

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Department of Economics**



**Diploma Thesis**

**Investment portfolio design**

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## DIPLOMA THESIS ASSIGNMENT

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**Investment portfolio design**

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### Objectives of thesis

The main objectives of the thesis:

To create a diversified portfolio of stocks consisting of four to five shares for long-term investments;

There were stated these sub-objectives:

To assess the selected economic indicators;

To compare the development of the market price of shares with the development of an index of the sector and the development of an exchange index;

To calculate the historical profitability of stock names, followed by the determination of the weights of stocks for the future portfolio;

To test portfolio diversification, determine the correlation matrix.

### Methodology

For the practical part were chosen the names of shares that are suitable for a risky investor with an investment horizon of 6-8 years. Due to the diversification of the portfolio, joint stock companies were selected from five sectors – gas and oil, automotive, aerospace and defense, technology and pharmacies.

The companies were selected and sorted based on the methods of the fundamental and the financial statement analysis.

## The proposed extent of the thesis

60 – 80

## Keywords

Investment, portfolio, financial market, capital market, shares

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## Recommended information sources

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Prague on 26. 03. 2019

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### **Declaration**

I declare that I have worked on my diploma thesis titled "Investment portfolio design" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 28.03.2019

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# Investment portfolio design

## **Abstract**

The diploma thesis is focused on design of the investment portfolio. The thesis is divided into two parts. The theoretical part describes in details financial market, money market, capital market, securities market structure, stock exchange, stocks and investment portfolio characteristics such as profitability, risk, liquidity. The practical part includes five industries with three joint stock companies in each of them. Resulting portfolio is made by selection one company from each industry on the basis of comparison of economic indicators and multi-criteria decision analysis. For chosen companies analysis is made on the basis of annual reports. Companies are presented in terms of scope, internal structure, products and description of the future direction. Further, a technical analysis is made on the basis of the financial statements. The technical analysis contains profitability, dividend, debtness and a comparison of a company's index with equity indices. Based on market prices a correlation matrix was made to determine correlation coefficients among stocks. According to the multi-criteria decision analysis which contains diluted earnings per share, price to earnings ratio to growth, price to book value ratio, dividend payout ratio and free cash flow, the share of each stock in the portfolio was made.

**Keywords:** investment, portfolio, financial market, capital market, shares

# Návrh investičního portfolia

## **Abstrakt**

Diplomová práce je zaměřena na návrh investičního portfolia. Práce je rozdělena do dvou částí. V teoretické části jsou rozebrány detaily finančního trhu, peněžního trhu, kapitálového trhu, struktury trhu s cennými papíry, burzy, akcií a charakteristik investičního portfolia, jako je ziskovost, riziko, likvidita. Praktická část obsahuje pět odvětví se třemi akciovými společnostmi v každé z nich. Výsledné portfolio je tvořeno výběrem jedné společnosti z každého odvětví na základě srovnání ekonomických ukazatelů a multikriteriální rozhodovací analýzy. Pro vybrané společnosti je analýza prováděna na základě výročních zpráv. Firmy jsou prezentovány z hlediska rozsahu, vnitřní struktury, produktů a popisu budoucího směřování. Dále je na základě účetní závěrky provedena technická analýza. Technická analýza obsahuje rentabilitu, dividendu, dluh a srovnání indexu společnosti s akciovými indexy. Na základě tržních cen byla vytvořena korelační matice pro stanovení korelačních koeficientů mezi zásobami. Podle multikriteriální rozhodovací analýzy, která obsahuje zředěný zisk na akcii, poměr ceny k zisku k růstu, poměr ceny k účetní hodnotě, poměr výplat dividend a volný peněžní tok, byl proveden podíl každé akcie v portfoliu.

**Klíčová slova:** investice, portfolio, finanční trh, kapitálový trh, akcie

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## **1.Introduction**

Investment has become very popular in recent years. More and more people are interested in how better value their money. People keep money savings on accounts. However, this is not too profitable because of low interest rates. Therefore, many people try to find alternatives for investing money to get more percentage of returns. Stock is one of this alternatives.

Currently, in the financial environment, the stock market is becoming increasingly popular, becoming not just a segment of the economy, access to which only a few can get, but an area of interest to an ever wider circle of people, sometimes far from the economy. It is not by chance that the richest people invest in the stock market. Although a lot of money can be both earned and lost, investing in stocks is one of the best ways to achieve personal financial security.

Each investor is looking for more percentage. However, before investing is important to understand that there are bigger risks as a result of higher market price volatility. It is needed to know how much money investor wants to invest. Determining how much money can be invested in stocks, it is necessary to determine the starting point, based on expectations and the degree of risk that investor can take.

When deciding and choosing the right investment for a particular investor, it is the most important to identify the individual's expectations and limits. Not everyone is willing to risk more than necessary. For some, conservative investment with a potential yield of several percent per year is more acceptable, with the goal of having the yield at least equal, ideally higher than inflation. There are many opportunities for everyone in the world of investing, it always depends on the client's priorities. It is important to predetermine specific expectations and the relationship to risk.

## **2. Objectives and methodology**

### **2.1 Objectives**

The main objectives of the thesis is to create a diversified portfolio of stocks consisting of four to five shares for long-term investments. For achieving a goal there is needed technical analysis of selected stocks, description of internal structures and activities of stock joint companies. One of the important roles is in assessing the selected economic indicators and comparison the development of the market price of shares with the development of an index of the sector and the development of an exchange index. Objectives also contain calculation multiple-criteria decision analysis, followed by the determination of the weights of stocks for the future portfolio. For testing portfolio diversification the correlation matrix should be implemented.

### **2.2 Methodology**

For the practical part were chosen the names of shares that are suitable for a risky investor with an investment horizon of 6-8 years. Due to the diversification of the portfolio, joint stock companies were selected from five sectors – gas and oil, automotive, aerospace and defense, technology and pharmacies.

In the first part of the portfolio there were chosen global companies that are among the leading companies in their field and are traded on American stock exchanges.

Subsequently, there was made a comparison of economic indicators within the companies in the sector and according to the criterion we got the resulting joint stock companies into the portfolio.

After there was prepared analysis of selected companies according to annual reports. Companies were further described in terms of their own activities, internal structure, description of the main products and description of the future direction of the company. There was made a technical analysis focusing on profit, debt, dividend, internal stock price, stock market price and stock performance comparison with stock indices and industry indices. Gross profit was used uniformly to monitor company earnings.

The internal and market prices of the stock were compared and a recommendation to purchase was made. If the stock's internal price is higher than the stock's market price, there is a good opportunity to buy, if it is below the stock's market price, it is not a good time to buy shares. If the internal price of a share is lower than the market price there should be set at which price it is appropriate to buy shares.

The internal price was calculated according to the following formula:

$$Internal\ Value = \frac{P}{E} actual * EPS\ estimate \quad (1)$$

Indebtedness was monitored using the long-term debt to total assets ratio indicator, from which it is known how much percentage of the debt is to assets.

The correlation coefficient was used to determine the dependence between stock returns.

The multiple-criteria decision analysis was implemented to determine a share of each company in the investment portfolio. This analysis includes such financial indicators as:

Diluted earnings per share (EPS) - used to gauge the quality of a company's earnings per share (EPS) if all convertible securities were exercised. Convertible securities are all outstanding convertible preferred shares, convertible debentures, stock options, and warrants.

$$Diluted\ EPS = \frac{(Net\ Income - Dividends - on - Preferred\ Stock)}{(Average\ Outstanding\ Shares + Diluted\ Shares)} \quad (2)$$

Price to earnings ratio to growth ratio (PEG) - used to determine a stock's value while also factoring in the company's expected earnings growth and is thought to provide a more complete picture than the P/E ratio.

$$PEG\ Ratio = \frac{\left(\frac{Price}{EPS}\right)}{EPS\ growth} \quad (3)$$

Price to book value ratio (P/B) – used to compare a firm's market to book value by dividing price per share by book value per share (BVPS).

$$\frac{P}{B}\ Ratio = \frac{MarketPricePerShare}{BookValuePerShare} \quad (4)$$

Dividend payout ratio (DPR) - the ratio of the total amount of dividends paid out to shareholders relative to the net income of the company. It is the percentage of earnings paid to

shareholders in dividends. The amount that is not paid to shareholders is retained by the company to pay off debt or to reinvest in core operations.

$$\textit{Dividend Payout Ration} = \frac{\textit{Dividends Paid}}{\textit{Net Income}} \quad (5)$$

Free Cash Flow - the cash a company produces through its operations, less the cost of expenditures on assets.

$$\textit{Free Cash Flow} = \textit{Operating Cash Flow} - \textit{Capital Expenditures} \quad (6)$$

Economic indicators of companies were taken from yahoo.finance.com and marketscreener.com. For visualization of results were created graphs, tables and figures. Microsoft Excel was used for the process of the acquired data evaluation.

### 3. Literature review

In the theoretical part we will describe basic concepts of markets including portfolio characteristics, such as profitability, evaluation of financial investment returns, risk, diversification and correlation coefficient, liquidity.

#### 3.1 Financial Market

The financial market is a monetary relationship that develops in the process of buying and selling financial assets under the influence of supply and demand. Money is subject to sale. Individuals and legal entities invest free cash, being lenders for those entities that need borrowed funds.

Kravchenko states (2017): “*financial market:*

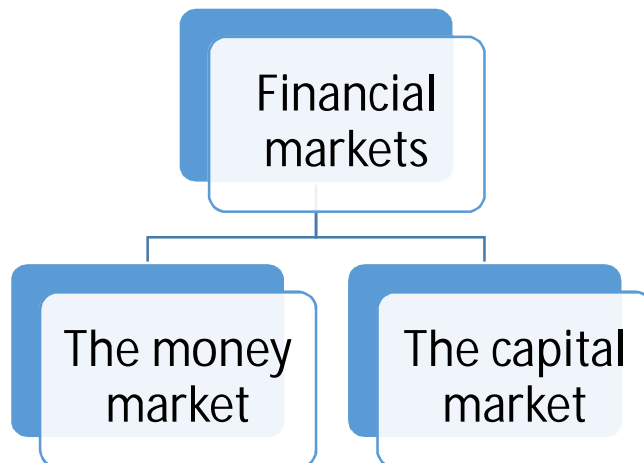
- *mobilizes temporarily free capital from diverse sources;*
- *effectively distributes the accumulated free capital among its numerous end users;*
- *determines the most effective directions for the use of capital in the investment field;*
- *forms market prices for individual financial instruments and services, objectively reflecting the emerging relationship between supply and demand;*
- *carries out qualified mediation between the seller and the buyer of financial instruments;*
- *creates conditions for minimizing financial and commercial risk;*
- *accelerates the turnover of capital, i.e. contributes to the revitalization of economic processes”.*

The financial market has following functions:

- It provides interaction between buyers and sellers, as a result of which prices are set for financial assets that balance supply and demand for them (balanced price, or market clearing price). The differences between sellers and buyers remain, they give rise to changes in price, which end with the agreement of the two parties to the act of buying and selling money.
- Implements a mechanism for the repurchase of financial assets and thereby increases their liquidity. Repurchase from investors of financial assets provide financial intermediaries (market dealers).
- It contributes to finding the counterparty of the agreement, significantly reduces the cost of operations and information costs, as well as the corresponding risks of investing.



Figure 1. Financial market structure.



Source: Kravchenko, 2017

The financial market of any country consists of a money market and a capital market. The division of the financial market into two parts is determined by the special nature of the circulation of financial resources serving the circulating and fixed assets. In the money market, funds are circulated that ensure the movement of short-term loans (up to one year). The capital market is moving long-term savings over a period of one year.

### 3.2 Money market

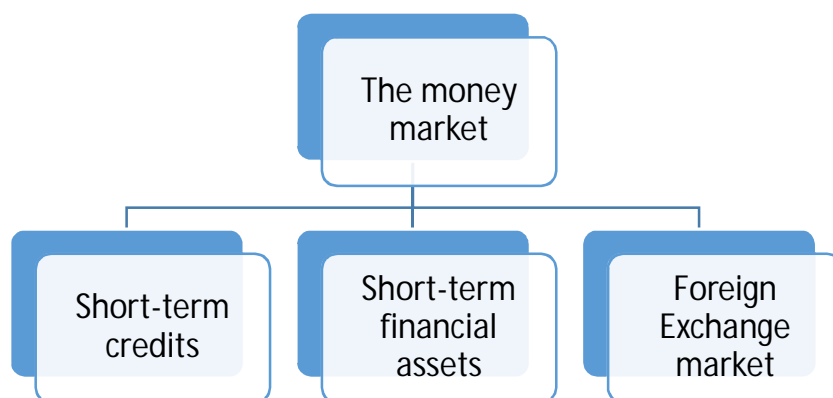
The money market is a short-term investment market, i.e. for a period of less than one year. This is a cash market in which the equilibrium value of the amount of money and the equilibrium interest rate is established as a result of the interaction of the demand for money and their supply.

In any market, the process of buying and selling some goods (or a group of goods) is carried out, and on the basis of supply and demand, the price for this product is formed. The specificity of the money market is that the goods on it are directly money, respectively, and the elements of the money market have their own specifics: demand takes the form of demand for loans, supply takes the form of offering temporarily free money, and price takes the form of percent. The money market is one of the main instruments in the economy for balancing supply and demand, as well as the formation of market interest as the price of money.

Kravchenko states (2017): *“Money market - a system of economic relations about the provision of funds for up to one year. There is an exchange of money as an asset for other liquid assets at the opportunity value, measured in units of the nominal rate of interest. Such an exchange is organized according to the laws of commodity-money relations, where the purchase and sale of*

*money as an asset, between subjects of market relations, taking into account the demand and supply prevailing in the market.”*

Figure 2. The money market structure



Source: Kravchenko, 2017

In turn, the money market is divided into the market of short-term bank loans, which satisfies the short-term needs for financial resources; short-term financial asset market and foreign exchange market. It should be noted that the movement of money in the money market is due to the difference in income and risk levels, and financial assets operating in the money market are usually liquid and low risk.

The foreign exchange market serves the international payment transaction associated with the payment of monetary obligations of legal and physical obligations of different countries. The specifics of international payments is the absence of a common means of payment for all countries. Therefore, a necessary means of calculation in foreign trade in goods and services, in interstate payments is the exchange of one currency for another in the form of buying or selling foreign currency. Thus, currency markets are the official centers where currency is bought and sold on the basis of supply and demand.

### **3.3 Capital market**

The capital market is a system of economic relations about the formation of supply and demand for medium-term and long-term loan capital and the redistribution of free capital. The capital market is a component of the financial market. The capital market includes the securities market and the debt market for more than one year.

