enron. Diversification is the key to success. One more important factor is rebalancing of the portfolio, the need for which grows from risk tolerance and change of aims of the investments. All in all, the logical conclusion from this literature review is that a strategy depends on the age of the investor and the aims of investments. A general rule is that the younger the investor, the more risky investments the investor can make and vice versa.

Answering the first research question, it can be concluded that people from 21 to 30 of age can invest in risky assets, as they have time to increase their capital, and there is no need just to save the value of money they have. So, as a conclusion, the investment portfolio of young investors differs from the investing portfolio of people who are close to retirement.

3 Empirical research

This chapter describes the empirical study. Stocks of several companies were picked up in order to create an investment portfolio. The first motivation of the choice will be explained regarding the way how it was decided these stocks were worth investing in without any analysis. At the end of the experiment, after ratios such as P/E, dividend yield and Market to book, have been calculated and the result is obtained, research questions two and three are answered. These questions are:

1. What are the factors that affect the decision to choose a particular security?
2. Is it possible to outperform the market index Dow Jones 30 within one month?

3.1 Basic information on stocks and motivation of choice

3.1.1 Philips

It was decided to purchase Philips stocks, as this is a big company with a revenue of 29,003 million dollars. Philips takes the 375th position among the companies all over the world in terms of the revenue figures. (Fortune 2017.) As the stock price of Philips exercised slight fluctuations for some time prior to the moment of

purchase, as well as a fall in the stock price, it was decided to purchase stocks of this company and allocate 16,078 euros, or 16 percent of the total budget. As the stocks of Philips are traded in different stock exchanges, it was decided to purchase them at NYSE as all the data, such as EPS, dividend yield and book value of stock were available for the company is in US dollars.

As shown in Table 5, it was decided to purchase 505 stocks, which were valued at 16,078.60 euros at the EUR/USD rate 1.2334 on 12 March 2018. The price of Philips stocks increased by 0.21 USD and generated 85.98 euros of gain with the exchange rate on 12 March 2018, which rate was used in order not to affect the results due to currency rate fluctuations. The total growth percentage was 0.53%, which helped to save the value of money. The inflation rate in the euro area is 1.3 percent per year. (Trading Economics 2018.) As the gain of 0.53 percent was generated during a month, this means that the capital even increased slightly.

	Philips						
	stock price	$ change	quantity	% change	$ pack change	price of pack	Euro value
12.03.2018	$ 39,27		505			$ 19 831,35	€ 16 078,60
13.03.2018	$ 38,84	-€ 0,43	505	-1,09%	-€ 217,15	$ 19 614,20	€ 15 902,55
14.03.2018	$ 38,91	€ 0,07	505	0,18%	€ 35,35	$ 19 649,55	€ 15 931,21
15.03.2018	$ 39,00	€ 0,09	505	0,23%	€ 45,45	$ 19 695,00	€ 15 968,06
16.03.2018	$ 40,21	€ 1,21	505	3,10%	€ 611,05	$ 20 306,05	€ 16 463,47
19.03.2018	$ 39,91	-€ 0,30	505	-0,75%	-€ 151,50	$ 20 154,55	€ 16 340,64
20.03.2018	$ 39,81	-€ 0,10	505	-0,25%	-€ 50,50	$ 20 104,05	€ 16 299,70
21.03.2018	$ 40,00	€ 0,19	505	0,48%	€ 95,95	$ 20 200,00	€ 16 377,49
22.03.2018	$ 38,89	-€ 1,11	505	-2,78%	-€ 560,55	$ 19 639,45	€ 15 923,02
23.03.2018	$ 37,69	-€ 1,20	505	-3,09%	-€ 606,00	$ 19 033,45	€ 15 431,69
26.03.2018	$ 38,16	€ 0,47	505	1,25%	€ 237,35	$ 19 270,80	€ 15 624,13
27.03.2018	$ 37,60	-€ 0,56	505	-1,47%	-€ 282,80	$ 18 988,00	€ 15 394,84
28.03.2018	$ 38,01	€ 0,41	505	1,09%	€ 207,05	$ 19 195,05	€ 15 562,71
29.03.2018	$ 38,31	€ 0,30	505	0,79%	€ 151,50	$ 19 346,55	€ 15 685,54
03.04.2018	$ 37,84	-€ 0,47	505	-1,23%	-€ 237,35	$ 19 109,20	€ 15 493,11
04.04.2018	$ 37,72	-€ 0,12	505	-0,32%	-€ 60,60	$ 19 048,60	€ 15 443,98
05.04.2018	$ 38,59	€ 0,87	505	2,31%	€ 439,35	$ 19 487,95	€ 15 800,19
06.04.2018	$ 38,35	-€ 0,24	505	-0,62%	-€ 121,20	$ 19 366,75	€ 15 701,92
09.04.2018	$ 38,75	€ 0,40	505	1,04%	€ 202,00	$ 19 568,75	€ 15 865,70
10.04.2018	$ 39,59	€ 0,84	505	2,17%	€ 424,20	$ 19 992,95	€ 16 209,62
11.04.2018	$ 39,09	-€ 0,50	505	-1,26%	-€ 252,50	$ 19 740,45	€ 16 004,91
12.04.2018	$ 39,54	€ 0,45	505	1,15%	€ 227,25	$ 19 967,70	€ 16 189,15
13.04.2018	$ 39,48	-€ 0,06	505	-0,15%	-€ 30,30	$ 19 937,40	€ 16 164,59
			Total growth:	**0,53%**		Profit or loss:	**€ 85,98**

Table 5. Performace of Philips stocks since 12.03 until 13.04 (investing.com 2018)

3.1.2 Magnit

Magnit is one of the biggest shop networks in Russia with more than 15,000 branches all over Russia. It has 12,283 grocery stores and 242 hypermarkets, as

well as 3890 branches selling cosmetics. (Magnit 2018.) After 29.1% of the stocks were sold by businessman Sergey Galickiy to VTB bank, the stock price was expected to grow, as such acquisitions mean overall growth in sentiments and thus a growth in the stock price. (rbc.ru 2018) It was decided to allocate 15% of the total budget to purchase stocks of the Magnit company. A total of 200 stocks were purchased at the price of 5,154 rubles, equivalent of 14,688.90 euros at the EUR/RUB exchange rate of 0.01425 on 12 March 2018.

