

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Department of Economic Theories**



**Master's Thesis**

**Approaches to common stock valuation**

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# CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

## DIPLOMA THESIS ASSIGNMENT

Tarlan Aliyev, BA

Economics and Management  
Economics and Management

Thesis title

### **Approaches to common stock valuation**

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#### **Objectives of thesis**

This thesis is focused on the discussion of the main objectives of common stock valuation. It studies approaches that are used for assessment whether common stock intrinsic value is fairly represented by its market price.

This research goal is to prove that stock valuation is an important tool that can help companies make informed decisions about trading. It is a technique that determines the value of a company's stock by using standard formulas. It values the fair market value of a financial instrument at a particular time. The reason for stock valuation is to predict the future price or potential market prices for investors to time they sale or purchase an investment.

#### **Methodology**

This paper will look at estimation of "intrinsic" value of a financial instrument which is ratio-based approach. The methodology that I will apply is focused on the fundamental strengths of the company as the dividends, cash flow, and the growth rate for a single company. Another methodology I will use is relative valuation method in which value of a stock is determined with reference to market value of comparable stocks.

## The proposed extent of the thesis

60-80

## Keywords

common stock valuation, discounted cash flow, dividend discount model, free cash flow, relative valuation, ratio, market value

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## Recommended information sources

Damodaran, A. The Little Book of Valuation. John Wiley & Sons, 2011. 256p. ISBN 9781118064146

Fabozzi, F., Markowitz, H. The Theory And Practice Of Investment Management, 2011. 704p. ISBN: 9780470929902

Fielitz, B., Muller, F., 1985. A Simplified Approach to Common Stock Valuation. Financial Analysts Journal, 41(6), pp.35-41.

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Prusak, B. The Accuracy Of Alternative Stock Valuation Methods – The Case Of The Warsaw Stock Exchange. Taylor & Francis, 2020. p416

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## **Declaration**

I declare that I have worked on my master's thesis titled "Approaches to common stock valuation" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 30.11.2021

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## **Acknowledgement**

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# **Approaches to common stock valuation**

## **Abstract**

Forecasting and evaluating the expected return on ordinary shares is an urgent problem in the current conditions of high volatility in the global financial market. Depending on the calculation methods used, software, historical price data and some other initial conditions, the future expected return on one company's shares may change from extremely positive to extremely conservative. In this regard, in our opinion, there is an objective need to assess the expected return on shares using various approaches and then compare the obtained indicators with the actual return on the security.

In the Master Diploma Thesis, the author has studied and applied in practice the key basic approaches in the field of calculating the predicted expected return on ordinary shares. The work explores the stock market in the oil and gas sector, as well as the factors influencing the value of shares in the sector. For a practical part the production and financial activities of ExxonMobil Corporation were assessed, within the framework of fundamental analysis, the current methods of evaluating the common stock were studied and the results were compared.

**Keywords:** Common stocks, ordinary shares, valuation of a fair value, fundamental analysis, absolute analysis, comparative analysis, ExxonMobil Corporation

# Přístupy k běžnému oceňování akcií

## Abstrakt

Prognóza a vyhodnocení očekávaného výnosu kmenových akcií je v současných podmínkách vysoké volatility na globálním finančním trhu naléhavým problémem. V závislosti na použitých metodách výpočtu, softwaru, historických cenových datech a některých dalších počátečních podmínkách se budoucí očekávaná návratnost akcií jedné společnosti může změnit z extrémně pozitivní na extrémně konzervativní. V tomto ohledu je dle našeho názoru objektivní potřeba posuzovat očekávaný výnos akcií různými přístupy a následně porovnat získané ukazatele se skutečným výnosem cenného papíru.

V diplomové práci autor prostudoval a v praxi uplatnil klíčové základní přístupy v oblasti výpočtu predikovaného očekávaného výnosu kmenových akcií. Práce zkoumá akciový trh v sektoru ropy a zemního plynu a také faktory ovlivňující hodnotu akcií v sektoru. V praktické části byly posouzeny výrobní a finanční aktivity společnosti ExxonMobil Corporation, v rámci fundamentální analýzy byly studovány současné metody oceňování kmenových akcií a výsledky byly porovnány.

**Klíčová slova:** Kmenové akcie, kmenové akcie, ocenění reálnou hodnotou, fundamentální analýza, absolutní analýza, srovnávací analýza, ExxonMobil Corporation



# Table of content

<b>Introduction.....</b>	<b>6</b>
<b>Objectives and Methodology.....</b>	<b>8</b>
Objectives.....	8
Methodology .....	8
Absolute analysis models methodology .....	10
Comparative analysis models methodology .....	16
<b>Chapter 1. Theoretical aspects of the formation of the value of an ordinary share</b>	<b>17</b>
<b>1.1 Stocks: concept and essence .....</b>	<b>17</b>
<b>1.2 Variety of shares .....</b>	<b>19</b>
<b>1.3 Valuation methods of ordinary shares.....</b>	<b>22</b>
1.3.1 Absolute analysis .....	24
1.3.2 Comparative analysis .....	34
<b>1.4 Influence of factors shaping the value of a share in the oil and gas industry....</b>	<b>38</b>
<b>Chapter 2. Analysis of the formation of the value of shares in the enterprise .....</b>	<b>43</b>
<b>2.1 Country overview.....</b>	<b>43</b>
<b>2.2. ExxonMobil history overview .....</b>	<b>47</b>
<b>2.3. Financial situation of ExxonMobil .....</b>	<b>50</b>
<b>Chapter 3. Application of valuation models for common shares on ExxonMobil..</b>	<b>53</b>
<b>3.1 Fundamental analysis of Exxonmobil stocks.....</b>	<b>53</b>
3.1.1. Absolute analysis .....	53
3.1.2. Comparative analysis .....	58
<b>3.3 Results interpretation .....</b>	<b>63</b>
<b>Conclusion .....</b>	<b>66</b>
<b>References.....</b>	<b>69</b>
<b>Appendix.....</b>	<b>74</b>

## **Introduction**

In the new economy based on the creation of equity capital, the priority task is to manage the value of property - in general, business entities, their securities (stocks, bonds, etc.), assets.

If the company is successful, the owners of the shares receive profit in the form of dividends. At a certain stage in the functioning of the company, the stock should be valued.

Valuation of shares is necessary to analyse the solvency of the enterprise in a comprehensive analysis of the financial condition of the organization. Evaluating the value of a share will help to avoid possible losses in case of fluctuations in the price of securities, will help to make a decision on investments, etc. As a rule, investors are interested in the fair value of shares, that is, their return.

The main problem facing companies is to improve the accuracy of the valuation of shares on which the fulfilment of the tasks set by the shareholders depends.

When oil and gas companies face all sorts of problems, they have requirements for building a strategy of behavior in the international energy markets and forming short-medium and long-term investment and financing programs. It also requires modern tools, techniques, and technologies to analyse external and internal environments.

This is necessary for predicting and calculating risks, dynamics of changes in prices for raw materials, assets, and shares.

The first chapter of the work examines the main theoretical aspects of this topic, namely, the concept of a share, its essence and classification, special attention is paid to ordinary shares, methods of valuation of ordinary shares and the most common valuation models in practice.

The second chapter of the thesis includes general information about market of the observing company – USA, including macroeconomic analysis. As well as an overview of the observed company – ExxonMobil and its position in the market.

The third chapter includes the application of the discussed methods of valuation of ordinary shares on the ExxonMobil corporation as well as on the sector.

The relevance of the master diploma thesis is due to the fact that the management of the share value is rapidly increasing due to the intensification of the competition between companies for capital of investors and shareholders. Determining the value of a company is one of the most important tasks in the corporate governance industry, because it makes it

possible to assess the level of competitiveness and success of a company in the market. The process of determining the cost itself is carried out for a specific purpose (calculating the sale price, property insurance, obtaining a loan, etc.), which predetermines the choice of the cost assessment method.