The capital market is a market that provides direction — through banks and other similar institutions — of people's savings (saved income) to finance investments and / or budget deficits. Equilibrium in the capital market implies the equality of the supply of deposits to the demand for loans. Since the accumulation of funds occurs through banks, and investment, respectively, through a loan, the interest rate plays a key role in establishing equilibrium in the economy as a whole (equilibrium in the capital market leads, in turn, to equilibrium in commodity markets).

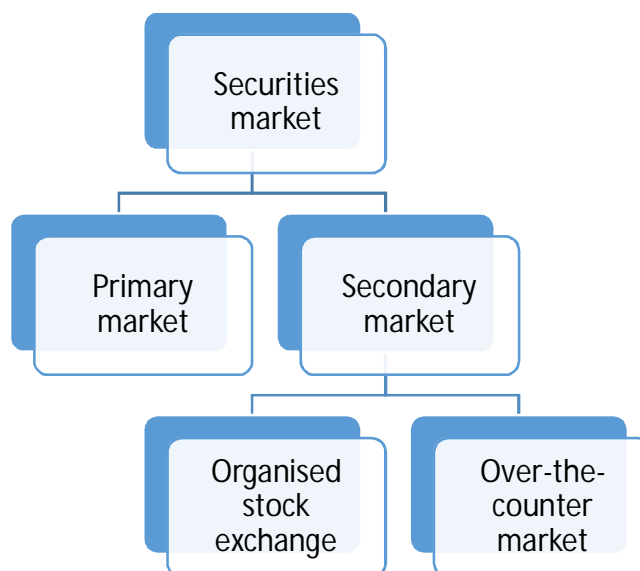
The capital market performs the following functions:

- combines small, scattered cash savings of the population and economic entities and creates large cash funds;
- transforms borrowed funds into loan capital in order to finance the national economy and households;
- provides coverage of the state budget deficit.

### 3.4 Securities market structure

The securities markets are trading in both short-term money market securities and long-term stock market securities. The stock market can be broken down as follows.

Figure 3. Security market structure



Source: Kravchenko, 2017

#### 3.4.1 Primary and secondary markets

**Primary market** - the market in which the newly issued securities are placed. Its main participants are issuers of securities and investors. Issuers in need of financial resources for

investments in fixed working capital determine the supply of securities on the stock market. Investors who are looking for a profitable area for the application of their capital, form the demand for securities. It is in the primary market that mobilization of temporarily free funds and their investment in the economy is carried out. But the primary market not only provides for the expansion of accumulation in the scale of the national economy.

Consequently, it can be concluded that in the primary market there is a distribution of free cash resources by branches and spheres of the national economy. The criterion for this placement in a market economy is the income earned by the securities. This means that free cash flows are sent to enterprises, industries and sectors of the economy that maximize income. The primary market serves as a means of creating an effective from the point of view of market criteria structure of the national economy, maintains the proportionality of the economy at the current level of profit for individual enterprises and industries.

All this means that the primary stock market is the actual regulator of the market economy. It largely determines the size of savings and investment in the country, serves as a natural means of maintaining proportionality in the economy that meets the criterion of profit maximization, and thus determines the pace, scale and efficiency of the national economy. The primary market involves the placement of new issues of securities by issuers. At the same time, corporations, the federal government, and municipalities can act as issuers.

Securities buyers are individual and institutional investors. The ratio between them depends on the level of economic development, the level of savings, and on the state of the credit system.

The placement of securities in the primary market is carried out in two forms:

1. by direct appeal to investors;
2. through intermediaries.

**Secondary market** - a market in which securities are traded in the form of resale of previously issued and in other forms. The main market participants are not issuers and investors, but speculators with the goal of making profit in the form of exchange differences. The content of their activities is reduced to the constant purchase and sale of securities. Buy cheaper and sell more expensive - the main motive of their activities.

The secondary market necessarily carries the element of speculation. As a result, in the secondary market there is a constant redistribution of property, which always has one direction - from small owners to large ones.

Thus, the secondary market, unlike the primary market, does not affect the size of investments and savings in the country. It provides only a constant redistribution of funds already accumulated through the primary market between various actors of economic life. As a result, the functioning of the secondary market ensures a continuous restructuring of the economy in order to increase its market efficiency and is as necessary for the existence of the stock market as the primary market.

However, the role of the secondary market is not limited to this. The secondary market:

- provides liquidity of securities;
- provides the possibility of their sale at an acceptable rate;
- creates favorable conditions for their initial placement.

The ability to turn securities into cash at any time is a prerequisite for investing in securities, because the source of invested loan capital is temporarily free cash and funds that can only be used in accordance with the basic principles of credit.

### **3.5 Stock exchange**

The traditional form of the secondary market is the stock exchange - an organized, regularly functioning market for securities and other financial instruments, one of the financial market regulators that serves the movement of money capital.

In every country of the world with a market economy, there is a national stock exchange. It is an organized market for trading securities: stocks, bonds and other financial instruments. More tangible assets (oil, gold) are traded on commodity exchanges.

A stock exchange is an organization whose objectives are to provide a place for making trade deals and to bring together buyers and sellers of securities. Unlike commodity exchanges that regulate the movement of goods, the stock exchange provides for the movement of capital. Accelerating the movement of capital contributes to improving the efficiency of the economy. This is one of the tasks of the stock exchange.

The role of a stock exchange in a country's economy is determined primarily by the degree of denationalization of ownership, more precisely, the share of share ownership in the production

of gross national product. In addition, the role of the exchange depends on the level of development of the stock market as a whole.

In order for the shares to hit the stock exchange, the company must hold an IPO - an initial public offering. After an IPO, shares become available to any investor for sale on the stock exchanges. This is the so-called secondary stock market.

Actually, the stock exchange is a legal entity that organizes trading in securities: it establishes the rules for trading, organizes the process itself, determines the equilibrium exchange price, provides guarantees for transactions, deals with disputes. Revenues of the exchange consist of the contributions of its members and commission as a percentage of the turnover of transactions.

A person from the street will not be able to directly participate in stock trading. This can be done only through brokerage companies. They are professional intermediaries, licensed to work on a specific exchange.

### **3.6 Stocks**

A share is a security issued by joint-stock companies, commercial banks, stock exchanges, concerns, corporations, firms, other enterprises of different forms of ownership, without a fixed circulation period, certifying that funds have been made for their development or membership in a joint-stock company and giving its owner the right to receiving part of the profits in the form of a dividend.

Various organizations have resorted to issuing stocks when alternative opportunities for raising funds have been exhausted, as well as when enterprises have arisen, in newly emerging promising industries, areas, entrepreneurship. But stocks are not just debt financial instruments, lending instruments. This is one of the very effective ways to directly interest the workers in the final results of their work, to intensify the participation of workers in the management of the enterprise, to develop a creative entrepreneurial attitude in each. The shareholder is no longer an employee, but an owner who has received the opportunity to actively participate with a decisive vote in general meetings at which issues of enterprise management, strategies for its development, distribution and use of income and profits are resolved.

The joint-stock form of organization of production is typical for almost all organizational structures of a developed market economy. It is used by small, medium and large enterprises. The advantages and prospects of this form are determined primarily by the fact that it integrates various forms of ownership, combines collective ownership with private ownership. Shareholders can be

an individual, a collective, an organization, or a state. There is reason to say that all forms of ownership are organically intertwined into a single whole in a joint-stock form, which makes it possible to overcome certain contradictions between them and take advantage of each form separately, although this creates new contradictions and difficulties.

Shareholder property is only a share. Only in relation to it, he can realize the property relationship: sell, donate, pass by inheritance. However, the shareholder practically does not own the share capital, the property of the joint stock company, since he does not directly manage how the share invested by him in the form of money paid for the purchased shares is used. Share capital, property of a joint stock company, are the object of disposal, ownership and responsibility of the joint stock company as a legal entity.

Through shares, both the movement of the property itself and its control from one group of owners to another is carried out. At the same time there is a concentration of capital. Possession of a controlling stake allows one who has invested a decisive part of capital in shares to realize practically the whole range of ownership relations in relation to share capital. As the size of firms grows, the stock form of the organization is undergoing a certain evolution. In small and medium-sized firms, it is possible to exercise direct control over the activities of the joint stock company on the part of the shareholders and there is a real personification of the owner. There is also a trend towards dispersion of share capital. In this case, often control over the activities of the company goes from the area of direct control to the area of indirect regulation carried out through the capital market (stock exchanges) through the sale and purchase of shares.

The development of the joint-stock form of the modern market economy vividly demonstrates the tendency of depersonification of the owner as an individual, private owner when it is concentrated among other subjects. This is especially characteristic of our time, when the concentration of control over joint-stock property is concentrated in the hands of several financial institutions: commercial banks, funds, and insurance companies. Nominally, in this case, all the investors of these funds are included in the number of owners, but in fact the property is controlled by a group of persons

### **3.6.1 Common stock**

A common stock is a security that is issued by a joint-stock company and gives the shareholder the right to receive dividends if the relevant decisions are taken by the shareholders meeting or the board of directors.

This term is used to designate a security that helps to attract investment in a joint stock company and at the same time gives shareholders certain powers. That is, it can be said that the share is an equity security, which secures the rights of the owner of the shares to:

- participation in decision making and company management;
- obtaining an appropriate share of the company's profits in the form of dividends;
- part of the property that remains during the liquidation of the company after settlements with tax authorities and counterparties.

#### Benefits for holders of common stock

Holders of ordinary shares, as a rule, have the right to vote at a general meeting of shareholders. It follows from this that ordinary shares are one of the key instruments of control over the management of a company.

Holders of ordinary shares also have the priority right to buy back new shares when they are issued prior to placing new shares on the stock market.

#### Types of common stock value

Generally distinguish the following types of stock value:

- nominal - the share of the share capital attributable to 1 share;
- issuing - the value of the stock at the initial placement on the market, usually it is higher than the nominal value of an amount called issuing proceeds;
- market - defined on the stock exchange as the balance between supply and demand;
- balance - the result of dividing the company's net assets by the number of shares outstanding.

If the market value of the stock (or its rate) is lower than the book value, it is considered that the stock is undervalued and we should expect an increase in its value. Similarly, in the case of an overvalued share relative to its book value, one should wait for the depreciation. A common stock can have two types of value: fixed and nominal. The nominal value shows the value of the company's funds. Therefore, it is the sum of the nominal value of all shares issued by the company, is the share capital of the company.

At the same time, ordinary shares always have the same price. Thus, the sum of the nominal values of all shares issued by the joint-stock company is equal to its statutory fund. Accordingly, all shareholders or shareholders are a group of owners of a joint stock company. From this it follows that the greater the shareholding the shareholder owns, the greater rights to manage it.

#### Shares and their opportunities



A package is the number of shares under common control. There are the following types of shares:

- minority package. Such a package includes from 1% to 25% of the shares;
- blocking package. Such a package includes from 25% of shares + 1 share to 50% of shares;
- control package. This package includes 50% of shares + 1 share.

### **3.6.2 Preference stock**

A joint stock company along with ordinary shares may issue preferred shares. Preferred shares give shareholders the preferential right to receive higher dividends, as well as the distribution of property in the event of the liquidation of a joint stock company. However, preferred shares do not give the right to participate, say, in management. Dividends on preference shares are paid in an amount not less than a predetermined fixed percentage to their nominal value, regardless of the amount of profit received by the joint-stock company in the relevant year. In the event of insufficient profit, interest on these shares is paid at the expense of the reserve fund. For ordinary shares of joint-stock companies, dividends are paid at the expense of profits remaining after paying taxes and other payments to the budget, paying interest on bank loans and bonds, replenishing reserve funds, contributions to expand production, or, for example, savings. All shares are issued by a joint stock company in the amount of the authorized capital or on the value of the property of a state enterprise, determined at the time of the decision to transform it into a joint stock company. An additional issue of shares is possible only if all previously issued shares are fully paid.

Shares are distributed in different ways: by open subscription; distribution of all shares between the founders; implementation directly by the enterprise, either through banking institutions or through the exchange. Shareholders can be not only enterprises. But the provision on securities stipulates that citizens can own only registered shares, the number of which is registered for each shareholder by a joint stock company, which, of course, makes circulation of shares on the stock market difficult. When citizens buy large blocks of shares, the legitimacy of income can be verified by submitting a declaration of income. Shareholders have the right to be foreigners. Payment for shares may be made in foreign currency or by providing other property, if this is provided for by the charter of the joint-stock company.

#### **The main types of preferred shares:**

Cumulative - allow you to claim dividends for all previous years, or, at the request of the investor, to demand an increase in nominal value of the amount of these dividends.

Convertible - such shares, on which the investor can exchange them for ordinary shares, without any conditions or under certain conditions.

Rights of holders of ordinary shares

Each ordinary share gives its owner the same amount of rights.

In accordance with the company's charter, they can participate in the general meeting with the right to vote on all issues within the competence of the meeting, and also have the right to receive dividends, in the case of liquidation of the company - the right to receive part of its property.

### **Privileged Shareholder Rights**

They do not have the right to vote at a general meeting, unless otherwise established by this law or the company's charter for a certain type of preferred shares.

The charter of a company must determine the amount of the dividend or the value paid upon liquidation of the company on preferred shares. Holders of preferred shares for which the dividend amount has not been determined are entitled to receive dividends along with holders of ordinary shares.

4 ways to earn income on shares:

- Speculation (can absolutely not reflect the real situation on the market)
- Dividend Payments (earnings per share, paid at a profit)
- Trust management (shares are given to trust companies)
- REPO (temporary sale of shares with mandatory redemption of them back)

### **3.7 Investment Portfolio characteristics**

In the broadest sense, the word "invest" means investing money today in order to get a large amount in the future. Factors such as time and risk are usually associated with this process. You have to give money now and in a certain amount. The reward comes later, if it comes at all, and its value is not known in advance. Therefore, the object of this study is a set of objects of financial investment, investment portfolio.

It is very important to determine the objectives of the formation of the portfolio. Setting such goals affects certain ratios of risk and return, potential growth in value and current income, and various levels of portfolio risk and depends on a whole set of factors. However, the main thing is that portfolio objectives are defined before the start of the investment process. We need to learn two ideas that are particularly important for successful portfolio management — the effect of diversification and the concept of an effective portfolio. Thus, as the stock market is being formed,

the real situation on the securities market raises a number of issues that require consideration and in-depth study.

Kravchenko states (2017): *“Investment portfolio - a set of real or financial investments. In the narrow sense - a set of securities of different types, different periods of validity and different liquidity, belonging to one investor and managed as a whole. As a rule, a portfolio is a specific set of corporate stocks, bonds with varying degrees of security and risk, as well as fixed-income securities guaranteed by the state, that is, with minimal risk of losses on the principal amount and current receipts.”*

Distributing investments in various directions, an investor can achieve a higher level of profitability of his investments or reduce their risk. A characteristic feature of the portfolio is that the risk of the portfolio may be significantly less than the individual investment instruments that make up the portfolio.