Magnit							
	stock price	$ change	quantity	% change	$ pack change	price of pack	Euro value
12.03.2018	5 154,00 ₽		200			1 030 800,00 ₽	€ 14 688,90
13.03.2018	5 050,00 ₽	- 104,00 ₽	200	-2,02%	- 20 800,00 ₽	1 010 000,00 ₽	€ 14 392,50
14.03.2018	4 970,00 ₽	- 80,00 ₽	200	-1,58%	- 16 000,00 ₽	994 000,00 ₽	€ 14 164,50
15.03.2018	5 149,00 ₽	179,00 ₽	200	3,60%	35 800,00 ₽	1 029 800,00 ₽	€ 14 674,65
16.03.2018	4 957,00 ₽	- 192,00 ₽	200	-3,73%	- 38 400,00 ₽	991 400,00 ₽	€ 14 127,45
19.03.2018	4 990,00 ₽	33,00 ₽	200	0,67%	6 600,00 ₽	998 000,00 ₽	€ 14 221,50
20.03.2018	4 930,00 ₽	- 60,00 ₽	200	-1,20%	- 12 000,00 ₽	986 000,00 ₽	€ 14 050,50
21.03.2018	4 910,00 ₽	- 20,00 ₽	200	-0,41%	- 4 000,00 ₽	982 000,00 ₽	€ 13 993,50
22.03.2018	4 800,00 ₽	- 110,00 ₽	200	-2,24%	- 22 000,00 ₽	960 000,00 ₽	€ 13 680,00
23.03.2018	4 747,00 ₽	- 53,00 ₽	200	-1,10%	- 10 600,00 ₽	949 400,00 ₽	€ 13 528,95
26.03.2018	4 715,00 ₽	- 32,00 ₽	200	-0,67%	- 6 400,00 ₽	943 000,00 ₽	€ 13 437,75
27.03.2018	4 755,00 ₽	40,00 ₽	200	0,85%	8 000,00 ₽	951 000,00 ₽	€ 13 551,75
28.03.2018	4 605,00 ₽	- 150,00 ₽	200	-3,15%	- 30 000,00 ₽	921 000,00 ₽	€ 13 124,25
29.03.2018	4 636,00 ₽	31,00 ₽	200	0,67%	6 200,00 ₽	927 200,00 ₽	€ 13 212,60
03.04.2018	4 700,00 ₽	64,00 ₽	200	1,38%	12 800,00 ₽	940 000,00 ₽	€ 13 395,00
04.04.2018	4 651,00 ₽	- 49,00 ₽	200	-1,04%	- 9 800,00 ₽	930 200,00 ₽	€ 13 255,35
05.04.2018	4 725,00 ₽	74,00 ₽	200	1,59%	14 800,00 ₽	945 000,00 ₽	€ 13 466,25
06.04.2018	4 694,00 ₽	- 31,00 ₽	200	-0,66%	- 6 200,00 ₽	938 800,00 ₽	€ 13 377,90
09.04.2018	4 484,00 ₽	- 210,00 ₽	200	-4,47%	- 42 000,00 ₽	896 800,00 ₽	€ 12 779,40
10.04.2018	4 518,00 ₽	34,00 ₽	200	0,76%	6 800,00 ₽	903 600,00 ₽	€ 12 876,30
11.04.2018	4 555,00 ₽	37,00 ₽	200	0,82%	7 400,00 ₽	911 000,00 ₽	€ 12 981,75
12.04.2018	4 730,00 ₽	175,00 ₽	200	3,84%	35 000,00 ₽	946 000,00 ₽	€ 13 480,50
13.04.2018	4 710,00 ₽	- 20,00 ₽	200	-0,42%	- 4 000,00 ₽	942 000,00 ₽	€ 13 423,50
			Total growth:	-8,61%		Profit or loss:	-€ 1 265,40

Table 6. Performaтce of Magnit stocks since 12.03 until 13.04 (investing.com 2018)

Table 6 shows the stock price of Magnit during the period of time since 12 March 2018, initial date of purchase until 13 April 2018, date of sale. The price of Magnit stocks decreased by 444 rubles and generated 1,265.40 euros loss at the exchange rate on 12 March 2018. The total loss in percentages was 8.61%. This was the worst performing security that was picked up for this investment portfolio, as this was the only security that showed negative performance.

3.1.3 BMW

BMW is a well-known company because of the vehicles they produce. BMW group is included into the 100 top companies with the highest revenue all over

the world, and it takes the 52nd place, with a total revenue of 104.130 million US Dollars. (Fortune 2017.) In addition to that, recently the stocks of BMW experienced a the fall in price and have fluctuated since February 2018. Thus the stock was expected to grow, as this is a big company without major problems. It was decided to allocate 20 percent of the budget in BMW stocks.