It should be noted that the need to manage the value of a share is dictated by modern business requirements that apply to the company.

# Objectives and Methodology

## Objectives

The Master Thesis is focused on the discussion of the main objectives of common stock valuation. It studies approaches that are used for assessment whether common stock intrinsic value is fairly represented by its market price. The main problem facing companies is to improve the accuracy of the valuation of shares on which the fulfilment of the tasks set by the shareholders depends.

**Object of research** – ExxonMobil Corporation

**The subject of the research** is the indicators of the financial and operating activities of the enterprise.

**The main goal of the Master Thesis** is to compare different fundamental approaches of the valuation of the common stocks to determine the its applicability. As a sub goal the determination of the attractiveness of Exxon Mobile's stock will be appreciated.

The purpose of the theoretical section is to explore the essence of stocks and its varieties as well as to discover the theoretical approaches for the stocks evaluation. The practical section aims to apply absolute and relative valuation methodologies on chosen organization, with the results compared with each other, as well as identifying the degree of difference.

To achieve this goal, the following tasks must be completed:

- to study the theoretical and methodological aspects of the formation of the value of an ordinary share;
- analyse the factors affecting the value of a share in the oil and gas industry;
- to characterize the research object - ExxonMobile;
- to conduct a fundamental analysis of ExxonMobile shares;
- determine the current position of ExxonMobile on the stock market;
- to determine the fair value of an ordinary share of ExxonMobile with the use of different approaches;
- conduct a comparative analysis of the used approaches and reveal their advantages and disadvantages.

## Methodology

This master thesis work includes theoretical and empirical analysis. The main methodology of the theoretical part included the scientific techniques were mainly focused

on the study of monographs, followed by the compilation and interpretation of the facts gathered, supplemented by personal opinion and experience. Finding adequate research results of researchers published in scientific journals was a priority, as was determining the applicability of the methods described and comparing them.

The problems of evaluating the value of common shares have occupied a significant place in the research of scientists over the past years. The development of this work required referring to the results of the following specialists on this subject: Gary Biddle, Robert Bowen, James Wallace, Lucie Courteau, Jennifer Kao, Gordon Richardson, Russell Fuller, and Chi-Cheng Hsia.

The information base of the practical part of the master thesis includes statistical data on the state of the oil and gas industry taken from the official trusted sources (<https://corporate.exxonmobil.com/Investors/Annual-Report>, <https://www.nasdaq.com/market-activity/stocks/xom>, <https://fortune.com/global500/2020/search/> ), as well as reference and analytical materials on the site of Exxonmobil Corporation.

The theoretical part of the bachelor thesis defines the conceptual framework and starting points for the application of selected tools of technical analysis. This is achieved through a descriptive description of the stock market environment and basic hypotheses that are either consistent with or inconsistent with the technical analysis approach. The conclusion of the research part is devoted to the approach of selected methods of technical analysis.

The practical part is focused on the synthesis of knowledge and experimental verification of their validity. Its beginning is devoted to the application of the fundamental analysis methods, both absolute and comparative. The calculations of the fundamental analysis were carried out in the 5 years period (2014-2019) using publicly available sources such as annual reports (balance sheet, income statements, cash flow statements) of chosen companies retrieved from the company's official website. This period was selected as fundamental analysis works better in the long run - weeks, months and years, as opposed to the technical one, which can be applied even at intervals of several minutes. It is effective to study the analysis of companies and the financial and economic situation of a company over the past few years, usually 3-5 years, in order to identify the effectiveness of company management and predict the prospects for its development.

Analysts can utilize the data in models to estimate the fair value of a share using each valuation approach's particular inputs. These indicators are important in establishing a stock's intrinsic value.

As it was stated above, the work will include fundamental analysis. The analysis will cover absolute analysis, applying such technics such as Average annual stock return, Dividend discounted model (Gordons), Discounted cash flow model, Capital Asset Pricing Model and relative analysis. The inputs parameters of all the models are described below including the clarification note.

### **Absolute analysis models methodology**

#### **Average annual stock return**

This method will used both the arithmetic average profitability for the year and geometric average.

#### **Formula 1. Arithmetic average annual stock return**

$$\text{AAR} = \frac{r_1 + r_2 + \dots + r_n}{n}$$

Where

r - rate of return for period n;

n - number of periods.

#### **Formula 2. Geometric average annual stock return**

$$\text{GAR} = \sqrt[n]{(1 + r_1)(1 + r_2) \dots (1 + r_n)} - 1$$

Where

r - rate of return for period n;

n - number of periods.

The reason for using both lies in the fact that the arithmetic average (the sum of returns divided by the number of periods) is not representative for calculating investment results, since the profitability obtained in the next period refers to the value of shares in the previous period, and includes the profitability on the profitability of the previous period, and not only on the amount investment. Thus, both of the methods will be used in calculation, as the average geometric yield, unlike the previous one, takes into account compound interest and shows the average annual growth over a given period of time.

### **Dividend discounted model (Gordons)**

The Dividend Discount Model (DDM) is a model in which it is assumed that dividends will grow from period to period in the same proportion, i.e. with the same growth rate. This model has become widespread under the name of the Gordon Growth Model.

The model is named after MJ Gordon, who originally published it in a study with Eli Shapiro in the Management Science<sup>1</sup>. The discounting formula assumes that the present value of a PV share (which determines its price at the initial point in time) can be represented as:

#### **Formula 3. Present value**

$$PV = \frac{P_1}{1+r} + \frac{P_2}{(1+r)^2} + \dots + \frac{P_n}{(1+r)^n}$$

Where,

$P_1, P_2, P_3$  - cash flows at the moment 1,2,3 ... n;

$r_1, r_2, r_3$  - market capitalization rates at the time of 1,2,3 ... n;

n - the number of years the investor expects to own the share.

To simplify calculations, M.J. Gordon suggested: since the validity of a share is theoretically unlimited, it is believed that the cash flow is an infinite stream of dividends (there will be no liquidation amount, since the share has been in existence for an infinitely

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<sup>1</sup> GORDON, M. J., and Shapiro, E., 1956. Capital Equipment Analysis: The Required Rate of Profit. *Management Science*, 3(1), 102–110.

long time). In addition, Gordon proposed to consider all values of the rate of increase in annual payments to be the same, that is, dividends increase annually by  $(1 + \text{rate of increase})$  times, and the rate of increase does not change indefinitely.

**Table 1. Inputs for the Gordon’s model:**

<b>Variable</b>	<b>Source</b>	<b>Description</b>
Current dividend at time 0	<i>Investing.com</i>	Zero-period dividend payments
The present value of the share at the time 0	<i>Investing.com</i>	Share price at this stage of the company's development
Average constant growth rate of dividends	<i>Calculated (based on Formula 4, Formula 2 )</i>	Average growth rate of dividend payments

Source: author

**Formula 4. Growth rate of dividends**

$$g = \left( \frac{d_1 - d_0}{d_1} \right) * 100\%$$

Where

$d_0$  - Cash Dividends in 0 period

$d_1$  - Cash Dividends in 1 period

**Discounted cash flow model**

The essence of the DCF method is to estimate the value of shares based on the projected cash flows generated by the company. In other words, DCF views the value of a company as the sum of its future cash flows, adjusted to today's value of money through the discount rate.

The Discount Rate is the return on investment in the company required by the investor, taking into account the risk he takes.



The point of discounting is that the value of money decreases over time. This value is reduced by inflation and the risks of uncertainty, which is why it is said that the dollar is worth more today than tomorrow. And therefore, money has: today's (present) value (Present Value, PV) and tomorrow (future) value (Future Value, FV), taking into account the value of money in time.