The main advantage of portfolio investment is the ability to select a portfolio for solving specific investment problems. There are the following types of portfolios:

- growth portfolio;
- income portfolio;
- conservative portfolio;
- portfolio of highly liquid investment objects.

The growth portfolio and the income portfolio are mainly focused on investments, respectively, providing an increase in capital or high current incomes, which is associated with an increased level of risk (see Appendix). Conservative portfolio, on the contrary, is formed at the expense of investment objects with a lower level of risk, which are characterized by lower growth rates of market value or current income. A portfolio of highly liquid investment objects suggests the possibility of quickly transforming a portfolio into cash without significant loss of value.

These types of portfolios, in turn, include a variety of intermediate varieties. For example, within a growth portfolio, a portfolio of conservative growth, a portfolio of medium growth, a portfolio of aggressive growth can be distinguished.

According to the degree of compliance with the objectives of investment should be allocated balanced and unbalanced portfolios. A balanced portfolio is characterized by a balance of revenues and risks, corresponding to the qualities specified during its formation. Various investment objects can be included in its structure: with a rapidly growing market value, high-yield and other objects, the ratio of which is determined by the market situation. At the same time, a combination of various investments allows to achieve the increment of capital and obtain high

income while reducing the total risks. An unbalanced portfolio can be considered as a portfolio that does not meet the goals set during its formation.

Since the selection of objects in the investment portfolio is carried out in accordance with the preferences of investors, there is a relationship between the type of investor and the type of portfolio. Thus, a highly reliable, but low-income portfolio corresponds to a conservative investor, a diversified portfolio to a moderate one, and a highly profitable, but risky portfolio to an aggressive one.

Thus, the investment portfolio consists of a number of financial mechanisms, formed according to the preferences of investors.

### **3.7.1 Profitability**

Graham states (2018, p. 307): *“First advice: the investor should not be taken seriously indicators of profit for one year. Second advice: if an investor pays attention to short-term earnings, he should be careful not to fall into the traps behind the earnings per share indicator. If the investor will carefully follow the first advice, the second, most likely, he will not need. However, it is unlikely that the majority of investors, when making investment decisions, rely on long-term indicators and are oriented towards a long-term perspective. Financiers most often use the data of quarterly and annual reports, and this cannot but influence the course of the investor’s thoughts. Therefore, knowledge of the basics of analyzing financial performance helps the investor to avoid many troubles.”* It is important to know at least basic indicators which help to evaluate and forecast a stock.

Profitability is the value that shows the effectiveness of its activities. This indicator is relative.

Standard profitability will be calculated either in numerical form or as a percentage.

Profitability can mean a portion of the profits from each unit of funds. Everything we received in the process of the company.

Economic profitability reflects the income of the company, originating from one unit of goods.

Factors affecting the profitability

External factors:

- Demand for products.
- Competition.

Internal factors:

- The amount of goods sold.
- Product quality.
- Revenue.
- Production costs

Facts that affect profits also affect profitability.

The difference in efficiency factors for different companies often comes from differences in the lines of business of the company. Therefore, there are different types of profitability:

- Return on assets.
- Return on equity.
- Profitability of sales (sales of goods).
- Profitability of production.
- Product profitability.

The overall profitability of the product indicates how effectively business assets can create profit factors. The main indicator - what percentage (or in the numerical equivalent) of profit comes from one unit of money invested in the property.

Return on equity. An extremely important indicator for who owns the business, or who invests in it. Accordingly, it reflects the effectiveness of the capital invested earlier.

Profitability of production. Reflects the efficiency with which the invested property is used in the production process. In other words, how well the company's funds are used, both current and core.

Product profitability. Shows what the sale of goods gives. That is, the difference between the profit from the sale of goods and the cost of its production and sale. Often, a separate indicator is not calculated profitability for all products, but only for a specific division of the company.

### **3.7.2 Evaluation of financial investment returns**

Investment return assessments in the investment world are already made for ex-post investments or for ex-ante earnings. In practice, ex-ante evaluation of earnings is the most common, ie an effort to determine a prediction for a given investment. Significant differences may arise in calculating the profitability of specific financial investments, mainly due to the methodology used. It is always up to the investor to apply the methodology.

There are many ways to calculate profitability, ex post or ex ante. According to the subsequent use of profitability can be divided into two basic groups of methods: static methods and dynamic methods.

Static methods of calculating investments in their calculations do not include a time factor. In practice, they are used to calculate short-term investments for which there is no time factor and for investments with low interest rates throughout the life of the investment.

Dynamic methods of calculating investments in their calculations take into account the time factor in conjunction with higher interest rates existing over the life of the investment.

### **3.7.3 Risk**

Investment activity in all forms and types is associated with risk.

Investment risk is the likelihood of unforeseen financial losses in a situation of uncertainty of investment conditions.

The risks of financial investment, which are associated with the following factors: badly considered choice of financial instruments; unforeseen changes in investment conditions.

Inflation risk is the probability of losses that a subject of the economy may suffer as a result of depreciation of the real value of investments, loss of assets (in the form of investments) of real initial value while maintaining or increasing their nominal value, as well as depreciation of expected incomes and profits of a subject of the economy from making investments uncontrolled advancing of inflation growth rates over the growth rates of investment income.

Deflationary risk is the probability of losses that a subject may incur in an economy as a result of a decrease in the money supply in circulation due to the withdrawal of a part of excess money, including by raising taxes, interest rates, budget cuts, savings, etc.

Market risk is the probability of a change in the value of assets as a result of fluctuations in interest rates, exchange rates, stock and bond quotes, and prices of goods that are invested. Market risk varieties are, in particular, currency and interest risk.

Operational investment risk - the probability of investment losses due to technical errors during operations; due to intentional and unintentional actions of staff; emergency situations; failures in the work of information systems, equipment and computer equipment; security breaches, etc.

Functional investment risk is the probability of investment losses due to errors made in the formation and management of an investment portfolio of financial instruments.

Selective investment risk is the probability of a wrong choice of an investment object in comparison with other options.

Liquidity risk is the probability of losses caused by the inability to free up investment-free funds in the required amount without a loss in a relatively short period of time due to market

conditions. Also under the risk of liquidity understand the probability of a shortage of funds to fulfill obligations to counterparties.

Credit investment risk manifests itself if investments are made using borrowed funds and represents the likelihood of a change in the value of assets or loss of initial quality assets as a result of the inability of the borrower-investor to fulfill its contractual obligations, both in general and for individual positions in accordance with the terms of the loan of the contract.

The risk of loss of profits is the probability of the occurrence of indirect (collateral) financial damage (non-receipt or loss of profits) as a result of the failure of any measure, such as insurance.

A number of investment risks are interrelated (correlated among themselves), changes in one of them cause changes in the other, which affects the results of investment activities.

#### **3.7.4 Diversification and correlation coefficient**

Diversification is a method of reducing risk across a portfolio by purchasing various assets that are not interrelated with each other. Proper diversification must reduce risk more than reduce potential income.

Diversification is considered one of the most powerful investment concepts.

The essence of diversification is that by putting several shares in a portfolio, we get:

- the sum of the average returns of these stocks
- lower standard deviation (risk) than their average stand. deviation

This becomes possible due to the low correlation between the assets in the portfolio. See more about standard deviation of the portfolio.

The logic of diversification is that by decomposing a portfolio into various unrelated asset classes, we do not reduce the long-term income level, but we reduce the short-term portfolio fluctuations associated with the volatility of individual assets.

It is important to understand that proper diversification is achieved not just when you put non-correlating assets in a portfolio, but when the sources of income of assets in a portfolio are of a different nature.

Correlation is the key to risk reduction through diversification. The main problem is that the correlation between assets is quite high. And in times of crisis, when the risk is maximum, the asset correlation also becomes maximum.

The diversification factor is the ratio of the standard deviation of a diversified stock portfolio to the standard deviation of a random stock. The smaller the correlation between stocks, the lower the diversification factor will be, the better it is in terms of risk.

Correlation is a measure of the relationship between two assets (calculated by correlation analysis methods - is a set of methods for detecting the so-called correlation dependence between random variables).

Correlation coefficient - from -1.00 to +1.00:

- A value of +1.00 is a completely positive correlation;
- Value 0 00 - no correlation;
- A value of -1.00 is a completely negative correlation.

### **3.7.5 Liquidity**

Liquidity - the ability of assets to be quickly sold at a price close to the existing one. Liquidity is the ability to turn into money.

There is distinguish of highly liquid, low liquid and illiquid values (assets). It is more liquid than it is. For a product, liquidity will correspond to the speed of its sale at a nominal price.

The separation is usually carried out according to the degree of market demand:

- Maximum liquid assets. Under them understand free finance and short-term material investments.
- Marketable assets. One example is accounts receivable (up to 12 calendar months of full repayment).
- Slow-moving assets. Inventories, debts to the enterprise, repaid in time more than 12 months.
- Hard to sell assets. Equipment used for production, other daily business operations.

Current assets like free money, goods, raw materials are more liquid than the property of the organization. The former are often used as collateral for urgent loans.

### **3.8 Charts**

Schwager states (2017, p.31): *“Charts plays one of the main roles in forecast of profitability and risk. Charts:*

- *give a concise price history - the most important element of information for any investor;*
- *can give the investor a good feeling of market volatility - an important consideration in the risk assessment;*



- are a very useful tool for fundamental analysis;
- can be used as a cash management tool to help establish well-thought-out and realistic protective installations;
- reflect market behavior due to certain repetitive schemes.”

There are few kinds of charts which each successful investor should know.

### 3.8.1 Line stock chart

Figure 4. Line stock chart



Source: forexstandard.ru, 2019

Line charts can only display one of the four bid prices due to their “linearity”. Often, investors use the curve to display closing prices, since consider it more important than the opening price, maximum or minimum. Focusing solely on the closing price, you can safely ignore price movements during trading. Line charts are also useful when there is only one type of price data (for example, only the closing price).

### 3.8.2 Bar chart

Figure 5. Bar chart



Source: forexstandard.ru, 2019

The histogram (bar) chart is the most common. Each period in such a chart contains a vertical line, with two short perpendiculars sticking out on either side. (Sometimes there is only one perpendicular to the left.) The upper and lower borders of this line - the bar - display the prices of the maximum and minimum in this period, respectively. The left perpendicular reflects the opening price, and the right (if there is one) - the closing. Thus, for the correct formation of the histogram chart, all four prices are required for each of the periods.

### 3.8.3 Japanese candles

Figure 6. Japanese candles



Source: forexstandard.ru, 2019

Japanese candles were invented by the Japanese (no matter how surprising it sounds) more than 300 years ago. Today, Japanese candles are becoming increasingly popular among analysts, traders and investors. All 4 prices are required for this type of chart (close, open, high and low). The daily candlestick displays the opening price in the morning, the intraday points of the extremum and the closing price in the evening. The weekly candlestick displays the opening price on Monday, the weekly high and low, and the closing price on Friday.

### 3.8.4 Point and Figure (P&F) Charts

Figure 7. Point and Figure Chart

1,036																												
1,0350	X																											
1,0340	X	O	X																									
1,0330	X	O	X	O																								
1,0320	O	X	O	X	O						X																	
1,0310	O	X	O	X	O						X	O									X				X			
1,0300	O	X	O	X	O				X		X	O	X								X	O	X	O				
1,0290	O	X	O		O				X	O	X	O	X	O							X	O	X	O				
1,0280	O	X			O				X	O	X	O	X	O	X						X	O	X	O				
1,0270	O	X			O	X			X	O	X	O	X	O	X	O	X	O			X	O	X	O				
1,0260	O	X			O	X	O	X	O	X	O	X	O								O	X	O	X				
1,0250	O	X			O	X	O	X	O	X											O	X	O					
1,0240	O				O	X	O	X	O												O	X						
1,0230					O	X	O	X													O	X						
1,0220					O		O	X													O	X						
1,0210							O														O	X						
1,0200																					O							
1,0190																												
1,0180																												
		1	3	4	5	8	9	12	13	15	17	18	19	20	21	22	25	28	30	31								

Source: forexstandard.ru, 2019

Point and Figure (P&F) Charts are based only on price movement, and ignore time. On the graph there is a scale of X, but equal periods on it are displayed in non-equal parts. Lack of movement or small price movement is considered unnecessary, ignored, and is not displayed on such a chart at all. Only price changes are applied that exceed a certain coefficient. Concentration on price makes it easier to detect lines of support and resistance, and market reversals in both directions.

## **4. Practical part**

In the practical part we will create portfolio from selected stocks according to analyzed data and chosen methods.

### **4.1 Stocks selection**

The portfolio will consist of at least four-five stocks. Portfolio will include diversified stocks. The investment portfolio will include US companies that dominate in their industry and have a global presence. The reason for choosing the US market is the availability of companies' data, low investment fees and market size.

### **4.2 Petroleum Industry**

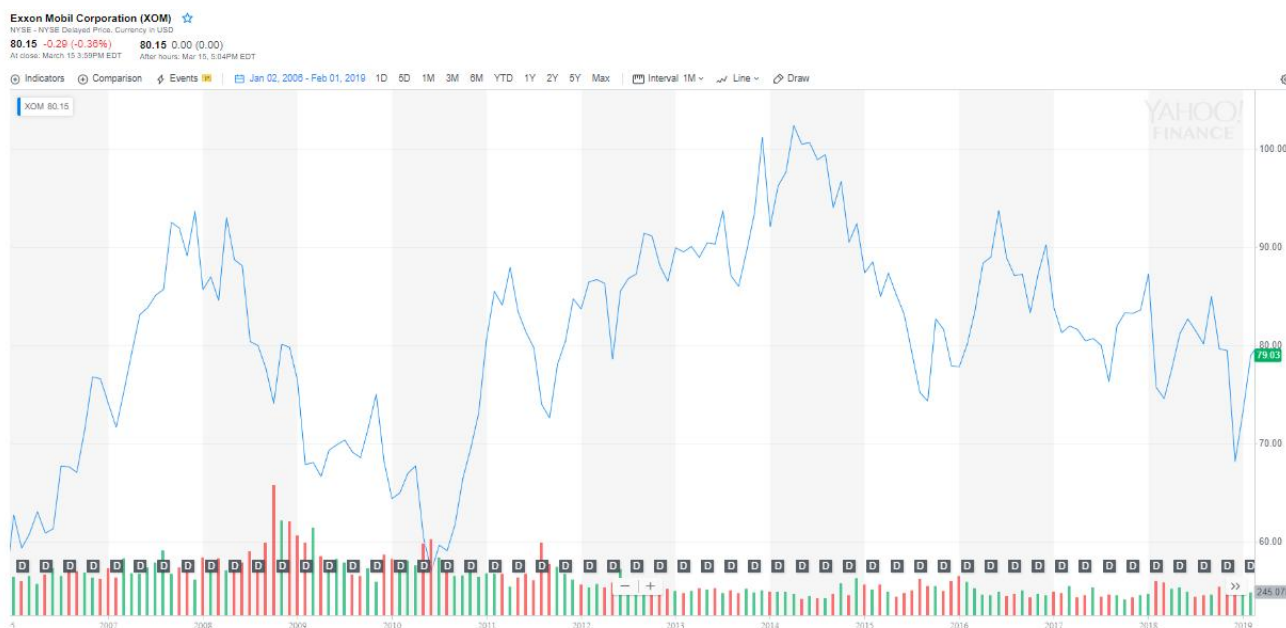
The first part of the portfolio includes American companies of petroleum industry, also known as gas and oil industry. Petroleum industry includes the global processes of exploration, extraction, refining, transporting (often by oil tankers and pipelines), and marketing of petroleum products. The largest volume products of the industry are fuel oil and gasoline (petrol). Companies in this industry are profitable and have significant competition. There will be presented such companies as ExxonMobil, Chevron, and ConocoPhillips.