	BMW					
	stock price	$ change	quantity	% change	$ pack change	price of pack
12.03.2018	€ 85,71		250			€ 19 831,35
13.03.2018	€ 84,63	-€ 1,08	250	-1,26%	€ 1 326,15	€ 21 157,50
14.03.2018	€ 84,17	-€ 0,46	250	-0,54%	-€ 115,00	€ 21 042,50
15.03.2018	€ 85,12	€ 0,95	250	1,13%	€ 237,50	€ 21 280,00
16.03.2018	€ 85,86	€ 0,74	250	0,87%	€ 185,00	€ 21 465,00
19.03.2018	€ 85,17	-€ 0,69	250	-0,80%	-€ 172,50	€ 21 292,50
20.03.2018	€ 85,99	€ 0,82	250	0,96%	€ 205,00	€ 21 497,50
21.03.2018	€ 86,10	€ 0,11	250	0,13%	€ 27,50	€ 21 525,00
22.03.2018	€ 85,33	-€ 0,77	250	-0,89%	-€ 192,50	€ 21 332,50
23.03.2018	€ 84,18	-€ 1,15	250	-1,35%	-€ 287,50	€ 21 045,00
26.03.2018	€ 85,21	€ 1,03	250	1,22%	€ 257,50	€ 21 302,50
27.03.2018	€ 85,81	€ 0,60	250	0,70%	€ 150,00	€ 21 452,50
28.03.2018	€ 85,56	-€ 0,25	250	-0,29%	-€ 62,50	€ 21 390,00
29.03.2018	€ 88,15	€ 2,59	250	3,03%	€ 647,50	€ 22 037,50
03.04.2018	€ 88,68	€ 0,53	250	0,60%	€ 132,50	€ 22 170,00
04.04.2018	€ 87,41	-€ 1,27	250	-1,43%	-€ 317,50	€ 21 852,50
05.04.2018	€ 88,70	€ 1,29	250	1,48%	€ 322,50	€ 22 175,00
06.04.2018	€ 88,97	€ 0,27	250	0,30%	€ 67,50	€ 22 242,50
09.04.2018	€ 88,34	-€ 0,63	250	-0,71%	-€ 157,50	€ 22 085,00
10.04.2018	€ 89,99	€ 1,65	250	1,87%	€ 412,50	€ 22 497,50
11.04.2018	€ 89,87	-€ 0,12	250	-0,13%	-€ 30,00	€ 22 467,50
12.04.2018	€ 89,93	€ 0,06	250	0,07%	€ 15,00	€ 22 482,50
13.04.2018	€ 91,33	€ 1,40	250	1,56%	€ 350,00	€ 22 832,50
			Total growth:	**15,13%**	Profit or loss:	**€ 3 001,15**

Table 7. Performace of BMW stocks since 12.03 until 13.04 (investing.com 2018)

As illustrated in Table 7 with data about the stock price and its fluctuations, 250 stocks were purchased, which were valued at 19,831.35 euros. The price of BMW stocks increased by 5.62 euro and generated 3,001.15 euros of profit. The total growth in percentages was 15.13%, which is considerable rally for a company that cannot be treated as a risky investment.

3.1.4 British Petroleum

British Petroleum is one of the most powerful energy companies that extract crude oil all over the world. British Petroleum is the 12th company in the world in terms of revenue: 186.606 million dollars. (Fortune 2017.) According to the data

on BP stocks placed on NYSE stock exchange, before the moment of purchase of these stocks, the price had fallen quite considerably, which allows to believe in a recovery in the stock price in the nearest future. Also, the fact of slight fluctuations in the price allows to believe in recovery in the stock price. It was decided to allocate 25,000 euros from the budget to purchase these stocks, as this is a big company with potential to grow.

	British Petroleum						
	stock price	$ change	quantity	% change	$ pack change	price of pack	Euro value
12.03.2018	$ 39,85		801			$ 31 919,85	€ 25 879,56
13.03.2018	$ 39,55	-£ 0,30	801	-0,75%	$ -240,30	$ 31 679,55	€ 25 684,73
14.03.2018	$ 38,87	-£ 0,68	801	-1,72%	$ -544,68	$ 31 134,87	€ 25 243,12
15.03.2018	$ 39,03	£ 0,16	801	0,41%	$ 128,16	$ 31 263,03	€ 25 347,03
16.03.2018	$ 39,48	£ 0,45	801	1,15%	$ 360,45	$ 31 623,48	€ 25 639,27
19.03.2018	$ 38,75	-£ 0,73	801	-1,85%	$ -584,73	$ 31 038,75	€ 25 165,19
20.03.2018	$ 39,04	£ 0,29	801	0,75%	$ 232,29	$ 31 271,04	€ 25 353,53
21.03.2018	$ 40,13	£ 1,09	801	2,79%	$ 873,09	$ 32 144,13	€ 26 061,40
22.03.2018	$ 39,03	-£ 1,10	801	-2,74%	$ -881,10	$ 31 263,03	€ 25 347,03
23.03.2018	$ 39,12	£ 0,09	801	0,23%	$ 72,09	$ 31 335,12	€ 25 405,48
26.03.2018	$ 40,42	£ 1,30	801	3,32%	$ 1 041,30	$ 32 376,42	€ 26 249,73
27.03.2018	$ 39,97	-£ 0,45	801	-1,11%	$ -360,45	$ 32 015,97	€ 25 957,49
28.03.2018	$ 39,60	-£ 0,37	801	-0,93%	$ -296,37	$ 31 719,60	€ 25 717,20
29.03.2018	$ 40,54	£ 0,94	801	2,37%	$ 752,94	$ 32 472,54	€ 26 327,66
03.04.2018	$ 40,71	£ 0,17	801	0,42%	$ 136,17	$ 32 608,71	€ 26 438,07
04.04.2018	$ 41,03	£ 0,32	801	0,79%	$ 256,32	$ 32 865,03	€ 26 645,88
05.04.2018	$ 41,92	£ 0,89	801	2,17%	$ 712,89	$ 33 577,92	€ 27 223,87
06.04.2018	$ 41,76	-£ 0,16	801	-0,38%	$ -128,16	$ 33 449,76	€ 27 119,96
09.04.2018	$ 41,66	-£ 0,10	801	-0,24%	$ -80,10	$ 33 369,66	€ 27 055,02
10.04.2018	$ 42,78	£ 1,12	801	2,69%	$ 897,12	$ 34 266,78	€ 27 782,37
11.04.2018	$ 43,06	£ 0,28	801	0,65%	$ 224,28	$ 34 491,06	€ 27 964,21
12.04.2018	$ 43,06	£ -	801	0,00%	$ -	$ 34 491,06	€ 27 964,21
13.04.2018	$ 42,96	-£ 0,10	801	-0,23%	$ -80,10	$ 34 410,96	€ 27 899,27
			Total growth:	**7,80%**		Profit or loss:	**€ 2 019,71**

Table 8. Performance of BP stocks since 12.03 until 13.04 (investing.com 2018)

As Table 8 above shows, it was decided to purchase 801 stocks, which were valued at 25,879.56 euros at the EUR/USD rate of 1.2334 on 12 March 2018. The price of the British Petroleum stock increased by 3.11 dollars and generated 2,019.71 euros at the exchange rate on 12 March 2018. The total growth in percentages was 7.80%, which is a good result for one of the top companies in the market segment.