**Table 2. Inputs for the DCF model:**

<b>Variable</b>	<b>Source</b>	<b>Description</b>
Free Cash Flow (FCF)	<i>Cash Flow Statement</i>	Money that remains at the disposal of the company after deducting investments in business development and investments (capital expenditures).
Weighted average cost of capital (WACC)	<i>Calculated (Formula 4)</i>	Will be taken as the discount rate - the weighted average cost of capital. The WACC of a company takes into account both the value of the company's share capital and the value of its debt obligations. It will be analyzed how to assess these two indicators, as well as their share in the company's capital structure, in the practical part.
Total capital value	<i>Income statement</i>	Current fair value of Exxon Mobil Corp.'s debt and equity

Source: author

### Formula 5. WACC

$$\text{WACC} = \frac{E}{D + E}(r_e) + \frac{D}{D + E}(r_d)(1 - t)$$

Where

E – market value of equity

D – market value of debt

$r_e$  – cost of equity

$r_d$  – cost of debt

t – corporate tax rate

### Capital Asset Pricing Model

The CAPM is most commonly used to explain the dynamics of securities prices and the functioning of a mechanism by which investors could assess the impact of investments in prospective securities on the risk and return of their portfolio.

The concept for this model was developed in the 1950s. in the USA by Harry Markowitz<sup>2</sup>, the model was further developed in the works of Jack Treynor (1961-1962), William Sharpe (1964), John Lintner (1965) and Jan Mossin (1966).

The essence of the CAPM model is as follows: assuming the existence of a highly liquid efficient market for financial assets, one can come to the conclusion that the amount of required return on funds invested in an asset is determined not so much by the specific risk inherent in a particular asset as by the general level of risk characteristic of the stock market.

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<sup>2</sup> MARKOWITZ, H., 1952. Portfolio Selection. *The Journal of Finance*, 7(1), pp.77-91.

**Table 3. Inputs for the Capital Asset Pricing model:**

<b>Variable</b>	<b>Source</b>	<b>Description</b>
Expected average rate of return of a market portfolio	<i>Nasdaq.com</i>	ExxonMobile ordinary shares are traded on the NASDAQ stock exchange, therefore the NASDAQ Composite Index (IXIC) market index will be selected as the market portfolio
Return on risk-free assets, which is usually understood as the return on government securities	<i>US Department of the Treasury, official site.</i>	As a risk-free rate, the arithmetic average of the yield on 10-year US Treasury bonds for 2014 was selected
$\beta$ - coefficient characterizing the sensitivity of the assessed security to changes in market yield	<i>Calculated (Formula 6)</i>	Calculated according to statistical data and expresses the variability of the security's yield in relation to the average market yield

Source: author

**Formula 6.  $\beta$  coefficient for CAPM**

$$\beta = \frac{Cov(R_i R_m)}{Var(R_m)} = \frac{\sigma_{i,m} \sigma_i}{\sigma_m}$$

Where

$\sigma_i$  – standard deviation of a security rate of return

$\sigma_m$  - standard deviation of the market rate of return

$\sigma_{i,m}$  – the correlation coefficient of expected return of a security and the expected return on market portfolio

## **Comparative analysis models methodology**

In comparative analysis the valuation ratios of Price/Earnings ratio, Price/Sales ratio, Price/Book Value are used, the formulas are presented below.

### **Formula 7. Price-to-Earnings ratio**

$$PE = \frac{\textit{Market Value per Share}}{\textit{Earnings per Share}}$$

### **Formula 8. Price-to-Sales ratio**

$$PS = \frac{\textit{Price per Share}}{\textit{Revenue per Share}}$$

### **Formula 9. Price-to-Book Value ratio**

$$PB = \frac{\textit{Market Value per Share}}{\textit{Book Value per Share}}$$

# **Chapter 1. Theoretical aspects of the formation of the value of an ordinary share**

## **1.1 Stocks: concept and essence**

By many authors a stock (or a share) is defined as a security that certifies the participation of its owner in the formation of the capital of a joint-stock company and gives the right to receive part of the profit of this company<sup>3</sup>, expressed in dividends as well as to participate in the management of the joint-stock company and to a part of the property remaining after its liquidation<sup>4</sup>.

The main feature of a share as a security is that the property and non-property rights it provides are closely intertwined, which allows to conclude that the share provides a of complex of rights - the right to membership in a corporation, corporate law<sup>5</sup>. While recognizing the admissibility of the allocation of corporate securities, it should be noted that such allocation is conditional, since corporate rights in general, in their essence, tend to property rights.

A feature of shares as corporate securities, securing the right to participate in the affairs of a joint stock company, is the opportunity they provide, in the presence of a certain number of them, to influence the implementation of entrepreneurial and other activities of the joint stock company.

The share indicates that its owner is a co-owner of a company, which is a legally independent organization (with separate property, its own balance sheet, different from the balance sheet of the enterprise)<sup>6</sup>. The size of the share is determined by the number of shares owned by a shareholder. By purchasing shares, a shareholder receives the right to alienate them in the form of a sale or assignment to another person. The shares issued by the joint-stock company are provided with all its property. Upon reorganization of such a company, all obligations under the issued shares are transferred to the legal successors. Upon liquidation of a joint-stock company, the enterprise has the right to receive part of its assets remaining after the satisfaction of creditors' claims, as well as the repayment of obligations

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<sup>3</sup>GUTTERMAN, A. S., 1994. The legal considerations in business financing. p. 24-25.

<sup>4</sup>MOTT, G., 2008. Accounting for Non - Accountants: A Manual for Managers and Students. Part 03: Financial Management, p. 247-263.

<sup>5</sup>HICKS, A., GOO, S. H., 2008. Cases and materials on company law. p. 270.

<sup>6</sup>KIZDARBEKOVA, A.S., ABENOV, A.B., 2010. The legal nature of the preferential right of the share purchase in common participatory share ownership in the Republic of Kazakhstan. pp. 52-56.

to those who own the preferred shares<sup>7</sup>. The size of the property received in this case by each shareholder is determined in proportion to the share of shares they own, in general, their volume.

As it was already mentioned, shareholders are entitled to receive income in the form of dividends. The amount of dividends on ordinary shares is determined once a year by the board of directors of the company and approved by the meeting of shareholders, based on the financial results obtained and the need to use profits to expand and develop the activities of the joint stock company<sup>8</sup>. Usually, for ordinary shares, the possibility of receiving dividends and their level are not guaranteed, although in some cases such guarantees can be given.

Moreover, shareholders have the right to participate in the management of the company. This right is exercised by voting at a meeting of shareholders when choosing its executive bodies and when deciding fundamental issues of the joint-stock company. A shareholder can vote by personally participating in meetings, by issuing a power of attorney to another person, or by sending special messages reflecting the shareholder's opinion on issues included in the meeting agenda.

Shares are issued for the entire amount of the company's authorized capital. If, as a result of the company's economic activities, the acquisition of new fixed assets and an increase in working capital, the value of the property exceeds the size of the original authorized capital, then additional shares may be issued for the excess amount, which will lead to an increase in the authorized capital, respectively, or to an increase in the value of previously issued shares.

A kind of guarantee of the right to participate in the management of a joint-stock company is the obligation of the latter to provide information about its activities. This obligation is stated in the OECD' "Shareholder Rights and the Equitable Treatment of Shareholders"<sup>9</sup>. Such information includes a list of shareholders, information of a financial nature, allowing to judge the position and prospects of the company, the risks associated with participation in it. Traditionally, this information is presented in annual accounts.

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<sup>7</sup>ONCEL, E., 2016. Voluntary Termination Of A Joint Stock Company And The Liquidation Process. Mondaq [online].