#### **4.2.1 ExxonMobil Corporation (XOM)**

The current company was established in 1999 as a result of the merger of the largest American oil companies Exxon and Mobil. This is one of the most successful mergers in the history. Both companies were the heirs of the Standard Oil company, founded in 1870 John D. Rockefeller. In less than ten years, it has almost completely taken control of US refining.

Nowadays, it is one of the largest oil-producing and petrochemical corporations of open type in the world. The company works in most countries of the world and is well known under such trademarks as Exxon, Esso and Mobil. ExxonMobil produces products that set in motion a modern transport and energize the city, produce lubricants for equipment and petrochemical raw materials for the production of thousands of consumer goods.

Figure 4. ExxonMobil Corporation 2006-2018



Source: finance.yahoo.com, 2019

The chart shows a jumping trend during all time period since 2006. The lowest price was close to 0 between 2010-2011. It can be explained by consequences of financial crisis which was also reflected in stock prices. The highest price of stock was mentioned in 2014. It is above \$110 per share. Since 2014 there are declining and growing in prices. As we can see, stock market situation is very changeable for ExxonMobil. Nowadays, price per share is nearly \$80.

The average dividend per share in five years is \$ 3,49.

Table 1. ExxonMobil Corporation (XOM), economic indicators

ExxonMobil (XOM)	Statistical data
Total debt/equity	19,04
Trailing P/E	16,42
Forward P/E	14,39
Price/Sales	1,22
ROA	3,88%
Profit margin	7,46%
Forward Dividend	3,28 USD
Market cap	339,42 mld. USD
Price	78,09 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that ExxonMobil has a market capitalization of \$ 339,42 mld. The price per share rose to \$ 78,09 during 2018. The profit margin is 7,46%. The ratio of net profit

to assets is 3,88%. The price / sales ratio is 1,22 - the shares are not overpriced. A comparison of forward P / E values of 14,39 and trailing P / E 16,42 mean that future earnings will be higher. Expected dividend for 2019 is \$ 3,28 per share. Total debt to total equity is 19,04.

#### **4.2.2 Chevron Corporation (CVX)**

Chevron Corporation is the Pacific Coast Oil Company which was founded in 1879 by Frederick Tyler in the town of Pico Well, near which he managed to find oil.

Chevron Corporation is the second after Exxon Mobil integrated energy company in the United States. The company's main fields are located in the USA (29%), Australia (20%) and Kazakhstan (18%).

Through technology and innovation, the company is executing major capital projects designed to yield decades of energy:

- Gorgon - one of the largest global natural gas projects is primed to power the Asia-Pacific region;
- Wheatstone - one of Australia's most significant resource projects is expected to be an important pillar of the Australian economy for decades to come;
- Jack/st. malo - in the U.S. Gulf of Mexico, the company is taking deepwater technology to new heights—nearly 30,000 feet beneath the ocean's surface;
- Tengiz expansion - for more than 20 years, the company has been operating one of the world's deepest supergiant oil fields and supporting local communities in Kazakhstan;
- The Big Foot Field is estimated to contain total recoverable resources in excess of 200 million oil-equivalent barrels;
- Mafumeira sul - the second stage of this project continues Chevron's commitment to Angola;
- The permian basin - an engine of America's energy resurgence is delivering transformational growth for us;
- Alder - technological innovation is unlocking the potential of this gas condensate field in the North Sea;
- Angola LNG - this liquefied natural gas plant is one of the largest energy projects on the African continent.

Figure 5. Chevron Corporation 2006-2018



Source: finance.yahoo.com, 2019

Chevron Corporation's equity development over the past decade began with a slump during the global financial crisis, with the price per share falling below \$ 70. Since then, there has been a slow visible growth trend that has reached maximum between 2014 and 2015 and has begun to decline. During this year, the share price fell to \$ 80. After 2015, there is steady growth with little jumps down and up. During the first half of 2018 there was a drop to 112 USD / share, currently the trend is on the same level. Market is growing.

The average dividend per share for five years is \$ 3,97.

Table 2. Chevron Corporation (CVX), economic indicators, 2018

<b>Chevron Corporation (CVX)</b>	Statistical data
Total debt/equity	22,14
Trailing P/E	16,19
Forward P/E	15,32
Price/Sales	1,5
ROA	3,60%
Profit margin	9,33%
Forward Dividend	4,76 USD
Market cap	238,1 mld. USD
Price	131,08 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Chevron Corporation has a market capitalization of \$ 238,1 mld. The price per share rose to \$ 131,08 during 2018. The profit margin is 9,33%. The ratio of net profit to assets is 3,60%. The price / sales ratio is 1,5 - the shares are not overpriced. A comparison of forward P / E values of 15,32 and trailing P / E 16,19 suggests that profitability will not change with respect to share price. Expected dividend for 2019 is \$ 4,76 per share. Total debt to equity is 22,14.

#### **4.2.3 ConocoPhillips (COP)**

ConocoPhillips Inc. is an American oil company. Headquartered in Houston, Texas. The company was founded in 2002 through the merger of Conoco (founded in 1875 under the name Continental Oil & Transportation) and Phillips Petroleum (founded in 1905).

Company operates in:

- Alaska;
- Asia Pacific and Middle East;
- Canada;
- Europe and North Africa;

ConocoPhillips has proved reserves of approximately 5.3 billion barrels of oil equivalent (BOE) and a large, diverse, low cost of supply resource base that provides the company with significant flexibility for future growth.

In 2018, ConocoPhillips' exploration strategy emphasized flexibility and discovering new barrels accretive to its existing portfolio. The company's 2018 exploration focused on select business units: Alaska, Lower 48, Malaysia and Norway—where existing infrastructure and experience can be leveraged. In addition to these focus areas, ConocoPhillips also concentrates on international exploration opportunities that provide both scale and flexibility, with international new-venture activity ongoing in Latin America.



Figure 6. ConocoPhillips 2006-2018



Source: finance.yahoo.com, 2019

According to the chart, ConocoPhillips had two sharp drops which happened in 2009 and 2016. The global financial crisis had direct influence on the company decreased price per shares. During both falls price was between \$50 and \$60. Since then, there has been a visible growth trend that has stopped in the end of 2018 and has begun to decline. Currently price per share is \$ 68, what is lower on \$ 10 in comparison with previous year.

The average dividend per share for five years is \$ 3,35.

Table 3. ConocoPhillips (COP), economic indicators, 2018

ConocoPhillips (COP)	Statistical data
Total debt/equity	46,68
Trailing P/E	12,7
Forward P/E	15,65
Price/Sales	2,05
ROA	8,46%
Profit margin	16,69%
Forward Dividend	1,22 USD
Market cap	76,67 mld. USD
Price	80,24 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that ConocoPhillips has a market capitalization of \$ 76,67 mld. The price per share rose to \$ 80,24 during 2018. The profit margin is 16,69%. The ratio of net profit to assets is 8,46%. The price / sales ratio is 2,05 - the shares are overpriced. A comparison of forward P / E values of 15,65 and trailing P / E 12,70 can mean that company is growing. Expected dividend for 2019 is \$ 1,22 per share. Total debt to equity is 46,48.

### **4.3 Automotive Industry**

Automotive industry tends to be one of the most profitable industries. There are big amount of companies which are cooperating in the development, design, manufacturing, marketing and selling of cars. Companies have constant development due to great public demand. In this part there will be presented the following companies: Ford Motor, General Motors, Tesla.

#### **4.3.1 Ford Motor Company (F)**

Ford Motor Company is an American automobile manufacturer, car manufacturer under the Ford brand. The fourth largest car manufacturer in the world in terms of production for the entire period of its existence; currently third in the US after GM and Toyota, and second in Europe after Volkswagen.

The company was founded in 1903 by Henry Ford, who created it, having received \$ 28,000 from five investors for business development. Ford has become known as the first in the world to use the classic car assembly line, launched for the first time on August 16, 1913.

Nowadays, the Ford Motor Company has its manufacturing, assembly and shopping centers in 30 countries. The company produces millions of cars, trucks and tractors annually and is the leader in car sales outside North America. Ford Motor Company sells more than 70 different models of cars around the world, produced under the brands of Ford, Lincoln, Mercury, Jaguar and Aston Martin. The company also has a stake in Mazda Motor Corporation and Kia Motors Corporation.

Figure 7. Ford Motor Company 2006-2018



Source: finance.yahoo.com, 2019

Trend like shows that Ford Motor Company was not exception during global financial crisis. Its price per share fall \$ 2,50. During next 4 years prices was increasing and decreasing. Its peak happened in 2015 when price reached \$ 17,5 per share. Since 2015 trend line is going down. Nowadays, the price per share is \$ 8,43.

The average dividend per share for five years is \$ 4,65.

Table 4. Ford Motor Company (F), economic indicators, 2018

<b>Ford Motor Company (F)</b>	Statistical data
Total debt/equity	427,59
Trailing P/E	9,16
Forward P/E	6,29
Price/Sales	0,21
ROA	1,07%
Profit margin	2,29%
Forward Dividend	0,60 USD
Market cap	33,63 mld. USD
Price	12,15 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Ford Motor Company has a market capitalization of \$ 33,63 mld. The price per share rose to \$ 12,15 during 2018. The profit margin is 2,29%. The ratio of net profit to assets is 1,07%. The price / sales ratio is 0,21 - the shares are underpriced. A comparison

of forward P / E values of 6,29 and trailing P / E 9,16 can mean higher future earnings. Expected dividend for 2019 is \$ 0,60 per share. Total debt to equity is 427,59.

### 4.3.2 General Motors Company (GM)

General Motors Corporation was founded in 1916 by William Durant. It formed by the merger of several car manufacturers. The oldest corporation was founded by R.E.Olds in 1892 in Detroit under the name Olds Motor Vehicle Company.

General Motors is the largest American automobile corporation, until 2008, during 77 years, the largest car manufacturer in the world. According to the results of 2014, the concern ranks third in the world (after Toyota and Volkswagen) in the number of cars sold (9.92 million units). Production is established in 35 countries, sales in 192 countries. The company's headquarters is located in Detroit. About one-fifth of the revenue from sales of products and services provided is the federal client sector for serving military orders (excluding foreign customers of American weapons and military equipment).

General Motors Company owns the following car brands: Cadillac, Alpheon, Opel, Buick, Chevrolet, GMC, Vauxhall, Holden.

Figure 8. General Motors Company 2006-2018



Source: finance.yahoo.com, 2019

General Motors Company's equity development in the past five years began with a slump, with the price per share falling below \$ 25. Since then, there has been a visible growth trend and

insignificant decline. The maximum happened in the end of 2019 - \$43 per share. In the beginning of this year, the share price decreased and after a little fell to \$ 34,47.

The average dividend per share in five years is \$ 3,76.

Table 5. General Motors Company (GM), economic indicators, 2018

<b>General Motors (GM)</b>	<b>Statistical data (USD)</b>
Total debt/equity	245,34
Trailing P/E	6,88
Forward P/E	6,01
Price/Sales	0,36
ROA	1,91%
Profit margin	5,45%
Forward Dividend	1,52 USD
Market cap	53,66 mld. USD
Price	45 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that General Motors has a market capitalization of \$ 53,66 mld. The price per share rose to \$ 45 during 2018. The profit margin is 5,45%. The ratio of net profit to assets is 1,91%. The price / sales ratio is 0,36 - the shares are underpriced. A comparison of forward P / E values of 6,01 and trailing P / E 6,88 means higher future earnings. Expected dividend for 2019 is \$ 1,52 per share. Total debt to equity is 245,34.

### **4.3.3 Tesla, Inc. (TSLA)**

Tesla Motors is an American company that manufactures electric vehicles and electric energy storage solutions.

The company was founded in July 2003 by Martin Eberhard and Mark Tarpenning but the company itself considers Ilona Mask, Jeffrey Brian Strobel and Ian Wright to be its co-founders.

Named in honor of the world famous electrical engineering and physicist Nikola Tesla.

The company has following lineup:

- Tesla Roadster;
- Tesla Model S;
- Tesla Model X;
- Model 3;
- Tesla Semi.

In 2018 it was announced that the company had managed to increase production to 7 thousand cars per week (while Tesla 3 production reached the level of 5 thousand cars and will be 6 thousand per week by the end of July). Previously, the company was criticized for not fulfilling its promise to ensure the release of 5 thousand Tesla 3 per week.

Figure 9. Tesla 2006-2018



Source: finance.yahoo.com, 2019

Tesla's equity development started in 2013 and since then it is gradually growing with little leaps. It can be explained by fact that electronic cars are becoming very popular around the world. There was a sharp growth in 2017 from price per share \$ 200 to price per share \$ 300. This price is staying during last two years.

Table 6. Tesla (TSLA), economic indicators, 2018

<b>Tesla, Inc. (TSLA)</b>	Statistical data
Total debt/equity	219,01
Trailing P/E	N/A
Forward P/E	30,27
Price/Sales	2,22
ROA	-0,54%
Profit margin	-4,55%
Forward Dividend	N/A
Market cap	47,57 mld. USD
Price	387,46 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Tesla has a market capitalization of \$ 47,57 mld. The price per share rose to \$ 387,46 during 2018. The profit margin is -4,55%. The ratio of net profit to assets is -0,54%. The price / sales ratio is 2,22 - the shares are overpriced. P / E values is 30,27 and trailing P / E – N/A. There is no expected dividend for 2019. Total debt to equity is 219,01.

#### 4.4 Aerospace and Defense Industry

Aerospace and Defense companies were selected because of a stable industry position in relation to the global and regional economic situation. It is associated with orders of the US government, which for a long time were among the largest in the world. In accordance with investors' preferences three major US companies will be represented in the part of Aerospace & Defense: Boeing, Northrop Grumman Corporation, Lockheed Martin.