3.1.5 Alcoa

Alcoa corporation is the third biggest aluminium producer in the world after Rusal and Rio Tinto Alcan (Federation of Aluminium Consumers in Europe n.d.). This company performed quite stably during February and half of March, thus it was

decided to purchase stocks of this company as it is a safe haven, and a stable company with no significant fluctuations is supposed to be included in every portfolio.

	Alcoa						
	stock price	$ change	quantity	% change	$ pack change	price of pack	Euro value
12.03.2018	$ 48,36		600			$ 29 016,00	€ 23 525,21
13.03.2018	$ 48,59	$ 0,23	600	0,48%	$ 138,00	$ 29 154,00	€ 23 637,10
14.03.2018	$ 46,57	$ -2,02	600	-4,16%	$ -1 212,00	$ 27 942,00	€ 22 654,45
15.03.2018	$ 46,93	$ 0,36	600	0,77%	$ 216,00	$ 28 158,00	€ 22 829,58
16.03.2018	$ 47,23	$ 0,30	600	0,64%	$ 180,00	$ 28 338,00	€ 22 975,51
19.03.2018	$ 46,36	$ -0,87	600	-1,84%	$ -522,00	$ 27 816,00	€ 22 552,29
20.03.2018	$ 46,47	$ 0,11	600	0,24%	$ 66,00	$ 27 882,00	€ 22 605,81
21.03.2018	$ 47,95	$ 1,48	600	3,18%	$ 888,00	$ 28 770,00	€ 23 325,77
22.03.2018	$ 44,92	$ -3,03	600	-6,32%	$ -1 818,00	$ 26 952,00	€ 21 851,79
23.03.2018	$ 44,71	$ -0,21	600	-0,47%	$ -126,00	$ 26 826,00	€ 21 749,64
26.03.2018	$ 45,77	$ 1,06	600	2,37%	$ 636,00	$ 27 462,00	€ 22 265,28
27.03.2018	$ 44,90	$ -0,87	600	-1,90%	$ -522,00	$ 26 940,00	€ 21 842,06
28.03.2018	$ 44,42	$ -0,48	600	-1,07%	$ -288,00	$ 26 652,00	€ 21 608,56
29.03.2018	$ 44,96	$ 0,54	600	1,22%	$ 324,00	$ 26 976,00	€ 21 871,25
03.04.2018	$ 45,35	$ 0,39	600	0,87%	$ 234,00	$ 27 210,00	€ 22 060,97
04.04.2018	$ 46,92	$ 1,57	600	3,46%	$ 942,00	$ 28 152,00	€ 22 824,71
05.04.2018	$ 47,61	$ 0,69	600	1,47%	$ 414,00	$ 28 566,00	€ 23 160,37
06.04.2018	$ 48,05	$ 0,44	600	0,92%	$ 264,00	$ 28 830,00	€ 23 374,41
09.04.2018	$ 50,62	$ 2,57	600	5,35%	$ 1 542,00	$ 30 372,00	€ 24 624,61
10.04.2018	$ 54,08	$ 3,46	600	6,84%	$ 2 076,00	$ 32 448,00	€ 26 307,77
11.04.2018	$ 53,97	$ -0,11	600	-0,20%	$ -66,00	$ 32 382,00	€ 26 254,26
12.04.2018	$ 54,47	$ 0,50	600	0,93%	$ 300,00	$ 32 682,00	€ 26 497,49
13.04.2018	$ 54,96	$ 0,49	600	0,90%	$ 294,00	$ 32 976,00	€ 26 735,85
			Total growth:	13,65%		Profit or loss:	€ 3 210,64

Table 9. Performance of Alcoa stocks since 12.03 until 13.04 (investing.com 2018)

It was decided to allocate 23,525.21 euros for the purchase of 600 stocks of Alcoa at the EUR/USD exchange rate of 1.2334 on 12 March 2018 (Table 9). The price of ALCOA stocks increased by 6.60 dollars during the month (Table 9), and this was a considerable boost in the price of stocks. It can be explained by the US sanctions against Rusal, which is a competitor of Alcoa, when the sentiment of traders moved towards uncertainty about the Rusal situation and Alcoa's trustworthiness increased, as well as the demand for the stocks of Alcoa. The total growth percentage was 13.65,which is a considerable boost, as the company is not a volatile asset as a whole.

3.1.6 Benchmarking index

As a benchmarking index it was decided to choose the Dow Jones Industrial Average, as this is one of the main indices in the world. Also, one more important

factor to choose DJIA as a benchmark was the fact that it consists of 30 companies, while most indices consist of 50 or 100 companies. At the beginning of the experiment, the aim of which was to outperform the Dow Jones index within a period of one month, the value of the Dow Jones was 25,178.61 and the value of “My portfolio” was 100.