<sup>8</sup>WESSON, N., SMIT, E.V.D.M., KIDD, M., HAMMAN, W.D., 2018. Determinants of the choice between share repurchases and dividend payments. *Research in International Business and Finance*. p. 180-196.

<sup>9</sup>OECD, 2002 Shareholder Rights and the Equitable Treatment of Shareholders. The Fourth Asian Roundtable on Corporate Governance [online].

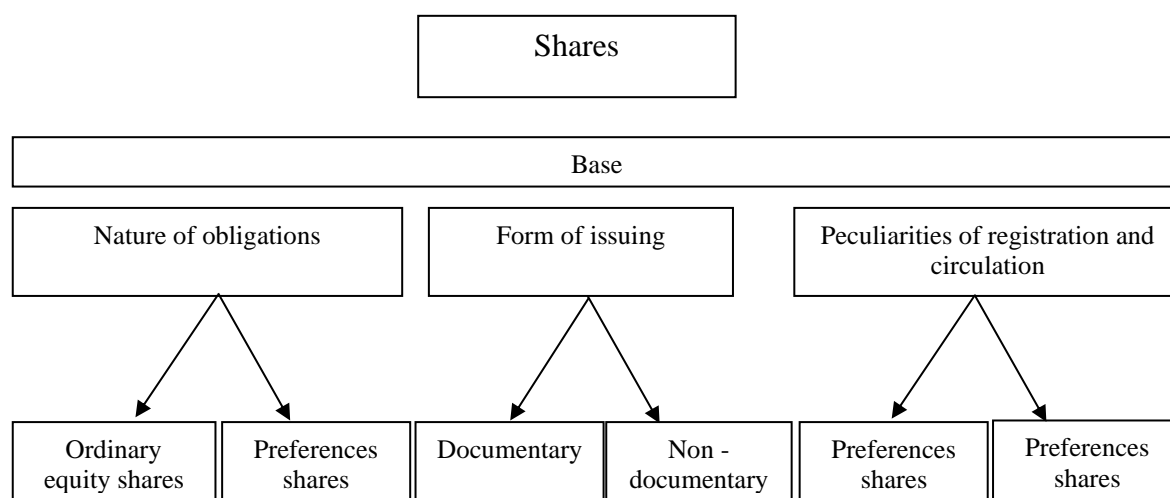
A share is the only corporate security, that is, a security that certifies the right of membership in an economic, or rather, a joint stock company. In other words, a share is always inextricably linked with the existence and activities of a joint stock company. This implies that a share is issued only by joint stock companies and is of unlimited nature, i.e., it does not have a predetermined final maturity date, since the life of a share, as a general rule, is equal to the life of the joint stock company itself.

It must be noted that all shares issued by the company must necessarily have the same value and be expressed exclusively in national currency<sup>10</sup>.

## 1.2 Variety of shares

Shares have different classifications depending on the base of division. In industrialized countries, shares are divided according to the peculiarities of registration and circulation, according to the form of issuing, the nature of obligations and regional affiliation. In Picture 1 most used classifications are presented.

**Figure 1. Classifications of types of shares**



Source: author, based on Mott, 2008.

A share is an issue-grade security, which can have two forms based on the form of issuing: documentary and non-documentary<sup>11</sup>. The first option assumes that the shares are paper-based, and the second option means shares in the form of certain entries on accounts. at the moment, documentary shares are almost never found, since with the development of

<sup>10</sup>MOTT, G., 2008. Accounting for Non - Accountants: A Manual for Managers and Students. Part 03: Financial Management. p. 247-263.

<sup>11</sup>CAMPBELL, D., 2009. International Securities Law and Regulation. p.94.

technology they have been supplanted by non-documentary, that is, electronic. All transactions with them are carried out only in electronic form, they are easier to distribute and control.

According to the peculiarities of registration and circulation, shares are divided into registered and bearer shares<sup>12</sup>. Registered names are issued to a specific owner, which limits the possibility of their circulation on the securities market, since they require re-registration. Bearer shares means that the owner's name is not recorded; they can be freely traded on the securities market, bought and sold without the need to register a new owner.

The most significant classification from the standpoint of investors as well as companies is a classification based on nature of obligations, difference in their investment qualities. Shares are classified as ordinary and preferred by the nature of their liabilities.

The combination of these two types of shares is called share capital<sup>13</sup>. The owners of such shares are the shareholders of the enterprise (company) and own the shares of the enterprise in proportion to their shares.

An ordinary share is a security issued by a joint stock company. The possession of this security gives the right not only to receive dividends, but also the right to vote at the meeting of shareholders and in many cases in the management of the Board of Directors (Supervisory Board). On average, unlike most types of securities, common stocks generate more income in the long run through capital growth.

Ordinary shares in the financial market are a very important tool, they play a decisive role in the formation of financial resources for various joint stock companies<sup>14</sup>.

A preference share is a security that assumes a fixed income and limited participation of the holder of this share in the affairs of the company. Preferred stocks are like bonds: they provide almost guaranteed returns. Holders of preferred shares receive a strictly fixed amount or percentage<sup>15</sup>. The amount of dividends does not depend on the company's profit. This is one of the distinguishing features of preferred shares from common ones. Preferred shares provide a stable income. Table 1 shows a comparison of the two types of shares.

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<sup>12</sup>KUNZ, R., 2002. Simplification of equity capital structure and market value. *Financial Markets and Portfolio Management*. pp.30-52.

<sup>13</sup>GUTTERMAN, A. S., 1994. *The legal considerations in business financing*. p. 46-50.

<sup>14</sup>SHADOVA, Z et al., 2016. *The Structure of the Share Capital and the Interests of the Majority Shareholder*.

<sup>15</sup>TEKIN, B, GUMUS, F., 2017. *The Classification of Stocks with Basic Financial Indicators: An Application of Cluster Analysis on the BIST 100 Index*.



**Table 4 - Comparison of common and preferred shares**

Type of a share	Disadvantages	Advantages
Ordinary shares	<ul style="list-style-type: none"> <li>-In case of unprofitable activity of the enterprise, dividends are not paid;</li> <li>-Refusal to pay dividends by decision of the majority of shareholders;</li> <li>-As a result of the bankruptcy of the enterprise and the sale of its property, they give the last right to the remaining property.</li> </ul>	<ul style="list-style-type: none"> <li>-Gives the right to manage the enterprise: voting at general meetings of shareholders, participation in supervisory and governing bodies, the right to receive dividends;</li> <li>-Given the right to receive information on the economic activities of the enterprise;</li> <li>-Give the right to receive part of the property of the enterprise in the event of its bankruptcy or termination of activities.</li> </ul>
Preference shares	<ul style="list-style-type: none"> <li>-Do not give the right to manage the enterprise;</li> <li>-An insignificant dividend in comparison with ordinary shares in the case of a large profit by the company.</li> </ul>	<ul style="list-style-type: none"> <li>-Give a pre-emptive right in the distribution of profits in the form of dividends;</li> <li>-Give a pre-emptive right over ordinary shares in the event of bankruptcy of the enterprise;</li> <li>-Give the right to receive a pre-agreed dividend in case the company receives a small profit;</li> <li>-Give the right to vote in the liquidation, reorganization of the enterprise or on the introduction of amendments and additions to the company's charter that restrict or change the rights of shareholders;</li> <li>-Give the right to vote, if at the annual meeting of shareholders a decision is made on non-payment</li> </ul>

		or incomplete payment of dividends established for preferred shares (except for holders of cumulative preferred shares).
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Source: author, based on Mott, 2008; Campbell, 2009.

However, ordinary shares do not give the right to vote at shareholders' meetings on current issues. Their holders vote only when the participation of each security holder is required. Such issues, for example, include the liquidation of an organization. In other cases, the owner of the assets has the right to attend the annual General Meeting of Shareholders but cannot influence their decisions. Acquaintance with the documents, which reflect the results of the company's activities, is allowed.