##### 4.4.1 The Boeing Company (BA)

The Boeing Company is one of the two largest manufacturers of civil aircraft in the world. It has been on the market since 1916 when it was founded by Williamam Boeing.

The company focuses not only on civil aircraft such as B737, B747 Jumbo jet, B777, B787 Dreamliner, but also military airborne technology. In addition to military helicopters, Boeing covers virtually completely the Army Aircraft segment. Moreover, the company participates in the NASA space program, has previously participated in the Apollo project and supplies its products to the International Space Station ISS. Currently Boeing invests in the technological development of drones for using in both military and civilian environments.

Figure 10. Boeing Company 2006-2018



Source: finance.yahoo.com, 2019

The chart shows a growing trend that has been going on since 2009. During the 2006-2018 reporting period, the global economy was shaken by the financial crisis, which was also reflected in stock prices of The Boeing Company. The stock price drop between 2008 and 2009 is striking, from \$ 100 a share to the lowest of the reporting period, \$ 30 a share. Since 2009, as already mentioned, there is a growing trend with regular corrections. Since the strong stock correction in 2016, there has been a strong upward trend resulting in stock price increases from \$ 110 per share to nearly \$ 400 per share in 2018.

The average dividend per share for five years is \$ 2,29.

Table 7. Boeing Company (BA), economic indicators, 2018

<b>The Boeing Company (BA)</b>	Statistical data
Total debt/equity	3377,32
Trailing P/E	20,11
Forward P/E	19,69
Price/Sales	2,12
ROA	6,50%
Profit margin	10,34%
Forward Dividend	8,22 USD
Market cap	213,93 mld. USD
Price	363,51 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that The Boeing Company has a market capitalization of \$ 213,93 mld. The price per share rose to \$ 363,5 during 2018. The profit margin is 10,34%. The ratio of net profit to assets is 6,50%. The price / sales ratio is 2,12 - the shares are overpriced. A comparison of forward P / E values of 19,69 and trailing P / E 20,11 suggests that company is growing. Expected dividend for 2019 is \$ 8,22 per share. Total debt to equity is 3377,32

#### **4.4.2 Northrop Grumman Corporation (NOC)**

Northrop Grumman Corporation is an American military-industrial company operating in the fields of electronics and information technology, aerospace, shipbuilding.

Founded in 1994 as a result of the merger of Northrop Corporation and Grumman Corporation.

The company's activities are consolidated into the main business groups:

- 1). Information & Services, with manufacturing sectors:



- Information Technology;-
  - Mission systems;
  - Technical Services.
- 2). Electronics;
  - 3). Aviation and space;
  - 4). Shipbuilding.

Company produces such aircrafts as Northrop A-17, Northrop YB-49, B-2 Spirit.

Figure 11. Northrop Grumman Corporation 2006-2018



Source: finance.yahoo.com, 2019

The graphical representation shows a strong fall in the share price during the global financial crisis, when the price plummeted by more than 50% over a period of one year. Since 2013, Northrop Grumman Corporation has been experiencing a strong upward trend that has stopped above \$ 350 a share. This peak was followed by a correction during which the stock price dropped to \$ 265. Now the price has rebounded and the gradual growth begins. Currently, price per share is \$ 265,85.

The average daily movement of Airbus’s shares in five years is \$ 1,61.

Table 8. Northrop Grumman Corporation (NOC), economic indicators, 2018

Northrop Grumman Corporation (NOC)	Statistical data
Total debt/equity	178,31
Trailing P/E	14,38
Forward P/E	12,03
Price/Sales	1,50
ROA	7,22%
Profit margin	10,73%
Forward Dividend	4,8 USD
Market cap	45,12 mld. USD
Price	243,88 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Northrop Grumman Corporation has a market capitalization of \$ 45,12 mld. The price per share rose to \$ 243,88 during 2018. The profit margin is 10,73%. The ratio of net profit to assets is 7,22%. The price / sales ratio is 1,50 - the shares are not overpriced. Forward P / E is 12,03 and trailing P / E is 14,38 what means the corporation is growing. Expected dividend for 2019 is \$ 4,8 per share. Total debt to equity is 178,31.

#### **4.4.3 Lockheed Martin Corporation (LMT)**

Lockheed Martin Corporation was founded in 1994 when two companies, Lockheed and Martin Marietta, merged together. The company has been specializing in the development and production of military aircraft machines since the very beginning. Regarding to the development and production of civil aircraft it is only a marginal part.

Among their most successful products are the C-130 Hercules and the C-5 Galaxy, which serve to transport military equipment and soldiers. In addition, F-16 Fighting Falcon and F-18 Hornet fighter aircraft manufacturers are co-financed by the United States government, which is also the main aircraft buyer. The latest F-35 Lightning II, the project is funded by the US government and the UK government. In addition, Lockheed Martin Corporation is developing NASA satellites for the US government.

Figure 12. Northrop Grumman Corporation 2006-2018



Source: finance.yahoo.com, 2019

The graphical development of Lockheed Martin Corporation is showing a growing trend, from 2012 to 2018. The upward trend is accompanied by corrections. For instance, such corrections occurred in 2015, when the market did not exceed \$ 202 and the price sharply dropped to \$ 186 per share and after increased again, and became even higher than before - \$ 220 per share. Another significant correction occurred in 2018, when the share price dropped from \$ 351 to \$ 295 per share.

The global financial crisis has also hit Lockheed Martin Corporation. From August 2008 to February 2009, the stock price fell from USD 117 to USD 69 per share.

The average dividend per share is \$ 2,71.

Table 9. Lockheed Martin Corporation (LMT), economic indicators, 2018

Lockheed Martin Corporation (LMT)	Statistical data
Total debt/equity	973,36
Trailing P/E	16,84
Forward P/E	12,3
Price/Sales	1,56
ROA	9,90%
Profit margin	9,39%
Forward Dividend	8,8 USD
Market cap	83,75 mld. USD
Price	293,85 USD

Source: finance.yahoo.com, 2019

Lockheed Martin Corporation has a market capitalization of \$ 83,75. The share price is \$ 293,85 at the end of 2018. The profit margin is 9.39%. The expected dividend for the following year is \$ 8.8. The ratio of net profit to assets is 9,90%. The price / sales indicator is 1.56 - the stock price is not overpriced. By comparing the trailing ratios of P / E – 16,84 and forward P / E – 12,3, an improvement in the profitability of the shares relative to the share price is suggested. Total debt to equity is 973,36.

#### **4.5 Technological Industry**

The twenty first century is the century of technologies and information. Technological industry is involved in the production of electronics that are significant moneymakers. Nowadays, mobile phones and electronic devices have become universal due to this industry. Technological companies do not stop on achieved. They develop and produce new phones and electronics devices each year. There are a lot of perspectives in this industry. In this part we are going to present Apple, Microsoft and Cisco Systems.

##### **4.5.1 Apple Inc. (AAPL)**

Apple was founded in California by Steve Jobs, Ronald Wayne and Steve Wozniak, who in the mid-1970s assembled their first personal computer based on the MOS Technology 6502 processor. After selling dozens of such computers, young entrepreneurs received funding and officially registered Apple Computer, Inc. in 1976.

Nowadays, Apple is an American corporation that manufactures personal and tablet computers, audio players, phones, software. One of the pioneers in the field of personal computers and modern multi-tasking operating systems with a graphical interface. Headquartered in Cupertino, California. Apple has created a unique reputation in the consumer electronics industry, comparable to the cult due to its innovative technology and aesthetic design.

Figure 13. Apple 2006-2018



Source: finance.yahoo.com, 2019

Apple's equity development over the past decade began with falls during the global financial crisis, with the price per share falling below \$ 15. Since then, there has been a visible growth trend that has stopped during 2015 and has begun to decline. During this year, the share price fell from \$95 to \$56. After 2015, steady growth followed the peak in 2018, when the price per share was almost \$ 230. In the second half of 2018 there was a drop to \$ 157 per share, currently the market is growing again. Nowadays, price per share is \$ 173.

The average dividend per share is \$ 1,7.

Table 10. Apple (AAPL), economic indicators, 2018

Apple Inc. (AAPL)	Statistical data
Total debt/equity	97,32
Trailing P/E	15,36
Forward P/E	14,59
Price/Sales	3,35
ROA	10,89%
Profit margin	22,72%
Forward Dividend	2,92 USD
Market cap	877,61 mld. USD
Price	233,47 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Apple has a market capitalization of \$ 877,61 mld. The price per share rose to \$ 233,47 during 2018. The profit margin is 22,72%. The ratio of net profit

to assets is 10,89%. The price / sales ratio is 3,35 - the shares are overpriced. A comparison of forward P / E values of 14,59 and trailing P / E 15,36 can mean higher future earnings. Expected dividend for 2019 is \$ 2,92 per share. Total debt to equity is 97,32.

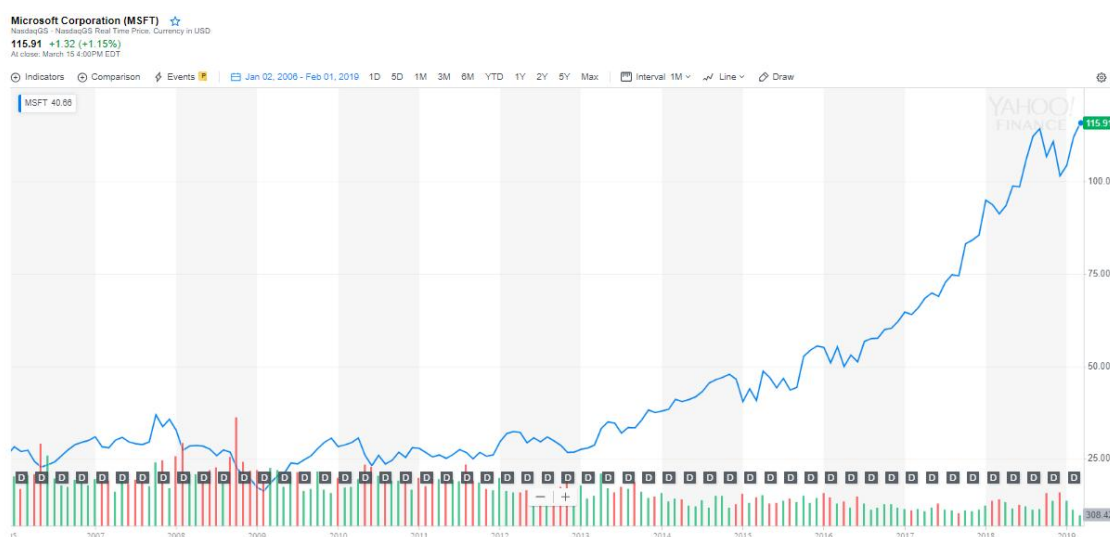
#### 4.5.2 Microsoft Corporation (MSFT)

Microsoft was founded in 1975 by Bill Gates and Paul Allen. Its first year, the new company, which employed three people, ended up with a turnover of \$ 16,005. For comparison: in 2000, the corporation's revenues amounted to \$ 25.3 billion, and profits - more than \$ 7.3 billion. The company's headquarters is located in Redmond, Washington, USA.

Microsoft Corporation is one of the largest transnational companies for the production of proprietary software for various kinds of computing equipment - personal computers, game consoles, PDAs, mobile phones and others, the developer of the most widely used software platform in the world at the moment - the Windows operating system family.

Company divisions also produce Xbox game consoles, as well as accessories for personal computers (keyboards, mice, etc.). C 2012 produces its own tablet computer - Surface. Microsoft products are sold in more than 80 countries, programs have been translated into more than 45 languages.

Figure 14. Microsoft Corporation 2006-2018



Source: finance.yahoo.com, 2019

Microsoft Corporation's equity development has very slow gradual growth. In 2007 price per share was \$ 36,8. However, the beginning of the next year started with the sharp decline which was \$ 27,20. In 2009 price per share reached its lowest level of \$ 16 due to the global financial

crisis. Since 2010 Microsoft Corporation has been experiencing growth with changes up and down in \$10. Currently price per share is \$ 112.

The average dividend per share for five years is \$ 2,24.

Table 11. Microsoft Corporation (MSFT), economic indicators, 2018

<b>Microsoft Corporation (MSFT)</b>	Statistical data
Total debt/equity	92,79
Trailing P/E	26,89
Forward P/E	23,23
Price/Sales	7,51
ROA	9,44%
Profit margin	28,31%
Forward Dividend	1,84 USD
Market cap	889,29 mld. USD
Price	117,25 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Microsoft Corporation has a market capitalization of \$ 889,29 mld. The price per share rose to \$ 117,25 during 2018. The profit margin is 28,31%. The ratio of net profit to assets is 9,44%. The price / sales ratio is 7,51 - the shares are overpriced. A comparison of forward P / E values of 23,23 and trailing P / E 26,89 means higher future earnings. Expected dividend for 2019 is \$ 1,84 per share. The total debt to equity is 92,79.

#### **4.5.3 Cisco Systems, Inc. (CSCO)**

Cisco Systems was founded in 1984 by the spouses Leonard Bosack and Sandra Lerner, previously engaged in the maintenance of computing equipment. The name Cisco is an abbreviation for the city of San Francisco, California.

Nowadays, Cisco is an American multinational company that develops and sells network equipment designed primarily for large organizations and telecommunications companies.

It is one of the world's largest companies specializing in high technology. Originally the company dealt only with corporate routers.

One of the features of the company's business model has become a multi-level, extensive certification system for computer network engineers.

Figure 15. Cisco System 2006-2018



Source: finance.yahoo.com, 2019

Cisco Systems` trend line is very changeable during whole time period. There are a lot of declines and growth. Johnson & Johnson's equity development over the past decade began with a slump during the global financial crisis, with the price per share falling below \$ 50. Since then, there has been a visible growth trend that has stopped during 2015 and has begun to decline. During this year, the share price fell to \$ 90. After 2015, steady growth followed the peak at the end of 2017, when the price per share was almost \$ 150. During the first half of 2018 there was a drop to 125 USD / share, currently the market is growing again.

The average dividend per share is \$ 2,97.

Table 12. Cisco System (CSCO), economic indicators, 2018

<b>Cisco Systems, Inc. (CSCO)</b>	Statistical data
Total debt/equity	62,9
Trailing P/E	19,41
Forward P/E	15,74
Price/Sales	4,61
ROA	7,19%
Profit margin	25,31%
Forward Dividend	1,4 USD
Market cap	234,19 mld. USD
Price	53,62 USD

Source: finance.yahoo.com, 2019



The results for 2018 show that Apple has a market capitalization of \$ 234,19 mld. The price per share rose to \$ 53,62 during 2018. The profit margin is 25,31%. The ratio of net profit to assets is 7,19%. The price / sales ratio is 4,61 - the shares are overpriced. A comparison of forward P / E values of 15,74 and trailing P / E 19,41 means that the company is growing. Expected dividend for 2019 is \$ 1,40 per share. Total debt to equity is 62,9.