	Total	**My portfolio**			
		$	+/-	%	Index
12.03.2018	€ 100 003,63				100,00
13.03.2018	€ 100 774,38	€ 770,75	0,771	0,771%	100,77
14.03.2018	€ 99 035,78	-€ 1 738,60	- 1,739	-1,725%	99,03
15.03.2018	€ 100 099,32	€ 1 063,53	1,063	1,074%	100,10
16.03.2018	€ 100 670,71	€ 571,40	0,571	0,571%	100,67
19.03.2018	€ 99 572,13	-€ 1 098,58	- 1,099	-1,091%	99,57
20.03.2018	€ 99 807,03	€ 234,90	0,235	0,236%	99,80
21.03.2018	€ 101 283,16	€ 1 476,13	1,476	1,479%	101,28
22.03.2018	€ 98 134,34	-€ 3 148,82	- 3,149	-3,109%	98,13
23.03.2018	€ 97 160,76	-€ 973,58	- 0,974	-0,992%	97,16
26.03.2018	€ 98 879,39	€ 1 718,64	1,719	1,769%	98,88
27.03.2018	€ 98 198,65	-€ 680,75	- 0,681	-0,688%	98,20
28.03.2018	€ 97 402,73	-€ 795,92	- 0,796	-0,811%	97,40
29.03.2018	€ 99 134,56	€ 1 731,83	1,732	1,778%	99,13
03.04.2018	€ 99 557,14	€ 422,59	0,423	0,426%	99,55
04.04.2018	€ 100 022,42	€ 465,28	0,465	0,467%	100,02
05.04.2018	€ 101 825,68	€ 1 803,26	1,803	1,803%	101,82
06.04.2018	€ 101 816,69	-€ 8,98	- 0,009	-0,009%	101,81
09.04.2018	€ 102 409,73	€ 593,04	0,593	0,582%	102,41
10.04.2018	€ 105 673,56	€ 3 263,83	3,264	3,187%	105,67
11.04.2018	€ 105 672,62	-€ 0,94	- 0,001	-0,001%	105,67
12.04.2018	€ 106 613,85	€ 941,23	0,941	0,891%	106,61
13.04.2018	€ 107 055,71	€ 441,86	0,442	0,414%	107,05
	Total Profit or loss:	**€ 7 052,08**		**Total change of index:**	**7,05%**

Table 10. Overall performance of "My portfolio" since 12.03 until 13.04

As it is shown in Table 10 above, the total change in “My portfolio” was 7.05 percent of gain, or 7,055.71 euros of profit. Even if the Dow Jones is not taken into consideration, the portfolio showed a good result, as it not just maintained the value of money within a month, but generated profit over the inflation rate. However, the goal of the experiment was to outperform the benchmark. According to the data obtained about the performance of the Dow Jones Industrial Average, at the moment of initial purchase, the Dow Jones was 25,178.61, while at the moment of stock sale the Dow Jones was 24,306.14, which is lower than at the beginning. Total loss of Dow Jones during the month was 3%. This is a common situation when the index declines before a new boost of growth, but the aim of the experiment was to beat the market. According to the data acquired (Table 10 ad 11), the performance of “My portfolio” during the period of time since 12 March 2018 until 13 April 2018 was better than the performance of the Dow Jones

Industrial Average by approximately 10%, and this was a difference of 10,000 euros, as the gain of “My portfolio” was 7,052.08 and the budget was 100,000 euros.

	Dow Jones			Who's better?
	+/-	%	Index	%
12.03.2018			25 178,61	
13.03.2018	- 171,58	-0,681%	25 007,03	My Portfolio
14.03.2018	- 46,23	-0,185%	24 758,12	Dow Jones
15.03.2018	115,54	0,467%	24 873,66	My Portfolio
16.03.2018	72,85	0,293%	24 946,51	My Portfolio
19.03.2018	- 335,60	-1,345%	24 610,91	My Portfolio
20.03.2018	116,36	0,473%	24 727,27	Dow Jones
21.03.2018	- 44,96	-0,182%	24 682,31	My Portfolio
22.03.2018	- 724,42	-2,935%	23 957,89	Dow Jones
23.03.2018	- 424,69	-1,773%	23 533,20	My Portfolio
26.03.2018	669,40	2,844%	24 202,60	Dow Jones
27.03.2018	- 344,89	-1,425%	23 857,71	My Portfolio
28.03.2018	- 9,29	-0,039%	23 848,42	Dow Jones
29.03.2018	254,69	1,068%	24 103,11	My Portfolio
03.04.2018	- 69,75	-0,289%	24 033,36	My Portfolio
04.04.2018	230,94	0,961%	24 264,30	Dow Jones
05.04.2018	240,92	0,993%	24 505,22	My Portfolio
06.04.2018	- 572,46	-2,336%	23 932,76	My Portfolio
09.04.2018	46,34	0,194%	23 979,10	My Portfolio
10.04.2018	428,90	1,789%	24 408,00	My Portfolio
11.04.2018	- 218,55	-0,895%	24 189,45	My Portfolio
12.04.2018	293,60	1,214%	24 483,05	Dow Jones
13.04.2018	- 122,91	-0,502%	24 360,14	My Portfolio
	Total change of index:		**-3%**	**My Portfolio**

Table 11. Performance of DJIA since 12.03 until 13.04 (investing.com)

3.2 Market to book value

Market to Book value is Market to book ratio, or M/B ratio. The companies’ book value was calculated as follows:

$$M/B = \frac{(Total\ Stockholder\ Equity - Preffered\ Equity)}{Total\ Outstanding\ stocks} \qquad (1)$$

In addition to that, book value could be calculated in different way:

$$P/B = \frac{Stock\ price}{Shareholder\ equity\ per\ share} \qquad (2)$$

(Investopedia 2018.)

What applies to all the companies that have a considerable difference between the Market and Book ratio is that these companies are overvalued and investors are willing to overpay for the company's assets, or so-called premium, due to the fact that the opinion of the market is that a particular company may generate higher profits per share (My Accounting Course 2018.).