The holders of common shares take the maximum risk, and this is their main difference from preferred securities. It can be said that the holders of ordinary shares give a kind of indefinite loan for the development of the company, while their potential revenue depends entirely on its activities, which means - on the decision of the company's management and board of directors. If the company is successful, then dividends are paid and the value of securities increases. Therefore, the investor in any case turns out to be in the black - even if the interest in the assets has disappeared, it can be sold on the exchange. But if the financial situation is not in favor of the company, the holder of ordinary securities is at risk - their price on the market decreases, dividends are not paid and the holder goes "in the red".

Ordinary shares in the financial market are a very important tool, they play a decisive role in the formation of financial resources for various joint stock companies.

### **1.3 Valuation methods of ordinary shares**

Methods for determining the value of a share and forecasting its value are based on two approaches: fundamental and technical. It should be borne in mind: if fundamental analysis is suitable for all stocks, then technical only for liquid ones (which are actively traded on the stock market).

The analysis can be carried out both for an individual company taken and for the industry as a whole. The main objective of this analysis is to interpret the performance indicators of the company in the stock market, as well as compare the object of research with

other companies in the oil industry. However in the scope of this work only fundamental analysis will be observed.

Western researchers identify two fundamental approaches to fundamental analysis: "top-down" and "bottom-up". Traditionally, analysis involves a top-down approach, which consists of several stages: analysis of the country's economy, industry analysis and analysis of individual companies. This approach is considered more convenient for investors, since first a country is analyzed that is more suitable for investment, the most promising industry is selected in it, and within a particular industry, an analysis of individual firms most suitable for investment is carried out. With another approach of fundamental analysis, first of all, a specific firm is determined, and then only the industry and the country's economy are considered. In this case, it is likely that the industry or country analysis will not show the prospects of the industry (country), then it will be necessary to conduct the analysis again, but having already chosen another company, which will take additional time and nerves from investors.

Fundamental analysis is aimed at assessing the value of a company and its financial position. To achieve the goals of the company, namely to predict prices, build a rating system and assess the real and fair market values, the calculation and analysis of the main financial ratios are used in two stages. At the first stage, the coefficients for the country, industry and region are analyzed, at the second stage, the assets, profit and cash flows of the enterprise are analyzed. Below in the scope of the work it will get acquainted with the indicators considered and calculated for the fundamental assessment method in the following paragraphs.

I think it is necessary to consider the postulates of fundamental analysis for a greater perception of the analysis itself. After all, a postulate is a position taken within the framework of a scientific theory as true due to the evidence, and therefore, playing the role of an axiom in a given theory. Fundamental analysis postulates:

- The price changes only under the influence of specific reasons, but not by itself;
- Price dynamics depends on many factors. If to try to predict them, then it is predict the future price movement in the market;
- If correctly predict the behavior of economic factors and understand the complex influence of these factors on the price, one can identify reliable expected exchange rates of financial instruments.

### 1.3.1 Absolute analysis

The observed literature proposes thumping number of valuation technics that are applied by analysts, which complicates the whole process and indicates that there is no one method which is best suited for every situation. Moreover, Pratt claimed that equity valuation is not a precise science<sup>16</sup>. According to Bruner et al., valuations are affected by factors such as corruption, liquidity, volatility and taxes, which also can vary between developing markets and developed markets<sup>17</sup>.

In practice, the decision to buy shares is usually based on a combination of several valuation approaches and general analysis of the company. It also happen that different approaches gives different results and assumptions, however this results should fit the big picture and be logical.

In a broad sense, reserve estimation methods fall into two main categories: absolute and relative estimation methods. In the theory of appraising the value of companies' shares, taking into account international valuation standards (IES), European valuation standards (ECO) and local federal valuation standards.

Each approach gives an idea of the evaluated company from different angles and relies on specific information, however, there are restrictions on the use of each of them. Picture 2 provides a classification of approaches and related methods.

Absolute valuation attempts to find the intrinsic value of a stock based on a company's fundamentals such as dividends, cash flow, and growth. Valuation models that fall into the absolute category involve:

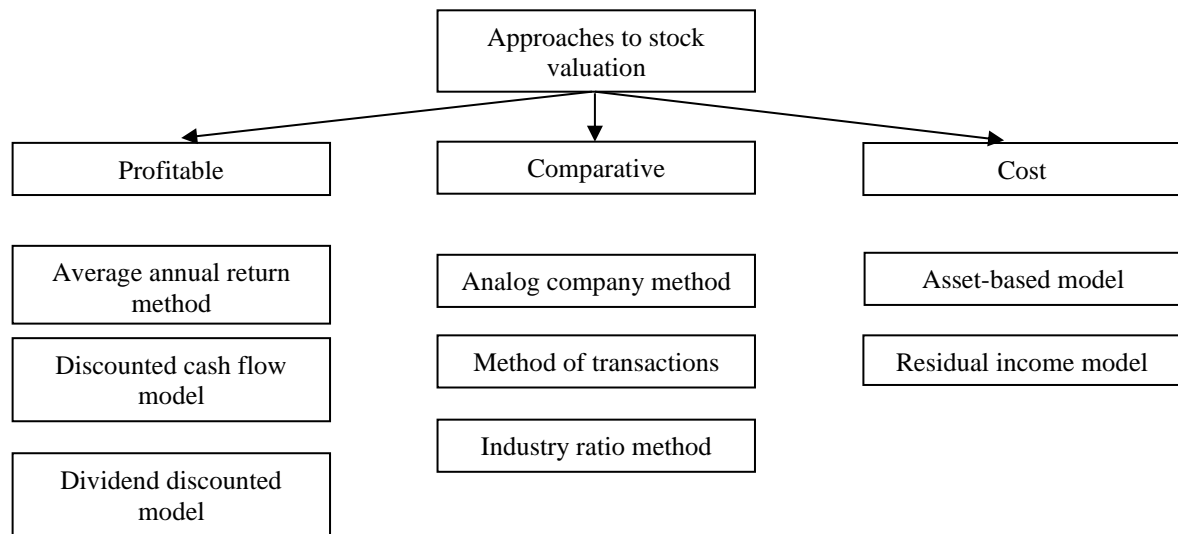
1. Average annual return method;
2. Discounted cash flow model;
3. Dividend discounted model;
4. Residual income model;
5. Asset-based model.

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<sup>16</sup>PRATT, S. P., NICULITA, A. V., 2006. The market approach to valuing businesses workbook. pp. 1-23.

<sup>17</sup>BRUNER, R. F et al., 2002. Introduction to 'Valuation in Emerging Markets'. *Emerging Markets Review*. pp. 310-324.

**Figure 2. Classification of approaches to stock valuation**



Source: author, based on Rawley, 2009.

Unlike absolute valuation models, relative valuation models work by comparing the company in question to other similar companies or by evaluating the overall companies' performance in the market. This approach includes such methods as analog company method, method of transactions and industry ratios, which are used by application various ratios. The most common are:

1. Price-to-earnings ratio;
2. Earnings-per-share ratio;
3. Price-to-book value ratio;
4. Prices-to sales ratio.

Valuation of the company's shares using the profit approach is the determination of the present value of future income that will arise from the use of the company and (possible) its further sale. When evaluating shares of an enterprise from the standpoint of a profitable approach, the enterprise itself is considered not as a property complex, but as a business that can generate income. The profit approach is not applied if there is no developed market for this business and considerations of generating income are not the basis for investment. The most common methods for evaluating shares of a company (business) within the profit approach are the discounted cash flow method, the average annual return method and the dividend discounted model.