## 4.6 Pharmaceutical Industry

Pharmaceutical industry is one of the most profitable industries on the American market. There are a lot of researches, developments, innovations and projects. For the analysis we will include Pfizer, Johnson & Johnson and Merck & Co.

### 4.6.1 Pfizer Inc. (PFE)

Pfizer Inc. was founded in 1849 and has since become one of the leading pharmaceutical companies. It focuses primarily on the development and production of its own drugs. Annual global research investment ranges about \$ 7.5 billion. Products of Pfizer Inc. are available in 150 countries.

Pfizer Inc.'s top sellers, which are \$ 1 billion and above in sales, are medicines - Plevnar family, Lyrica, Ibrance, Lipidor, Viagra, Xanax.

Figure 16. Pfizer Inc. 2006-2018



Source: finance.yahoo.com, 2019

Pfizer Inc. it was deeply affected by the global financial crisis in 2008, when it lost half of its share price. Since 2009, it has been steadily in the growth trend, supplemented by regular

corrections. During 2018, the stock price jumped from \$ 35 to \$ 45 per share, followed by a sharp correction of \$ 43.

The average dividend per share is \$ 0.254.

Table 13. Pfizer (PFE), economic indicators, 2018

<b>Pfizer Inc. (PFE)</b>	Statistical data
Total debt/equity	66,07
Trailing P/E	22,39
Forward P/E	13,56
Price/Sales	4,32
ROA	5,93%
Profit margin	20,79%
Forward Dividend	1,44 USD
Market cap	231,95 mld. USD
Price	46,47 USD

Source: finance.yahoo.com, 2019

Market Capitalization Pfizer Inc. is \$ 231,95. The ratio of total debt to equity is 1,16 and the price / earnings ratio is 46,47. The price to sales ratio is 4.32 - it means overcharging shares. Return on assets is 5,93%. The company's profit margin is 20,79%. Expected dividend for 2019 is \$ 1,44. The price per share at the end of 2018 is \$ 46,47.

#### **4.6.2 Johnson & Johnson (JNJ)**

Johnson & Johnson is one of the largest global pharmaceutical companies in 57 countries. It was founded in 1886 and has since held many world leaders in research and development - the contraceptive patch, the world's first antibacterial sewing, the world's first drug-covered stent.

Johnson & Johnson focuses on consumer medicines and products; Johnson's baby, O.B., Listerine, Nicorette, Imodium, Visine are among the best selling in the world. Another segment of the company is medical devices and medical technologies - cardiological stents, spinal implants, and sterilizers. The last segment of the company is Janssen, which develops medicinal products in the following therapeutic areas - immunology, cardiovascular disease, oncology, neurology.

Figure 17. Johnson & Johnson 2006-2018



Source: finance.yahoo.com, 2019

Johnson & Johnson's equity development over the past decade began with a slump during the global financial crisis, with the price per share falling below \$ 50. Since then, there has been a visible growth trend that has stopped during 2015 and has begun to decline. During this year, the share price fell to \$ 90. After 2015, steady growth followed the peak at the end of 2017, when the price per share was almost \$ 150. During the first half of 2018 there was a drop to 125 USD / share, currently the market is growing again.

The average dividend per share is \$ 2,66.

Table 14. Johnson & Johnson (JNJ), economic indicators, 2018

Johnson & Johnson (JNJ)	Statistical data
Total debt/equity	51,02
Trailing P/E	24,55
Forward P/E	15,15
Price/Sales	4,49
ROA	8,62%
Profit margin	18,75%
Forward Dividend	3,6 USD
Market cap	366,4 mld. USD
Price	140,82 USD

Source: finance.yahoo.com, 2019

The market capitalization of Johnson & Johnson is USD 366,4 mld. The ratio of total debt to equity is 1,4 and the current price / earnings ratio is 18,75. The share price to sales is 4,49 - it means overcharging the share price. Return on assets is 8,62%. Profit margin is 18.75%. The share price at the end of 2018 is \$ 140,82. The expected dividend for 2019 is \$ 3,6.

#### 4.6.3 Merck & Co., Inc. (MRK)

Merck & Co was founded in 1827 by Jacob Friedrich Merck. He made big contributions in the company and due to him the company became the largest producer of alkaloids (morphine, codeine, cocaine).

Nowadays, Merck & Co., Inc. is a multinational pharmaceutical company headquartered in the United States. The company produces vaccines and other drugs, as well as publishes on a non-profit basis health information publications such as the Merck Index chemical handbook and The Merck Manuals medical handbook.

Outside the United States and Canada, products manufactured by Merck & Co. are marketed under the brand name Merck Sharp & Dohme (MSD).

Figure 18. Merck & Co 2006-2018



Source: finance.yahoo.com, 2019

Merck & Co's equity development had price per share \$ 58. After there was sharp decline due to global financial crisis. In 2009 price fall more than twice to \$24 per share. Since 2009 there is slow gradual growth with little growth and declines in the interval of \$10. In 2015 the price per share was \$59 and in the same year it fall to \$49. Currently market is growing again and the price per share is on maximum level \$ 81.

The average dividend per share is \$ 3,07.

Table 15. Merck & Co (MRK), economic indicators, 2018

<b>Merck &amp; Co., Inc. (MRK)</b>	<b>Statistical data (USD)</b>
Total debt/equity	93,72
Trailing P/E	35,16
Forward P/E	15,63
Price/Sales	4,98
ROA	6,29%
Profit margin	14,71%
Forward Dividend	2,2 USD
Market cap	210,55 mld. USD
Price	82,12 USD

Source: finance.yahoo.com, 2019

The results for 2018 show that Merck & Co. has a market capitalization of \$ 210,55 mld. The price per share rose to \$ 82,12 during 2018. The profit margin is 14,71%. The ratio of net profit to assets is 6,29%. The price / sales ratio is 4,98 - the shares are overpriced. A comparison of forward P / E values of 15,63 and trailing P / E 35,16 means that the company is growing. Expected dividend for 2019 is \$ 2,2 per share. Total debt to equity is 93,72.

#### **4.7 Portfolio**

The joint stock companies represented in the resulting portfolio were selected on the basis of data analysis and multiple-criteria decision analysis. Evaluation has been made according to such indicators as total deb/equity, ROA and forward dividend.

Table 16. Multiple-criteria decision analysis

Industry	Company	ROA	Total debt/equity	Forward Dividend	Evaluation
Gas and oil	<b>ExxonMobil (XOM)</b>	3,88%	19,04	3,28	1
	Chevron Corporation (CVX)	3,60%	22,14	4,76	2
	ConocoPhillips (COP)	8,46%	46,68	1,22	3
Automotive	Ford Motor Company	1,07%	427,59	0,6	2
	<b>General Motors Company</b>	1,91%	245,34	1,52	1
	Tesla, Inc.	-0,54%	219,01	N/A	3
Aerospace & Defense	The Boeing Company	6,50%	3377,32	8,22	3
	Northrop Grumm Corporation	7,22%	178,31	4,8	2
	<b>Lockheed Martin Corporation</b>	9,90%	973,36	8,8	1
Technological	<b>Apple</b>	10,89%	97,32	2,92	1
	Microsoft	9,44%	92,79	1,84	2
	Cisco	7,19%	62,9	1,4	3
Pharmaceutical	Pfizer Inc.	5,93%	66,07	1,44	3
	<b>Johnson &amp; Johnson</b>	8,62%	51,02	3,6	1
	Merck & Co.	6,29%	93,72	2,2	2

Source: finance.yahoo.com and author, 2019

On the basis of data in the table 16 for the stock portfolio there were selected ExxonMobil Corporation, General Motors Company, Lockheed Martin Corporation, Apple and Johnson & Johnson.

#### 4.7.1 ExxonMobil (XOM) analysis

As one of the world's largest publicly traded energy providers and chemical manufacturers, ExxonMobil develops and applies next-generation technologies to help safely and responsibly meet the world's growing needs for energy and high-quality chemical products.

Worldwide, ExxonMobil markets fuels and lubricants under four brands: Esso, Exxon, Mobil and ExxonMobil Chemical.

In 2018 Exxon Mobil Corporation had \$20.8 billion of earnings, or \$4.88 per share assuming dilution, compared with \$19.7 billion a year earlier.

The company has the following divisions:

- **Upstream** - Understanding of the global hydrocarbon endowment, coupled with unique geoscience capabilities, allows the company to identify and prioritize the development of the highest quality resources. Due to experience and applied technologies, the company develops more oil and gas reserves at both new and mature fields. Advances in seismic imaging, reservoir simulation, drilling and facility design allow to explore and develop deposits that were previously unidentified or unreachable.

- ***Chemical*** - ExxonMobil Chemical is one of the largest chemical manufacturing companies in the world. Its unique portfolio of commodity and specialty businesses generates annual sales of nearly 25 million tonnes of prime products.
- ***Downstream*** - As the largest global refiner, the majority of refining capacity is integrated with lubricants and/or chemical businesses. ExxonMobil's global Fuels & Lubricants organization drives the efficient development and deployment of global best-practices and new technologies. ExxonMobil is the world's leading supplier of lubricant basestocks and the largest global marketer of finished lubricants.
- ***Natural gas and power marketing*** - Reliable supplies of natural gas and access to power are fundamental to the world's economic growth and increased prosperity. ExxonMobil employs a global team of commercial experts to maximize the value of the company's gas, natural gas liquids and power interests in meeting the growing needs of consumers around the world.

### **The Future of the Company**

ExxonMobil has revised its Permian Basin growth plans to produce more than 1 million oil-equivalent barrels per day by as early as 2024 – an increase of nearly 80 percent and a significant acceleration of value.

The \$10+ billion liquefaction project will have capacity to produce around 16 million tons of LNG per year. Preliminary estimates by an independent study indicate the project could generate up to \$31 billion in U.S. economic gains and more than \$4.6 billion in direct federal, state and local tax revenues over the life of the project.

Exxon Mobil Corporation will streamline its upstream organization and centralize project delivery across the company to double operating cash flow and earnings by 2025.

The company makes research on advanced biofuels, including biofuels, a qualitatively new energy source, the use of which will not depend to such extent on food, land and fresh water as traditional biofuels, while reducing emissions to the atmosphere. Over the past fifteen years, ExxonMobil investment in reducing emissions has reached \$ 7 billion.

### **Technical analysis**

#### **Profitability**

ExxonMobil's gross profit increased since 2015. In 2015, gross profit was \$ 77.801 billion, followed by decline to \$ 67.869 billion in 2016, and a growth to \$ 78.109 billion in 2017.

Table 16. Gross profit of XOM 2015-2017 GM

	2017	2016	2015
Gross profit, mld. USD	78,109	67,869	77,801

Source: author, 2019

### Dividend

The ExxonMobil dividend increased from \$ 2,88 per share in 2015 to \$ 3 in 2016 and to \$ 3,06 in 2017. The following table shows the quarterly dividend values.

Table 18. Dividend of XOM 2016-2017 (USD)

	2017	2016	2015
First quarter	0,75	0,75	0,69
Second quarter	0,77	0,75	0,73
Third quarter	0,77	0,75	0,73
Fourth quarter	0,77	0,75	0,73
Total	3,06	3	2,88

Source: author, 2019

### Debt

The following table 19 shows the development of ExxonMobil indebtedness. Long-term debt to total assets insignificantly increased during 2015-2017 from 0,06 to 0,07. Together with the debt, total assets also increased from \$ 336,76 billion to \$ 348,69 billion, long-term debt rose by \$ 4,39 billion.

Table 19. Long-term debt/Assets XOM 2015-2017

	2017	2016	2015
Long-term debt mld. USD	23,08	27,71	18,69
Assets mld. USD	348,69	330,31	336,76
<b>Long-term debt/Assets</b>	<b>0,07</b>	<b>0,08</b>	0,06

Source: author, 2019



### Comparison with indices

The following figure 19 shows a comparison of the performance of XOM shares and the S&P 500 stock index. The chart shows that since 2014 ExxonMobil's shares became lower than the S&P 500 index on 20%.

Figure 19. Comparison with XOM vs. S&P 500 vs. sector



Source: [www.marketscreener.com](http://www.marketscreener.com), 2019

### Internal price vs. market price

According to the formula N.1 there was calculated internal stock price which is 81,34 USD. In comparison with market value of XOM on 25.03.2019 – 80,34 USD, it is obviously that both prices are similar. However, market price is very changable. So stocks are still appropriate to purchase.

#### 4.7.2 General Motors (GM) analysis

As the first automotive company to mass-produce an affordable electric car, and the first to develop an electric starter and air bags, GM has always pushed the limits of engineering:

- GM is the only company with a fully integrated solution to produce self-driving vehicles at scale.
- GM is committed to an all-electric future.

- 2.6 billion EV miles have been driven by drivers of five GM electrified models, including the Chevrolet Bolt EV.

General Motors' organizational structure has the following regional segments:

- GM North America (GMNA)
- GM Europe (GME)
- GM International Operations (GMIO)
- GM South America (GMSA).

GM's automotive business operations are grouped as one division. This characteristic of the organizational structure allows the company to effectively manage each business, considering that different businesses have different needs. Thus, top-tier managers are able to strategically align the business with General Motors' mission statement and vision statement. In spite of a low degree of business diversification, the following business-type divisions are used in General Motors' corporate structure:

- Automotive
- GM Financial (Auto financial services)

Full-year 2018 results:

- EPS-diluted of \$5.58 and EPS-diluted-adjusted of \$6.54
- Full-year income of \$8.1 billion and EBIT-adjusted of \$11.8 billion
- Full-year EBIT-adjusted margin of 8.0 percent
- North America EBIT-adjusted of \$10.8 billion
- China equity income of \$2 billion
- GM Financial EBT-adjusted of \$1.9 billion, up 58 percent

**The future of the company:**

- GM invests \$300 Million adding 400 Jobs at Michigan Plant for New Chevrolet Electric Vehicle;
- new investment commitment of \$1.8 billion in its U.S. manufacturing operations across six states, adding a total of 700 new jobs;
- GM expects higher year-over-year sales in Chevrolet Bolt EV's major markets.

## Technical analysis

### Profitability

General Motors' gross profit has been staying almost the same since 2015. In 2015, gross profit was \$ 18.142 billion, followed by growth to \$ 19.383 billion, and a decline to \$ 18.804 billion in 2017.

Table 20. Gross profit of LMT 2015-2017 GM

	2017	2016	2015
Gross profit, mld. USD	18,804	19,383	18,142

Source: author, 2019

### Dividend

The GM dividend increased from \$ 1,38 per share in 2015 to \$ 1,52 in 2016 and staying the same \$ 1,52 in 2017. The following table shows the quarterly dividend values.