Company	Date of latest book value	Market value of stock on 13.04.2018	Book value of stock	Monetary difference	Market Value / Book value
Philips	31.12.2017	$ 39,48	$ 15,16	**$ 24,32**	**2,60**
Magnit	31.12.2017	4 710,00 ₽	2 743,91 ₽	**1 966,09 ₽**	**1,72**
BMW	31.12.2017	€ 91,33	€ 79,71	**€ 11,62**	**1,15**
British Petroleum	31.12.2017	$ 42,96	$ 29,84	**$ 13,12**	**1,44**
Alcoa	31.12.2017	$ 54,96	$ 28,98	**$ 25,98**	**1,90**

Table 12. Market to book value of the companies placed in "My portfolio"

3.2.1 Philips

Table 12 presents the figures for Market and book value of the chosen stocks. Market to Book value of Philips is 2.60, which means that the company is undervalued, as the assets of the company are worth more than the stocks traded on the stock exchange. This is a characteristic of a financially healthy company that has a consistent amount of tangible assets, such as production plants, as Philips has. Philips has 25,315 million dollars of assets, 13,316 million dollars of liabilities and 11,999 million dollars of shareholders' equity. As the assets are financed almost equally from shareholders' equity and liabilities. It has a market to book ratio of 2.60. As shareholders' equity starts to cover the assets by more than a half, it will decrease, and the stock price will grow. Other factors that affect the M/B ratio are RoE (Return on Equity) and RoA (Return on Assets). The RoE of Philips over the last five years was 5.19%, and RoA 2.23%, while the average in the industry was 12.07 and 6.29% respectively. These ratios affect the stock

prices as follows: – higher RoE and RoA – higher stock price – higher M/B ratio, and vice versa. (Investing.com 2018)

3.2.2 Magnit

The Market to Book value of Magnit is 1.72, which means that the company is slightly undervalued, like in the case with Philips. As Philips, half of Magnit's assets are financed by liabilities and half by shareholders' equity. The total amount of assets are valued at 9,137.56 million dollars, while liabilities are valued at 4,635.71 million dollars and shareholders' equity of 4,501.85 million dollars. As the assets are financed equally by equity and liabilities, the Market to Book ratio is close to 2, but unlike Philips, Magnit is not very much undervalued and the room for growth is less. When it comes to RoE and RoA, the situation is quite similar to the Philips case. Return on Equity over the last year is 15.75%, while the industry average is 38.42%. In addition, Return on Assets is 7.32%, while the industry average is 15.87%. These figures show that the M/B ratio would be higher if RoE and RoA would be higher, and if so, the company would be more undervalued. Due to this fact, it can be concluded that the company is almost fairly valued in comparison to Philips. (Investing.com 2018)

3.2.3 BMW

The Market to Book value of BMW is 1.15, which means that the company is fairly valued, as the assets of the company are worth almost as much as the stocks traded on the stock exchange. This is a characteristic of a financially healthy company that has a consistent amount of tangible assets such as production plants, factories and official service centres, like BMW group has. BMW has 193,483 million euros of assets, 139,371 million euros of liabilities and 54,112 million euros of shareholders' equity. As the assets are financed mostly from liabilities, it has a Market to Book ratio of 1.15. The company is financially healthy due to the fact that more shareholders' equity is employed. The conclusion could be drawn: bigger book value company has - less M/B ratio is. One more important reason that proves BMW is a fairly valued company is a RoE of 16.09% over the last five years, while the average in the industry is 17.47%, and a RoA of 3.93%, while average is 4.61%. (Investing.com 2018)

3.2.4 British Petroleum

The Market to Book value of British Petroleum is 1.44, which means that the company is quite fairly valued, but not as fairly as BMW. British Petroleum is a big company and has total assets of 276,515 million dollars. The assets are balanced by 178,024 million dollars of liabilities and 98,491 million shareholders' equity. As the company's assets are mostly financed by liabilities, it has a quite fair market value, in comparison to, for example, Philips. When it comes to RoE and RoA, over the last year the company has shown outstanding results, in comparison to the average results in the industry. The RoE of BP is 4.38%, while the average in industry is -2.75%. The RoA of British Petroleum is 1.6%, while the industry's average RoA is -1.67%. The results are outstanding, and even though, the results of the company are better than the industry's averagy, it is still quite fairly valued, as the RoE and RoA figures are quite low in general. (Investing.com 2018)

3.2.5 Alcoa

The Market to Book value of Alcoa is 1.90, and according to this figure, the company is quite fairly valued, but not completely. The value of assets is quite close to the value of all the traded stocks of the company. Alcoa has 17,096 million dollars assets, financed by 11,728 milliion dollars of liabilities and 5,368 million dollars of equity. As the assets are financed mostly by liabilities, the company is more fairly valued, as just one third of the capital is from shareholders. As the assets are mostly financed by debts and bank loans, it is obvious that Alcoa is fairly valued. The RoE of Alcoa is 2.92%, while the average in the industry is -10.94%. This affects the Market to Book value significantly, as the RoE of the company is considerably bigger than the industry's average. As it is was mentioned above, larger RoE – larger stock price – larger M/B ratio. (Investing.com 2018)

3.2.6 Summary

The Market to Book value allows to assess how a company is valued on the market, whether it is undervalued, overvalued or fairly valued. Undervalued companies have an M/B ratio of more than 1, overvalued companies have an M/B

of less than 1, and fairly valued companies have an M/B ratio of 1 or close to that value. During the calculations and analysis process, of why the M/B value of a particular company equals to what it equals, one important fact was found. According to the obtained data about the RoE and RoA of the chosen companies, the most fairly valued companies have a common characteristic: assets are mostly financed by liabilities (approximately two thirds) and the rest by equity (approximately one third). Also, in addition to that, it was found that companies that have a Market to Book value close to 1, generated the most profit (BP and BMW), while Magnit and Philips generated a loss or small profit. When it comes to Alcoa, the company is not very fairly valued due to a sharp hike in the stock price, after sanctions against Rusal. The consequence of the sharp rise in the stock price was an increased M/B ratio, thus Alcoa is supposed to be in line with BP and BMW, but it is not, due to market sentiment.

3.3 P/E ratio

P/E ratio (Price-Earnings Ratio) also known as price multiple or earnings multiple. According to Investopedia (2018) P/E is calculated as follows:

$$\frac{Market\ value\ of\ share}{Earnings\ per\ share} = P/E \qquad (3)$$

The market value of a stock is the price of stocks that are traded on the stock exchange, while EPS or Earnings per share equals to fiscal profit divided by the number of stocks traded. P/E ratio shows how much money an investor is willing to pay to get one dollar/euro/ruble of the current profit back. (Investopedia 2018.) Even though there are no such examples in the sample of this study, the P/E ratio can be even negative, but it is not common to calculate it if the company is in a loss position.