### *1. Average annual return method*

In the theory of finance, the concept of profitability is closely related to the statistical analysis of the dynamics of a financial asset. In a broad sense, the profitability can be represented as the income received in connection with the realization of the ownership of the investment object plus the change in its market price, divided by the original price of the object<sup>18</sup>. This definition is of great value in evaluating a financial asset if the investor expects to own this asset for 1 year or less. Otherwise, it is advisable to calculate the expected return on the basis of the assessment of the present value of the asset and the concept of the time value of money.

The first approach to assessing stock returns is reduced to calculating the average annual stock return for n periods<sup>19</sup>. The first step is to calculate the stock return for each period using the Formula 10:

#### **Formula 10. Stock return for a period**

$$R_i = \frac{(P_c + D - P_o)}{P_o}$$

Where

$P_o$  - the opening price at the beginning of the i-th period

$P_c$  - closing price at the end of the i-th period

$D$  - dividends or other cash flow paid during the i-th period

Accordingly, in order to obtain the statistical value of the average n-period profitability, it is necessary to find the profitability for n periods, and then calculate the simple arithmetic average by using Formula 1 from the Methodology Chapter.

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<sup>18</sup>RAWLEY, T, GUP, B., 2009. The Valuation Handbook: Valuation Techniques From Today's Top Practitioners. 1st ed. Wiley.

<sup>19</sup>FULLER, R., HSIA, C. A., 1984. Simplified Common Stock Valuation Model. pp.49-56.

This approach to assessing the profitability of an asset has a number of disadvantages:

- 1 The calculations are based on historical price data, which does not take into account the current trend in the stock market.
- 2 The expected return and the actual return often have significant differences, which greatly affects the valuation of the share price.
- 3 The calculations do not take into account possible risks in the future and structural shifts in the stock market.

## 2. *Discounted cash flow model*

The discounted cash flow method is based on making forecasts of future income and converting them to fair value indicators. According to modern finance theory, DCF valuations determine the present value of an asset by discounting future cash flows that the asset is expected to generate at a discount rate reflecting the level of risk associated with these cash flows<sup>20</sup>. This method is used to assess any industry. Its distinctive feature and main advantage is that it takes into account non-systematic changes in the income stream that cannot be described by any mathematical model.

### **Formula 11. Present Value**

$$PV = \frac{CF_1}{(1+k)} + \frac{CF_2}{(1+k)^2} + \frac{\frac{TCF}{(k-g)}}{(1+k)^{n-1}}$$

Where

CF<sub>1</sub> - The expected cash flow in year one

CF<sub>2</sub> - The expected cash flow in year two

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<sup>20</sup>RAWLEY, T., GUP, B., 2009. The Valuation Handbook: Valuation Techniques From Today's Top Practitioners.. pp. 111–113.

TCF - The “terminal cash flow” or expected cash flow overall. This is usually an estimate, as calculating anything beyond 5 years or so is guesswork

k - The discount rate, also known as the required rate of return

g - The expected growth rate

n - The number of years included in the model<sup>21</sup>

### 3. *Dividend discounted model*

For an investor deciding to invest cash in the purchase of a stock, future cash flows are the dividend and capital gains on the sale of the stock. From the point of view of a non-personalized investor, the frequency of sales does not affect the current valuation. This assessment is determined by the prospects for the owner of the share of cash receipts, i.e. the corporation earning net profit. Since the circulation period of the share is not limited, the impersonal investor will count only on receiving dividends throughout the circulation period, and the current valuation of the  $P_0$  share will be equal to the sum of the discounted dividend streams over an infinite time horizon (Formula 12).

#### **Formula 12. Current valuation of the share**

$$P_0 = \sum_{t=1}^{\infty} \frac{\textit{Divident for one share for a period } t}{(1 + k)^t}$$

Where

k is the return required by investors.

If the dividend does not change over the years, then:

$$P_0 = \frac{d_t}{k}$$

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<sup>21</sup>RAWLEY, T, GUP, B., 2009. The Valuation Handbook: Valuation Techniques From Today's Top Practitioners. 1st ed. Wiley.



If the cash flows are constant over an indefinite time horizon, the asset valuation is the ratio of the fixed cash flow to the asset's return (expected and required). If dividends are expected to grow at a constant rate, i.e.  $d_1 = d_0 \times (1 + g)$ , then the share price is determined by the fixed size of the next year's dividend  $d_1$ , the growth rate  $g$  and the required return to shareholders, taking into account the risk (Gordon's perpetual growth model).

**Formula 12. Gordon's stock valuation formula**

$$k = \frac{D_0 \times (1 + g)}{P_0} + g$$

Where

$k$  - required (expected) stock return

$D_0$  - current dividend at time 0

$P_0$  - the present value of the share at the time 0

$g$  - average constant growth rate of dividends<sup>22</sup>

This model best predicts the stock price of corporations that are growing at or below the nominal growth rate of an economy or industry, with a constant dividend yield and a stable dividend policy.

For example, if for the United States the nominal economic growth was 6% in 1993 (4% - inflation and 2% - real growth), then the Gordon model can be applied to corporations with a stable growth rate not exceeding 6%.

The cost (property) approach to business valuation considers the value of an enterprise in terms of costs incurred. The main feature of the cost-based approach is an element-by-element assessment, that is, the estimated property is divided into component parts, each part is assessed, and then the value of the entire property complex is obtained by summing the values of its parts. Basic in the property (cost) approach is the Formula 13.

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<sup>22</sup>GORDON, A., SHARPE, W., BAILEY, J., 2001. Fundamentals Of Investments. Upper Saddle River, NJ: Prentice Hall. pp. 103-109.

### Formula 13. Equity capital

$$E = A - L$$

Where

A - assets

L - liabilities

#### 4. *Asset-based model*

The method of net assets allows to evaluate an enterprise in terms of the costs of its creation, provided that the enterprise remains operational. This model is based on valuation of net asset value (NAV), which is calculated as market value of assets minus market value of liabilities. NAV approach has some limitations, and it is not advised to use it as a primary method of a valuation, rather an additional method that can help to create a big picture of the company state. This is explained by the fact that the NAV approach is used as the lowest cost, in other words, the lowest price a stock is worth<sup>23</sup>.

Another asset-based model is based on the Capital Assets Pricing Model (CAPM). The expected return on a stock that has a certain share in the market portfolio can be estimated using the Formula 14.

### Formula 13. Capital Assets Pricing Model

$$R_i = R_f + \beta \times (R_m - R_f)$$

Where

$R_i$  - the expected return on the i-th share

$R_f$  - risk-free rate of return

$\beta$  - beta coefficient

$R_m$  - the expected return on the market portfolio

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<sup>23</sup>WACHOWICZ, J, VAN HORNE, J., 2008. *Fundamentals Of Financial Management*. pp. 700- 711.

In the Western economy, the risk-free rate is fairly well defined. In some countries, it means the interest on securities guaranteed by the US government, in others - the current rate of return on Treasury bills and bonds.

Hypothetically, the risk-free rate is equal to the return on a security or portfolio of securities under no circumstances exposed to default risk, and therefore does not correlate at all with other returns in the economy. In theory, the best measure of the risk-free rate would be the return on a zero-beta investment portfolio. But since building such zero beta portfolios is expensive and complex, there is no a risk-free rate assessment tool at our disposal.

Instead, one can choose one of three possible instruments from the list of US government securities:

1) treasury bills;

2) ten-year Treasury bonds;

3) thirty-year treasury bonds. It is advised using the 10-year Treasury bond interest rate for several reasons.

First, it is the long-term interest rate, which more closely matches the duration of the company's cash flows. The current rate for short-term promissory notes is short-term and therefore does not quite match the duration of the cash flows. If one is forced to use a short-term rate, then the most appropriate choice in this case is the expected short-term rates for each future period, and not today's short-term rate. In essence, the ten-year interest rate is the geometric mean of the expected short-term Treasury bill rates over the entire valuation period.