Table 21. Dividend of GM 2016-2017 (USD)

	2017	2016	2015
First quarter	0,38	0,38	0,3
Second quarter	0,38	0,38	0,36
Third quarter	0,38	0,38	0,36
Fourth quarter	0,38	0,38	0,36
Total	1,52	1,52	1,38

Source: author, 2019

### Debt

The following table 22 shows the development of GM indebtedness. Long-term debt to total assets insignificantly increased during 2015-2017 from 0,04 to 0,05. Together with the debt, total assets also increased, long-term debt rose by \$ 3,04 billion.

Table 22. Long-term debt/Assets GM 2015-2017

	2017	2016	2015
Long-term debt mld. USD	10,99	9,50	7,95
Assets mld. USD	212,48	221,69	194,34
<b>Long-term debt/Assets</b>	<b>0,05</b>	<b>0,04</b>	<b>0,04</b>

Source: author, 2019

### Comparison with indices

The following figure 20 shows a comparison of the performance of GM shares and the S&P 500 stock index. The chart shows that since 2014 General Motors` shares became lower than the S&P 500 index on 40%.

Figure 20. Comparison with GM vs. S&P 500 vs. sector



Source: [www.marketscreener.com](http://www.marketscreener.com), 2019

### Internal price vs. market price

According to the formula N.1 there was calculated internal stock price which is 42,89 USD. In comparison with market value of GM on 25.03.2019 – 36,68 USD, it is obvious underestimate prices and stocks are appropriate to purchase.

### 4.7.3 Lockheed Martin Corporation (LMT) analysis

Lockheed Martin Corporation (LMT) is one of the largest arms companies in the world. It focuses on researching, designing, developing, manufacturing and integrating advanced military technology systems, products and services. It has been on the market for more than 105 years. According to the LMT annual report, sales are not seasonal. Major LMT programs are co-funded by the US government. In 2017, LMT's total revenue was \$ 51 billion, 69% was for the US government (of which 58% for the Ministry of Defense), 30% were international contracts

obtained through the US government (including orders for other states' armies), 1% sales include US private contracts.

The company has four divisions:

1. Aeronautics - 39% of Annual Sales - The division focuses on research, development and production of military aircraft and drones. Major aircraft development programs are: F-35 Lightning II Joint Strike Fighter (25% of total revenue), C-130 Hercules, F-16 Fighting Falcon, F-22 Raptor.

2. Missiles and Fire control - 14% of annual sales - The division focuses on research, development and production of air missile defense systems, tactical missile systems, air - ground, logistics, launch systems, remote controlled land vehicles and technical support. The main development programs are: The Patriot Advanced Capability 3, Terminal High Altitude Area Defense, The Multiple Launch Rocket System.

3. Rotary and mission systems - 28% of annual sales - The division focuses on research, development and production of military and civilian helicopters, ship and submarine weapon systems, combat simulation, training and cyber security. The main development programs are: The Blackhawk and Seahawk helicopters, The Aegis Combat System, The VH-92A helicopter,

4. Space - 19% of Annual Sales - The division focuses on research, development and production of satellites, missile guidance systems and space transport vehicles. The main development programs are: The Trident II D5 Fleet Ballistic Missile, The United Kingdom's Nuclear Deterrent Program, Global Positioning System (GPS) III, The Orion MultiPurpose Vehicle.

### **The Future of the Company**

The main development programs of the company, supported by the US government for a long time, are:

- F-35 - Fifth Generation Combat Aircraft
- C-130 - Army Airplane
- PAC-3 - Patriot Advanced Capability
- THAAD - High Altitude Area Defense - air missile defense system
- AEGIS - Aegis combat system - maritime ballistic protection system.

In 2017, a strategically important agreement was concluded between the US government and Saudi Arabia, which for LMT means the possibility to export military technology to Saudi Arabia. The agreement has a \$ 28 billion revenue potential for LMT over the next ten years.

Regular supplies of materials, especially aluminum and titanium, are important for the company and therefore have long-term contracts with suppliers of these strategic materials.

At the end of 2017, LMT had pre-orders for its products at \$ 99.9 billion. In 2018, revenue from these pre-orders should reach \$ 31 billion.

### **Technical analysis**

#### **Profit**

Lockheed Martin Corporation's gross profit has been increasing since 2015. In 2015, it reached \$ 4.492 billion, a year later reached \$ 5,062 billion, and in 2017 was \$ 5.548 billion.

Table 23. Gross profit of LMT 2015-2017 LMT

	2017	2016	2015
Gross profit, mld. USD	5,548	5,062	4,492

Source: author, 2019

#### **Dividend**

The LMT dividend increased from \$ 6.77 per share in 2016 to \$ 7.46 in 2017. The following table shows the quarterly dividend values.

Table 24. Dividend of LMT 2016-2017 (USD)

	2017	2016
First quarter	1,82	1,65
Second quarter	1,82	1,65
Third quarter	1,82	1,65
Fourth quarter	2	1,82
Total	7,46	6,77

Source: author, 2019

#### **Debt**

The following table 25 shows the development of LMT indebtedness. Long-term debt to total assets insignificantly decreased during 2015-2017. Together with the debt, total assets also decreased, long-term debt fell by \$ 0.8 billion.

Table 25. Long-term debt/Assets LMT 2015-2017

	2017	2016	2015
Long-term debt mld. USD	13,51	14,28	14,31
Assets mld. USD	46,52	47,81	49,30
<b>Long-term debt/Assets</b>	<b>0,29</b>	<b>0,30</b>	<b>0,29</b>

Source: author, 2019

### Comparison with indices

The following chart shows a comparison of the performance of LMT shares, the S&P 500 stock index and the S&P index for Aerospace & Defense. The chart shows that at the age of five years, Lockheed Martin Corporation's shares are more than twice as powerful as the S&P 500 and over 60% more powerful than the sector index.

Figure 21. Comparison with LMT vs. S&P 500 vs. sector



Source: www.marketscreener.com, 2019

### Internal price vs. market price

According to the formula N.1 there was calculated internal stock price which is 391,87 USD. In comparison with market value of LMT on 25.03.2019 - 293,95 USD, it is obvious underestimate prices and stocks are appropriate to purchase.

#### **4.7.4 Apple Inc. (AAPL) analysis**

Apple is the first American company whose capitalization exceeded 1.044 trillion US dollars. This happened during the trading of shares of the company on September 10, 2018. On the same day, the company became the most expensive public company in history.

Apple has product-based divisions. This aspect of the corporate structure is used to manage specific products or product components that the company delivers to its target customers. There are senior vice presidents and vice presidents for different outputs or products:

- Software Engineering (iOS and macOS);
- Hardware Engineering (Mac, iPhone, iPad and iPod);
- Hardware Technologies (hardware components).

#### **Future of technologies**

Apple's first strategic move is to diversify its sales so that by 2020 the service brings at least \$ 50 billion. For 2017 Apple has already earned \$ 27 billion in services and in 2016 - \$ 24 billion.

One of the recent innovations is Apple Card. It is an innovative, new kind of credit card created by Apple and designed to help customers lead a healthier financial life. Apple Card is built into the Apple Wallet app on iPhone, offering customers a familiar experience with Apple Pay and the ability to manage their card right on iPhone. Also the company produced new version of iOS for iPhones and iPads with some new functions such as Screen Time, Measure, Shortcuts.

One of the new projects of near future is smart glasses Apple Glasses. Wearing these glasses, a huge screen appears before eyes, which is capable to display any information within the framework of augmented reality. Siri voice assistant is integrated into smart glasses, which allows to control the gadget using voice commands and help, for example, while navigating the city.

#### **Technical analysis**

##### **Profitability**

Apple's gross profit is very changeable during last years. Decreasing and increasing in the company's profits is due to the decreasing and increasing demand for models of iPhones. In 2015, gross profit was \$ 93.6262 billion, followed by decline to \$ 84.253 billion, and a growth to \$ 88.186 billion in 2017.



Table 26. Gross profit of APPL 2015-2017

	2017	2016	2015
Gross profit, mld. USD	88,186	84,263	93,626

Source: author, 2019

### Dividend

Dividend per share of Apple continues to grow. Since 2015, it has increased from USD 2,03 to USD 2,23 in 2016 and to USD 2,46 in 2017. The following table shows the quarterly dividend values.

Table 27. Dividend of APPL 2015-2017 (USD)

	2017	2016	2015
First quarter	0,57	0,52	0,47
Second quarter	0,63	0,57	0,52
Third quarter	0,63	0,57	0,52
Fourth quarter	0,63	0,57	0,52
Total	2,46	2,23	2,03

Source: author, 2019

### Debt

According to the following table 28 AAPL's indebtedness has increased in recent years from 290,35 billion USD in 2015 to 375,32 billion USD in 2017.

Table 28. Long-term debt/Assets APPL 2015-2017

	2017	2016	2015
Long-term debt mld. USD	97,21	75,43	53,33
Assets mld. USD	375,32	321,69	290,35
<b>Long-term debt/Assets</b>	<b>0,26</b>	<b>0,23</b>	0,18

Source: author, 2019

### Comparison with indices

The following figure 22 shows a comparison of the performance of AAPL shares, the S&P 500 stock index and the S&P index for Technological Industry. The chart shows that at the age of five years, APPL's shares are more powerful than S&P 500 index. Industry index is shown since 2018 and it is twice lower than APPL index.

Figure 22. Comparison with AAPL vs. S&P 500 vs. sector



Source: [www.marketscreener.com](http://www.marketscreener.com), 2019

### Internal price vs. market price

According to the formula N.1 there was calculated internal stock price which is 273,6 USD. In comparison with market value of AAPL on 25.03.2019 - 188 USD, it is obvious underestimate prices and stocks are appropriate to purchase.

### 4.7.5 Johnson & Johnson (JNJ) analysis

Johnson & Johnson (JNJ) has been on the market for 132 years, currently operating in 57 countries. J&J has its own technology centers, laboratories and a network of researchers. According to the Board of Directors of Johnson & Johnson, the company's revenues are not seasonal. The entire company is divided into three divisions (share of total revenue)

1. Consumer healthcare (44.9%)
2. Medical devices (35.9%)
3. Pharmaceuticals (19.2%)

The Consumer Health Division includes: Baby Care, Skin & Hair Care, Wound Care and Tropicals, Women's Health Care, McNeil Consumer Healthcare, Over - The - Counter Medicines, Nutritionals

The medical devices division includes: Advanced Sterilization Products, Animas Corporation, Biosence Webster, DePuy Synthes, Ethicon, Inc., Janssen Diagnostics BVBA, Johnson & Johnson Vision Care, Inc., LifeScan, Inc., Mentor. The Pharmaceuticals division

includes: Janssen, Janssen R&D LLC, Janssen Healthcare Innovation, Janssen Pharmaceuticals Inc., Janssen Diagnostics, Janssen, Therapeutics, Janssen Scientific Affairs, McNeil-PPC, Inc.

### **The future of society**

By the end of 2018, the company has already met the major goals of approving and launching the US and European, nine new drugs:

American market

- ERLEADA - indication for the treatment of metastatic prostate cancer
- SYMTUZA - indication for treatment of HIV on rilpivirine base
- DARZALEX - indication for the treatment of myeloma tumors
- XARELTO - indications for the treatment of coronal arteries / peripheral arteries
- ZYTIGA - indication for the treatment of metastatic prostate cancer
- IMBRUVICA - indications for the treatment of lymphocytic leukemia

European market

- JULUCA - indication for the treatment of HIV on rilpivirine base
- DARZALEX - indication for the treatment of myeloma tumors
- INVOCAN - indication for the treatment of diabetes
- TREMFYA - a monoclonal antibody to the interleukin protein

For the following year 2019, Johnson & Johnson has prepared these drugs for approval: Erdafitinib, ERLEADA, OPSUMIT, STELARA.

Ten new and improved medicines should be launched in the next three years: XARELTO, STELARA, ERLEADA, HIV Vaccine, IMBRUVICA, DARZALEX, Erdafitinib.

Regular introduction of new or improved medicines is supported by continually increasing investments, which in 2017 amounted to USD 10.6 billion. The investments were mainly made in new research centers in order to increase the portfolio of medicines and help with the development of medicines for diseases at a later stage.

### **Technical analysis**

#### **Profitability**

Johnson & Johnson's gross profit has risen for 55 years in a row. Increasing the company's profits is due to the ever-increasing demand for drugs to indicate cancer and to strengthen the immune system. In 2015, gross profit was \$ 48.538 billion, followed by growth to \$ 50.205 billion, and a profit of \$ 51.096 billion in 2017.

Table 29. Gross profit 2015-2017 JNJ

	2017	2016	2015
Gross profit, mld. USD	51,096	50,205	48,538

Source: author, 2019

### Dividend

Dividend per share of Johnson & Johnson continues to grow. Since 2015, it has increased from USD 2,95 to USD 3,15 in 2016 and to USD 3,32 in 2017. The following table shows the quarterly dividend values.

Table 30. Dividend of JNJ 2015-2017 (USD)

	2017	2016	2015
First quarter	0,8	0,75	0,7
Second quarter	0,84	0,8	0,75
Third quarter	0,84	0,8	0,75
Fourth quarter	0,84	0,8	0,75
Total	3,32	3,15	2,95

Source: author, 2019

### Debt

According to the following table, JNJ's indebtedness has increased in recent years. Which is caused by the ever-increasing investment in the company's development.

Table 31. Long-term debt/Assets JNJ 2015-2017

	2017	2016	2015
Long-term debt mld. USD	30,68	23,55	12,86
Assets mld. USD	60,16	71,13	71,7
<b>Long-term debt/Assets</b>	<b>0,51</b>	<b>0,33</b>	0,18

Source: author, 2019

### Comparison with indices

The following chart shows a comparison of the performance of JNJ shares, the S&P 500 stock index and the S&P index for Pharmaceutical Industry. The chart shows that at the age of five

years, Johnson & Johnson's shares are more powerful than the sector index on 50%-60% and close to S&P 500.

Figure 23. Comparison with JNJ vs. S&P 500 vs. sector



Source: [www.marketscreener.com](http://www.marketscreener.com), 2019

### Internal price vs. market price

According to the formula N.1 there was calculated internal stock price which is 204,93 USD. In comparison with market value of JNJ on 25.03.2019 – 138,70 USD, it is obvious underestimate prices and stocks are appropriate to purchase.

### 4.7.6 Correlation matrix

The following table shows the correlation coefficients of the monthly market prices. No correlation coefficient is equal to one, so there is no perfect correlation between the selected stock titles. Diversification is effective if the correlation coefficient is less than one, which is the case with all stock titles under review.

It is evident that the strongest correlation is between Lockheed Martin Corporation and General Motors Company, and Lockheed Martin Corporation and ExxonMobil, a correlation coefficient of both cases is 0,88. The increased correlation rate is caused by interdependent and related business sectors of these companies.