Company	Stock price	EPS	P/E ratio
Philips	$ 39,48	***$ 0,85***	***46,45***
Magnit	4 710,00 ₽	***397,78 ₽***	***11,84***
BMW	€ 91,33	***€ 11,53***	***7,92***
British Petroleum	$ 42,96	***$ 1,29***	***33,30***
Alcoa	$ 54,96	***$ 0,86***	***63,91***

Table 13. Price to earnings per share calculations

The average market P/E ratio is 20-25, which means everything below 20 is to be treated as a low P/E and under 25 is to be treated as a high P/E, while a P/E between 20 and 25 is an average. In general a high P/E means that investors expect higher earnings in the future, comparing to companies with a low P/E ratio. Companies with a low P/E could also be treated as undervalued companies, or the perfromance of the company is relatively better than previously. (Investopedia 2018.)

As shown in Table 13, to begin with companies with a high P/E ratio, the P/E of Philips is 46.45. This is a high P/E, thus investors expect that the stock price is going to increase, and are going to invest more in that company. The P/E ratio of British Petroleum is 33.3, which is also a high result according to Investopedia (2018). It is to be mentioned that the stock price of BP fell during the winter of 2018, and it has just started to recover . Thus it is undoubtly that investors expect a growth in the stock price and increase in profit of the company. Alcoa also has a high P/E ratio, which is 63.91. The situation with Alcoa is the same as with BP, but the stock price just started to recover, after sanctions against Rusal.

When it comes to the companies with a low P/E ratio, in the investing portfolio these are BMW and Magnit. It is to be indicated whether the company is undervalued or its performance steadily becomes better year after year. BMW is a well-known company with a P/E of 7.92. Since the end of 2014 its revenue has increased by approximately 22 percent from 80,401 million euros to 98,678 million euros, and this is such a big company. Thus such a low P/E is a great performance over the time. (Investing.com 2018.)

Magnit's P/E ratio is 11.84 and it is also treated as a low P/E ratio. In 2014 Magnit had a revenue of 19,872.29 million dollars, while in 2015 the revenue was 15,594.59 million dollars. Afterwards, the revenue started to recover to the figures of 2014. In 2016 the revenue was 16,033.61 million dollars and in 2017 the revenue was 19,593.1 million dollars. It means that the company recovers, and the performance is relatively better than it was previously, thus the P/E ratio is so low. (Investing.com 2018.)

3.4 Dividend yield

The dividend yield is a financial ratio that shows how much money a company pays out dividends in relation to its stock price. The bigger the percentage is, the more attractive is an investment in the company's stock for investors. A good example explaining the dividend yield is as follows: There are two companies X and Y. The stock price of company X is 10 euros and the stock price of company Y is 20 euros. Both companies, at the end of the year, pay out dividends that equal to 1 euro. The dividend yield of company X is 1 divided by 10, or 10%. The dividend yield of company Y is 1 divided by 20, or 5%. If both companies pay out the same amount of dividends, and the dividend yield for company X is twice bigger than for company Y, it is a more attractive idea to invest into company X. (Investopedia 2018.)

When it comes to the stocks in the portfolio, dividends are not only paid by Alcoa. The dividend yield of BMW is 2.29% and this is the lowest dividend yield in the portfolio. The dividend yield of Philips is 4.43% and this is a fairly good dividend yield. The dividend yield for Magnit is 6.40% and this is the highest one in the portfolio. The dividend yield of BP is 5.60% and this is also a good yield, or so-called Return on Investment or RoI. (Investing.com 2018.)

The most attractive RoI is the RoI of Magnit, as it pays out the biggest percentage, and the price of the stocks is relatively high to compare other companies presented in the study. The price of one Magnit stock is approximately 65 euros, depending on the exchange rate. The second most attractive dividend yield is provided by BP, as it is higher than that the other companies have. BMW stocks are relatively attractive in terms of dividend yield, as the percentage is quite small, but the price of stock is quite high, comparing to the other stocks presented in the portfolio. (Investing.com 2018.) Table 14 below demonstrates the dividend yields for the stocks in ”My portfolio”.

Company	Dividend yield
Philips	**4,43%**
Magnit	**6,40%**
BMW	**2,29%**
British Petroleum	**5,60%**
Alcoa	**Not paid**

Table 14. Dividend yield

3.5 Compound Annual Growth Rate (CAGR)

Compound Annual Growth Rate is a tool to evaluate the growth rate of investments for a specific period of time longer than one year. (Investopedia 2018.) Even though the period of time is just one month in this study it was decided to calculate the CAGR with the aim to show how it works, and how it is to be calculated, as this is an important tool for investors to estimate the performance of the portfolio.

Investopedia (2018) gives the following formula:

$$\text{CAGR}=\left(\frac{End\ value}{Beginning\ Value}\right)^{\frac{1}{number\ of\ years}}-1 \qquad (4)$$

Table 15 of CAGR calculation consists of several columns: name of company, number of the stocks of the company, market capitalization, weight of the stocks of a particular company in the portfolio, final price of the stocks pack, return after the stocks were sold, influence of the stocks pack of each company on the overall performance of the portfolio, number of years (actual days divided by 365 this study), and the CAGR of individual stocks in the portfolio and the CAGR of the whole portfolio (Investopedia 2018.).