Second, the ten-year rate is close in its time horizon to a portfolio of stocks in a market index - for example, the S&P 500, and therefore is consistent with the beta and market risk premium associated with that market portfolio.

Finally, the ten-year rate is relatively immune to the two problems associated with using a longer-term rate — say, the 30-year Treasury bond rate. The price of a ten-year bond is less sensitive to unexpected fluctuations in inflation, and therefore its beta is less than the beta of a thirty-year bond; the liquidity premium for a 10-year bond may be slightly lower than for a 30-year bond. These are technical details that, under normal circumstances, are of little importance. But they speak in favor of a ten-year rate.

The risk-free yield can be taken to be the government bond interest rate in the country where the unit is based (unless they are at serious default risk). If government bonds cannot reasonably be considered risk-free, then there is the concept of interest rate parity, on the basis of which the rate of US government bonds is translated into its equivalent in another country.

Within the framework of the theory, CAPM simplifies some of the factual phenomena that are inherent in the financial market and the stock market in particular. Theoretical assumptions applicable to CAPM are presented in Table 5.

**Table 5. CAPM theoretical assumptions**

Assumption	Disclosure of essence
Capital Markets Efficiency	Transaction and operating costs are low, investors are maximally informed about the current market position and do not have enough funds to independently influence the market price of a share.
Normal distribution of security returns	The price of a security obeys the law of normal distribution, that is, the frequencies of the empirical and theoretical distribution of stock returns do not differ significantly. Accordingly, the distribution of returns on a market portfolio consisting of shares of this type and other securities also obeys the normal law.
Stock index as an alternative to the market portfolio	The third assumption boils down to identifying the market portfolio as an abstract concept with market “substitutes”, which are stock indices (S&P 500, Dow Jones Industrial Average, NASDAQ Composite Index, etc.).
Lack of opportunity to play for a fall	The CAPM assumes that investors form a diversified portfolio of assets with a long-term management period. In addition, the mathematical expectation of this portfolio is positive. In the long term, investors expect

	the value of the market portfolio to increase. This assumption implies that investors view the short sale of the security as a zero-probability event.
The expected return on the market portfolio and security exceeds the risk-free rate of return	This assumption allows you to more objectively compare assets with different levels of risk among themselves.

Source: author, based on Blitz, D., Falkenstein, E. and Vliet, P., 2014.

One of the most widespread residual income valuation approaches is an Economic Value Added (EVA) model<sup>24</sup>. It is based on the premise that in order for a company to create wealth for its owners, its earnings on its invested capital must exceed the cost of this capital. EVA is calculated as the product of the excess return made on an investment, that is, the excess return over the weighted average cost of capital (ROI – WACC), and the capital invested in that investment. In its simplest form, the EVA model discounts EVA at the WACC:

**Formula 13. EVA model**

$$V_0 = \sum_{t=1}^{t=n} \frac{EVA_t}{(1 + WACC)^t}$$

The equivalence of the EVA model and DCF model has been shown by several researchers, such as Hartman<sup>25</sup>, Lundholm and O'Keefe<sup>26</sup>, Courteau et al<sup>27</sup>.

<sup>24</sup>DAMODARAN, A., 2007. Return on Capital (ROC), Return on Invested Capital (ROIC) and Return on Equity (ROE): Measurement and Implications. *SSRN Electronic Journal*,.

<sup>25</sup>HARMAN, J C., 2000. On the Equivalence of Net Present Value and Market Value Added as Measures of a Project's Economic Worth, *Engineering Economist* , 45, pp. 158-165.

<sup>26</sup>LUNDHOLM, R., O'KEEFE, T., 2001. On Comparing Residual Income and Discounted Cash Flow Models of Equity Valuation: A Response to Penman 2001 *SSRN Electronic Journal*.

<sup>27</sup>COURTEAU, L, KAO, J, RICHARDSON, G., 2001. Equity valuation employing the ideal versus ad hoc terminal value expressions. *Contemporary Accounting Research*, 18, pp. 625-661.

The EVA model, however, may prove quite tedious, as it may entail multiple changes to profit figures in order to achieve an acceptable EVA. For example, Stern Stewart has established more than 160 possible adjustments to derive a suitable EVA<sup>28</sup>.

### 1.3.2 Comparative analysis

The comparative (market) approach to assessing the value of shares in an enterprise suggests that the most likely market value of shares in a company may be the price of a similar company on the market. The method of the company - the analogue, or capital market, when evaluating a shareholding in a company, which is often used today, is based on the market prices of shares of similar companies. It is based on the principle of substitution: an investor can invest funds either in analogous companies or in the evaluated one. To calculate the market value of equity capital, it is necessary to obtain the product of a similar financial indicator of the evaluated company and the estimated value of the price multiplier. The transaction method, or the sales method, focuses on acquisition prices the enterprise as a whole or its controlling stake. This determines the most optimal area of application of this method - the assessment of 100% capital or a controlling stake. It should be noted that this method consists in constructing a company model, where the object for consideration is only companies belonging to the same industry with the evaluated enterprise and which are similar in ownership, size, organizational and legal form.

The method of industry coefficients, or the method of industry ratios, is based on the use of recommended ratios between the price of an enterprise's business and certain financial parameters.

Sectoral coefficients are calculated on the basis of long-term statistical observations by special research institutes of the sale price of various operating enterprises and their most important production and financial characteristics. The industry ratios method can be used when the required industry data is available and is recommended as an auxiliary method. The most commonly used ratios are grouped below in Table 3.

**Table 6. Application of stock valuation coefficients**

Equity valuation ratio	Terms of use
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<sup>28</sup>BIDDLE, G., BOWEN, R., WALLACE, J., 1999. EVIDENCE ON EVA. *Journal of Applied Corporate Finance*, 12(2), pp.69-79.

The ratio of the price of an ordinary share to net earnings per share (P / E)	The ratio of the company's net profit, less dividends on preferred shares, accrued for the reporting year, to the number of ordinary shares. Applies if earnings per share growth is stable.
Market capitalization to sales revenue ratio	It accurately reflects the value of shares in market conditions, since the revenue figure is close to the value calculated according to IAS (GAAP). The lower the number, the less likely the stock will be overvalued.
The ratio of market capitalization to the result of enterprise cash flows (P / CF)	An important indicator, because it is the cash flow that most fully characterizes the financial performance of the business.
Ratio of market and book value of shares	Compares the market capitalization of an enterprise and the size of its equity capital. Essential for "asset-oriented" investors.
The ratio of the amount of received dividends to the current share price	The so-called "dividend yield".

Source: author, based on Fabozzi, Markowitz, 2011; Mott, 2008.

These figures are compared with the averages of other comparable companies in the same industry. If the P / E ratio is less than the corresponding industry average, then the assets of the company can be acquired at a lower cost compared to other similar companies. Likewise, if the ratio of the share price to the book value of assets per share is less than the corresponding industry average ratio, then this is also a sign of undervaluation. The low P / E tells us that the company is undervalued and below its fair value. A high P / E suggests otherwise.

Some investors prefer to use the ratio of share price to net cash flow instead of P / E ratio. This approach is justified for companies operating with large cash flows, for example, for some types of enterprises in the fuel and energy complex. As a result of their activities,

significant cash flows are generated associated with the production and transportation of oil and gas, which are usually reinvested and directed to the exploration of new field<sup>29</sup>.