For example, the value of oil prices (XOM) are directly related to the prices of flights (LMT), with a correlation coefficient of +0.88. The relationship between oil prices and flights has a very strong positive correlation since the value is close to +1. So if the price of oil decreases, flights follow in tandem. If the price of oil increases, so does the prices of flights.

Conversely, the weakest correlation is between General Motos and Johnson & Johnson which is 0,398.

Table 32. Correlation matrix of market prices

	<i>XOM</i>	<i>GM</i>	<i>LMT</i>	<i>AAPL</i>	<i>JNJ</i>
XOM	1				
GM	0,63019	1			
LMT	0,88193	0,88852	1		
AAPL	0,63794	0,07289	0,35945	1	
JNJ	0,75745	0,398	0,65743	0,4983	1

Source: author, 2019

#### 4.7.7 Portfolio layout

For portfolio composition we used Multi-Criteria Decision Analysis. There were chosen five important indicators for evaluation such as diluted earnings per share, price to earnings ratio to growth, price to book value ratio, dividend payout ratio and free cash flow.

In the first table there are indicators and in the second there is rank according to data. Names of indicators are according to their importance. For estimation there was used ordinal scale: 5 = good; 1 = poor.

Table 33. Multi-Criteria Decision Analysis

Importance rank	Indicators	XOM	GM	LMT	AAPL	JNJ
1	Diluted earnings per share (EPS)	2	1	5	4	3
2	Price to earnings ratio to growth ratio (PEG)	2	1	5	4	3
3	Price to book value ratio (P/B)	5	1	2	3	4
4	Dividend payout ratio (DPR)	2	1	5	3	4
5	Free Cash Flow	2	1	3	5	4
	Total scores	13	5	20	19	18
	Share	17,33	6,67	26,67	25,33	24,00

Sources: finance.yahoo.com and author's computation, 2019

According to the table 33, the highest earnings per share are in Lockheed Martin Corporation and Apple which are \$ 17,59 and \$ 12,12. General Motors has the lowest PEG which

is 0,38, and Johnson & Johnson has the highest PEG which is 2,43. The lower the number, the less it is necessary to pay to get in on the company's expected future earnings growth. General Motors and ExxonMobil have the lowest P/B which are 1,32 and 1,76.  $P/B < 1$  indicates that the market values a business lower than its existing assets, which means it is a good time to invest. ExxonMobil has the highest indicator in dividend payout ratio which is 66,19. Very high number can show unstability in the company. So it is better to pay attention on indicators which are closer to 60% and lower. Regarding to free cash flow, the highest amount is shown in Apple – 45,15 billion and Johnson & Johnson – 17,39 billion.

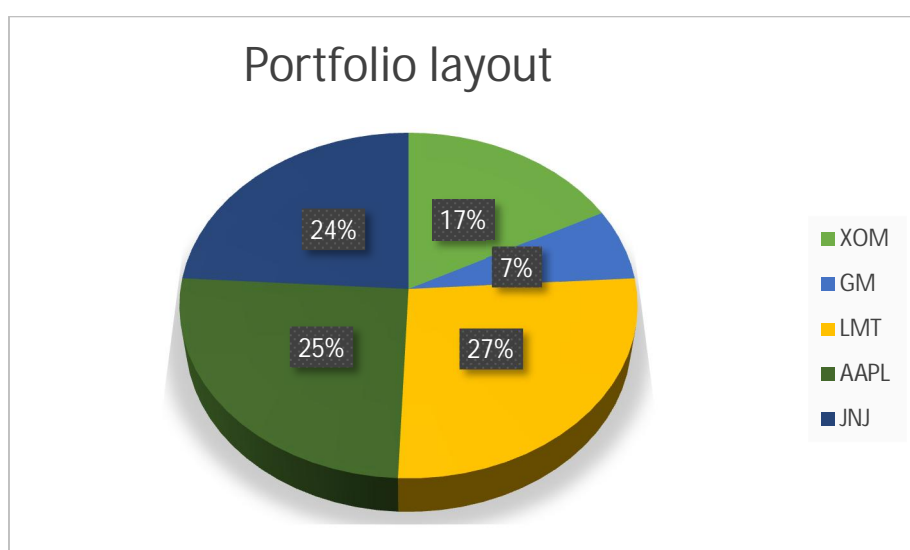
Table 34. Multi-Criteria Decision Analysis

Importance rank	Indicators	XOM	GM	LMT	AAPL	JNJ
1	Diluted earnings per share (EPS)	3	3	5	5	3
2	Price to earnings ratio to growth ratio (PEG)	4	5	5	5	4
3	Price to book value ratio (P/B)	4	5	2	3	4
4	Dividend payout ratio (DPR)	3	3	5	3	4
5	Free Cash Flow	4	1	4	5	4
	Weight	18	17	21	21	19

Sources: author, 2019

In the table 24 there was made estimation of companies according to importance rank. There were given marks according to ordinal scale: 5 = good; 1 = poor.

Figure 24. Portfolio layout



Source: author, 2019

The figure 24 shows the final portfolio layout. The resulting portfolio will include ExxonMobil's shares of 17%. Shares of General Motors will be 7%. Lockheed Martin Corporation from 27%. Apple will be 25% and Johnson & Johnson will be represented by 24% in the portfolio.



## 5. Results and Discussions

Based on the methodological procedure, there were selected stock titles traded on US stock exchanges from a total of five sectors. Three major US companies such as Exxon Mobil Corporation, Chevron Corporation and ConocoPhillips have been selected from the oil and gas industry. The Automotive industry is presented by Ford Motor Company, General Motors Company and Tesla, Inc. The Aerospace & Defense Industry is presented by the Boeing Company, Northrop Grumm Corporation and Lockheed Martin Corporation. The Technological Industry includes Apple, Microsoft Corporation and Cisco Systems. The pharmaceuticals industry is represented by the three largest US companies, Pfizer, Johnson & Johnson and Merck & Co. Companies in the larger part of the portfolio were presented in terms of their business focus and carried out a basic financial analysis of economic indicators and an assessment of stock price developments over the past ten years.

The joint stock companies represented in the resulting portfolio were selected on the basis of data analysis and criteria method. Evaluation has been made according to such indicators as total deb/equity, ROA and forward dividend. The stock portfolio includes ExxonMobil Corporation from oil and gas industry, General Motors Company from automotive industry, Lockheed Martin Corporation from aerospace and defense industries, Apple from the technological industry and Johnson & Johnson from pharmaceutical industry. The resulting criteria portfolio contains a total of five stock titles.

In the five selected companies, the annual reports were studied. The structure of the companies was described on the basis of annual reports. Primary products have been described in more detail for each company. Another part of the company's analysis focused on the future direction of the company as a whole. The key step in the analysis of the companies was technical analysis. Companies were analyzed on the basis of indebtedness, profitability, the ex-post development of the share price development. Stock index was compared with S&P index and industry index for last five years.

ExxonMobil Corporation is divided into four divisions: upstream, chemicals, downstream and natural gas and power marketing. The company's growth plans are to increase the production of oil and to double operating cash flow and earnings by 2025. The primary focus of future development and research is advanced biofuels and liquefaction project. The company's gross profit has increased since 2015, from \$ 77.801 billion to \$ 78.109 billion in 2017. Dividends are paid quarterly. Overall, the dividend has increased from \$ 2.88 per share in 2015 to \$ 3.06 in 2017. XOM's long-term debt has insignificantly increased since 2015 from \$ 18.69 billion to \$ 23.08

billion in 2017. The stock's internal price is \$ 81.34 and the stock's market price is \$ 80.34. Based on the technical analysis XOM shares are recommended for purchase.

General Motors Company is divided into regional segments: GM North America (GMNA), GM Europe (GME), GM International Operations (GMIO), GM South America (GMSA) and business-type divisions: Automotive and GM Financial (Auto financial services). The primary focus of future development is investment of \$ 300 million at Michigan plant for new Chevrolet Electric Vehicle and \$ 1.8 billion in its US manufacturing operations across six states. The company's gross profit has increased since 2015, from \$ 18.142 billion to \$ 18.804 billion in 2017. Dividends are paid quarterly. Overall, the dividend has increased from \$ 1.38 per share in 2015 to \$ 1.52 in 2017. GM's long-term debt has increased since 2015 from \$ 7.95 billion to \$ 10.99 billion in 2017, owing extensive investments into the production. The stock's internal price is \$ 42.89 and the stock's market price is \$ 36.68. Based on the technical analysis GM shares are recommended for purchase.

Lockheed Martin Corporation is divided into four divisions: Aeronautics, Missiles and Fire Control, Rotary and Mission Systems, and Space Division. The company focuses on developing five major programs: the F-35, the C-130, and the PAC-3, THAAD, AEGIS protection systems. The company's gross profit has been steadily growing between 2015-2017, reaching \$ 5.548 billion in 2017. The dividend is paid quarterly, the annual dividend increased from \$ 6.77 per share in 2016 to \$ 7.46 in 2017. The company expects a continuing rise in dividends for subsequent years. Long-term debt to total assets is at a comparable level year-on-year. Over the five-year horizon, LMT outperforms the S&P 500 index more than twice and the industry index exceeds more than 60%. The stock's internal price is \$ 391.87 and the stock's market price is \$ 293.95. Based on a technical analysis, LMT shares are recommended for purchase.

Apple is divided into three divisions: Software Engineering (iOS and macOS), Hardware Engineering (Mac, iPhone, iPad and iPod), Hardware Technologies (hardware components). Apple's first strategic move is to diversify its sales so that by 2020 the service brings at least \$ 50 billion. The primary focus of future development and research is on smart glasses Apple Glasses and programs such as iOS for iPhones and iPads. The company's gross profit has been continuously changing since 2015, from \$ 93.626 billion to \$ 88.186 billion in 2017. Dividends are paid quarterly. Overall, the dividend has increased from \$ 2.03 per share in 2015 to \$ 2.46 in 2017. APPL's long-term debt has increased almost double since 2015, owing to extensive investment in innovation development. The stock's internal price is \$ 273.60 and the stock's market price is \$ 188. Based on the technical analysis APPL shares are recommended for purchase.

Johnson & Johnson is divided into three divisions: Consumer Healthcare, Medical devices and Pharmaceuticals. The primary focus of future development and research is on indications for the treatment of HIV, diabetes and prostate cancer. The company's gross profit has been continuously growing since 2015, from \$ 48.538 billion to \$ 51.096 billion in 2017. Dividends are paid quarterly. Overall, the dividend has increased from \$ 2.95 per share in 2015 to \$ 3.32 in 2017. JNJ's long-term debt has increased more than double since 2015, owing to extensive investment in research centers around the world. The stock's internal price is \$ 204.93 and the stock's market price is \$ 138.70. Based on the technical analysis JNJ shares are recommended for purchase.

The correlation matrix based on the monthly market prices of stocks showed that there is no perfect correlation between stock companies. The strongest correlation is between Lockheed Martin Corporation and General Motors Company, and Lockheed Martin Corporation and ExxonMobil, a correlation coefficient of both cases is 0,88. Hence, the portfolio is suitably diversified. According to the Multi-Criteria Decision Analysis with such five important indicators as diluted earnings per share, price to earnings ratio to growth, price to book value ratio, dividend payout ratio and free cash flow stocks were determined by the following representation in the portfolio: ExxonMobil Corporation - 17%, General Motors Company – 7%, Lockheed Martin Corporation - 27%, Apple – 25% and Johnson & Johnson - 24%.

## **Conclusion**

An investment portfolio is a collection of assets with different qualities that an investor combines in such a way as to obtain the structure of investment capital that suits his needs and goals in the best way. The main feature of the investment portfolio is that the investor can give its investment qualities that seem unattainable from the standpoint of a single investment instrument, but are quite possible with their proper combination.

The main goal of this thesis was to create a diversified stock portfolio designed for long-term investment. A total of five branches of joint stock companies were designated for the creation of the equity portfolio: petroleum, automotive, aerospace and defense, technologies and pharmacies. From selected industries, the largest American companies were selected. Subsequently, there was chosen one company from each sector. Basic economic indicators were found to evaluate the economic situation based on data taken from the server yahoo.finance.com. According to the criteria of economic indicators and multiple-criteria decision analysis, there was determined shares of each company in the portfolio layout. Multiple-criteria decision analysis included such financial indicators as ROA, total debt/equity and forward dividend. ExxonMobil Corporation was selected in the oil and gas industry. General Motors Company was selected in the automotive industry. Lockheed Martin Corporation was selected in the aerospace and defense industry. The technological industry was presented by Apple. Johnson & Johnson has been selected for the pharmaceutical industry.

The main task of the thesis was to make fundamental analysis based on which companies were selected for final portfolio. The annual reports of individual company were studied. Based on annual reports, companies were presented in terms of scope, internal structure, products, and a description of future direction. In order to find out more detailed economic situation within companies, a technical analysis was prepared according to the financial statements of individual joint stock companies. The analysis was conducted to determine profitability, indebtedness, the development of dividend payouts, and a comparison of the performance of shares of companies with a sector-specific index and the S&P 500 stock index for NYSE and NASDAQ Composite Index for Apple, which is traded on the stock exchange NASDAQ. The charts for comparison were taken marketscreener.com. Based on the time series obtained from yahoo.finance.com, the average quarterly dividend per share were calculated. According to the formula with P/E current and EPS estimates there was internal price calculated. After market price and internal price were compared and it was made conclusion about purchase.

Furthermore, the correlation matrix of the monthly market prices of joint stock companies was calculated to determine the strength of correlation between individual stock titles. According to the correlation matrix, no perfect correlation was found between selected companies. The strongest correlation exists between ExxonMobil Corporation and Lockheed Martin Corporation, and General Motors Company and Lockheed Martin Corporation. A correlation coefficient for both cases is 0.88. The increased correlation rate is caused by interdependent and related business sectors of these companies. the value of oil prices (XOM) are directly related to the prices of flights (LMT), with a correlation coefficient of +0.88. The relationship between oil prices and flights has a very strong positive correlation since the value is close to +1. So if the price of oil decreases, flights follow in tandem. If the price of oil increases, so does the prices of flights. Conversely, the weakest correlation is between General Motos and Johnson & Johnson which is 0.398. According to the result of correlation coefficients, it is clear that the portfolio is suitably diversified.

In conclusion, the weighting of individual stocks in the resulting portfolio was calculated based on the Multiple-Criteria Decision Analysis with such five important indicators as diluted earnings per share, price to earnings ratio to growth, price to book value ratio, dividend payout ratio and free cash flow. All these financial indicators were estimated by the level of importance. According to the calculated weight, the final portfolio design is following: ExxonMobil Corporation - 17%, General Motors Company – 7%, Lockheed Martin Corporation - 27%, Apple – 25% and Johnson & Johnson - 24%.

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