	N stocks	Market Cap	Weight	final price	Return	Influence	N of days	CAGR based on the time of the trade
Philips	505	€ 16 078,60	16,08%	€ 16 164,59	0,53%	0,09%	32	6,27%
Magnit	200	€ 14 688,90	14,69%	€ 13 423,50	-8,61%	-1,27%	0,088	-64,21%
BMW	250	€ 19 831,35	19,83%	€ 22 832,50	15,13%	3,00%		398,97%
British Petroleum	801	€ 25 879,56	25,88%	€ 27 899,27	7,80%	2,02%		135,64%
Alcoa	600	€ 23 525,21	23,52%	€ 26 735,85	13,65%	3,21%		330,27%
		€ 100 003,63				7,05%		118%

Table 15. CAGR calculations of the portfolio

In orer to begin the CAGR calculations, the first step to take is to calculate the weight of every stock pack in the portfolio. The weight is calculated as follows: money invested in the stocks of a particular company is divided by the total invested money. For example, 250 stocks of BMW priced at 19,831.35 euros divided by the total investments equals 100,003.63 euros, thus the weight of BMW is 19.83% in the overall portfolio. After the weight has been calculated, the return is to be calculated, by divisding the final price of the stocks pack by the Market Cap or initial price of the stocks pack. For instance, British Petroleum, at the beginning, was valued at 25,879.56 euros for 801 stocks, and at the moment of sale these 801 stocks were priced at 27,899.27 euro. 27,899.27 euros were divided by 25,879.56 euros and a return of 7.8% was obtained. The next step is to calculate the influence of the return of each stocks pack separately. In order to obtain influence figures, the return is to be multiplied by the initial weight of the stocks pack. For expample, the initial weight of Philips was 16.08% and the return was 0.53%, and an influence of 0.09% for Philips was obtained. The overall influence is calculated by summing up of all the influence figures that were obtained during the calculations. The number of years was obtained by division of the actual number of days that had passed by 365. The CAGR of each stock pack was calculated as follows: (final price of stocks pack divided by initial price of stocks pack) powered by 0.088 or 32/365 and one is deducted from the obtained figure. The CAGR of an index is calculated in exactly the same way, but percentages are used: 107.05% is divided by 100% and powered by 0.088, and one is deducted from the obtained figure. The obtained CAGR of the portfolio is 118%. As it was mentioned already, CAGR is used only for periods of time longer than one year, but in this research paper it was included in order to obtain knowledge of how to make this calculations, what it is for and how it works in general. In addition to that, it is to be noticed that if the stocks are going to perform in a way these performed, the CAGR is to be 118%. (Jansen 2016)

3.6 Summary

Summing up in the empirical part of this research paper, it could be concluded that the goal of the thesis study was achieved. The investment portfolio with stocks picked up by an amateur trader outperformed the Dow Jones Industrial

Average index by 10%. In this chapter an analysis of the stocks was conducted and some ratios were calculated in order to understand how the process of stock assessment goes. During the process of calculation the author obtained important knowledge of the process of investing.The author of the thesis was satisfied with the obtained results, as the main goal was achieved.

4 Conclusion

At the beginning of the research process there were three research questions to be answered. One of the questions was about the investing strategy, whether active nor passive one suits the best for investors at the age of 21-30 years old. The second research question was about the factors allocating the choice of a particular security. The third research question was about the possibility to outperform the market index Dow Jones Industrial Average within one month. The theoretical framework was based on various sources, such as books, magazines and webpages allowed concentrating on the initial research questions. Main concepts about the investing process, as well as advantages and drawbacks, were clarified, as the literature review, includes plenty of information concerning these issues.

As a conclusion the author can claim that all the research questions were answered and the results are in line with the expectations of the author. An active and risky investing strategy suits young investors the best, as the goal of young investors is to increase the capital. As the focus group is quite young, the risk tolerance of the investors is very high, and the investors have a possibility to earn more money, thus they can invest in more risky assets. Although active investing has certain drawbacks, this investing strategy suits young investors the best, as this investing strategy gives young investors an opportunity to outperform the market and to gain additional profit.

As for the second research question, there are plenty of factors allocating the choice of a security, These are P/E ratio, dividend yield, EPS, Market to Book value, and P/B ratio. Also some more technical analysis could be employed, as there are various ways to determine whether a security is undervalued, or not. Also, concerning bonds, such additional criteria as maturity and coupon rate are

crucial. Moreover, there some other ways to invest the money, and such as ETFs, mutual funds, index funds.

The third research question was the main one in this research paper: whether it is possible to outperform the market determined by the benchmarking index Dow Jones Industrial Average. The author is fully satisfied with the obtained results, as it was not only proved that it is possible to outperform the market by picking up the stocks without the advice of mature brokers, but also due to the fact that in the process of stock selection a different methods can be used. Such methods include analysis of financial market situation, different ratios, financial summary of the company and income statements. As a result, the author obtained knowledge which, one day, he wants to use in real life and hopes this research paper would help somebody to better understand the process of investing and would boost interest in investments.

To sum up, the author would like to note that nowadays the demand for investing money in some security has increased considerably. At the beginning of 2017 the popularity of cryptocurrencies increased rapidly, everyone wanted to invest some money in Bitcoin, Etherium and other cryptocurrencies. Some persons even got loans for investments. Therefore, the author wants to advice the readers to avoid risky investments using loaned money, as this is not even trading on leverage; when investor have some part of own capital for trading and some part of loaned money; this is trading on very volatile assets without any own money.

List of Tables

Table 1. Percentage of International funds that did not outperform the market, p. 17
Table 2. Ownership of global equity stocks, p. 24
Table 3. Active and passive investing strategy summary, p. 27
Table 4. S&P bond credit ratings, p.32
Table 5. Performance of Philips stocks since 12.03 until 13.04, p. 34
Table 6. Performance of Magnit stocks since 12.03 until 13.04, p. 35
Table 7. Performance of BMW stocks since 12.03 until 13.04, p. 36
Table 8. Performance of BP stocks since 12.03 until 13.04, p. 37
Table 9. Performance of Alcoa stocks since 12.03 until 13.04, p. 38
Table 10. Overall performance of “My portfolio” since 12.03 until 13.04, p. 39
Table 11. Performance of DJIA since 12.03 until 13.04, p. 40
Table 12. Market to book value of the companies placed in “My portfolio”, p. 41
Table 13. Price to earnings per share calculations, p. 44
Table 14. Dividend yield, p. 47
Table 15. CAGR calculations of the portfolio, p. 47

List of Figures

Figure 1. Continuum of investment styles, p. 24
Figure 2. Conservative portfolio, p. 29
Figure 3. Moderately aggressive portfolio, p. 29

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