The ratio of the share price to the value of tangible assets is calculated in the same way as the ratio of the share price to the book value of assets, except that the value of intangible assets (such as goodwill) is deducted from the company's total book value. If the ratio of the share price to the book value of assets per share is lower (due to higher cost), the return on equity, calculated as the ratio of net profit to the average amount of equity capital for the period under review, is higher (due to higher profitability), and the ratio of all borrowed funds to equity capital is at the same level when compared with indicators similar companies, then there are truly undervalued shares. The above criteria can be explained in a different way: higher profitability (return on equity) actually takes place only when it cannot be explained by a low level of equity capital or strong financial dependence, i.e. a high proportion of borrowed funds in the capital structure, and therefore a higher risk.

The P / CF multiple shows the extent to which a particular company's stock can be overvalued and undervalued in relation to the cash flow that it generates. Good Cash Flow is always a fundamental part of a healthy business. If the company has a stable profit, then there will be funds for the payment of dividends, reinvestment of funds in business development, etc. The ratio of the share price to the volume of sales per share is usually used when analyzing companies that do not have profits and do not pay dividends. For such companies, high sales and growth rates indicate that investors are optimistic about future profits<sup>30</sup>.

The considered methods for evaluating the shares of companies on the basis of the methods used make it possible to obtain an actual information about the value of the company and the possibilities of quotation of shares on the stock market.

As the stock market develops, assessing the market value of securities becomes more and more relevant. The motives for making investment decisions require a rigorous calculation of the price justification. In practice, various approaches and methods for assessing the value of securities are used. Depending on the approach used, the following types of securities value are distinguished:

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<sup>29</sup>AGOSTINHO M., WEIJERMARS, R., 2017. Petroleum Business Strategies for Maintaining Positive Cash Flow and Corporate Liquidity Under Volatile Oil and Gas Prices as the Sustainable Energy Transition Unfolds. *Journal of Finance and Accounting*. 5(1), pp. 34-55.

<sup>30</sup>JUMONO, S. et al, 2015. Market Concentration, Market Share, and Profitability (Study at Indonesian Commercial Banking in the Period of 2001-2012). *Asian Social Science*, 11(27), p.18.



- nominal;
- balance sheet (accounting);
- liquidation.

The nominal value is original. The nominal value is indicated on the shares upon issue and is calculated by dividing the authorized capital by the number of issued shares.

The book (or accounting) value of a security is the value of that asset as measured by the balance sheet of the investor's organization. This is the most stable type of variable value of securities over time, since they are not depreciated.

In addition to the categories of stock value, which are listed above, there are 2 concepts around which a lot of disputes constantly arise in the expert community: "market" and "fair" securities prices.

The market value of a share is the value that develops under the influence of supply and demand in the secondary securities market. Theorists argue that the basis of the market price of a share is the idea of market participants about the value of fictitious capital, which reflects the market value of the entire set of assets of the issuer, as well as opinions about the value of the rights that this security as a title of shared ownership endows the investor with. In practice, speculative factors play a huge role in market quotes.

The fair value of a share is the value formed under the influence of the internal characteristics of the issuer: the actual state of the company and the prospects for its development. Determination of such a value is the subject of valuation activity. The prices that actually emerge on the market rarely coincide with such calculated values and then they say that the securities are "undervalued" or "overvalued" by the market. The fair value of a share is highly controversial. Many experts believe that market prices are truly fair, and any estimates of the "internal" value of shares are inadequate, since they do not include psychological factors, political and economic risks. Others, on the contrary, believe that the market price of a share should eventually come to its real value, therefore, securities undervalued by the market should be bought, and overvalued securities should be sold.

When considering different ways of valuing shares, one should remember the reason for the examination. For the buyer, this is the prospect of receiving part of the profit (income) of the enterprise, expressed in the form of dividends or benefits provided by the board of the company (for example, the sale of the company's products at individual prices). From the point of view of the seller, this is not only the loss of a certain amount of future receipts, but

also the emergence of the possibility of investing the funds raised in other investment projects.

## **1.4 Influence of factors shaping the value of a share in the oil and gas industry**

The price of a company's shares on the market is determined by the company's performance, as well as by numerous external factors. All factors can be divided into three large groups: macroeconomic, sectoral and microeconomic.

Macroeconomic factors include indicators that characterize the efficiency of the country's economy. Dynamically developing countries are the most attractive for investment, and companies in these countries can have a large capitalization. The most significant factors are: GDP, consumer price index, inflation rate, level of export / import of products, changes in world prices, level of investment, level of political stability; strategic government programs, fluctuations in exchange rates, changes in interest rates, the level of average wages, the level of unemployment in the country.

Microeconomic factors are directly related to the company's activities. They show the efficiency of the company and, accordingly, affect the capitalization, since the most successful companies are attractive to investors.

These include factors that reflect the financial and economic condition of the enterprise, the image of the enterprise and the degree of its openness. factors are closely related to the development of the stock market (the level of economic viability of the issuer, the ratio of supply and demand). Industry factors include indicators specific to individual industries. For companies in the oil and gas complex, such are, for example, oil prices and the volume of oil and gas production<sup>31</sup>.

In table 7, I take a closer look at the various factors that affect the value of a share.

**Table 7. Classification of factors affecting the value of securities**

Factors	Characteristics of factors
Macroeconomic factors	- development of competition; - investment climate; - inflationary components;

<sup>31</sup>HENRIQUES, I. and SADORSKY, P., 2008. Oil prices and the stock prices of alternative energy companies. *Energy Economics*, 30(3), pp.998-1010.

	<ul style="list-style-type: none"> <li>- limitation of monopoly;</li> <li>- profitable investments in securities</li> </ul>
Microeconomic factors	The development phase of the cycle of the stock market segment, to which
Industry factors	<ul style="list-style-type: none"> <li>- the number, size and types of firms operating in this industry;</li> <li>- dynamics of the main economic indicators in the industry (growth rates, decrease in production volumes, the level of production costs, profitability);</li> <li>- dynamics of demand for industry products.</li> </ul>
Basic and primary factors	<ul style="list-style-type: none"> <li>- type of stock, its consumer properties as a commodity;</li> <li>- the value of the ownership rights certified by the share.</li> </ul>
Secondary factors	<ul style="list-style-type: none"> <li>- investment qualities: profitability, liquidity, reliability, safety, riskiness;</li> <li>- management capabilities of the action.</li> </ul>
External factors	Industry affiliation and territorial location of the issuer.
Internal factors	<ul style="list-style-type: none"> <li>- the economic viability of the issuer, the level of its financial and economic activities;</li> <li>- characteristic of the efficiency of production activities;</li> <li>- business reputation and status of the issuer.</li> </ul>
Organizational factors	<ul style="list-style-type: none"> <li>- the level of development of the stock market infrastructure;</li> <li>- information transparency of the issuer;</li> <li>- the degree of market transparency;</li> <li>- reliability of the depository service;</li> <li>- observance of the rights of the investor;</li> <li>- application of the Corporate Governance Code.</li> </ul>
Economic forces	Efficiency of using the material, labor and financial resources of the issuer.
Subjective factors	Formation of sustainable motivations and their management.
Systemic factors	General trends in the structure of the stock market.

Probability factors	Expected and random events cause stock market fluctuations, crisis situations, etc.
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Source: author, based on Artenyan, S., 2019; Tvaronavičiene M., Michailova J., 2006.

The above factors have a simultaneous effect on the value of shares, and in practice it is difficult to determine the real measure (weight) of each factor.

Oil stocks, which, according to many researchers, are most influenced by: oil price, exchange rate, GDP, as well as indicators directly related to indicators of the investment attractiveness of stocks, and ratios related to the company's profit and its efficiency. The development of the market for shares of oil companies is associated both with changes in the cost of minerals on international markets and with the discovery and development of new deposits. Obviously, if it is necessary to raise funds for the development of a new oil field or the construction of transport infrastructure, oil producing companies forced to attract funds from investors<sup>32</sup>. The impact of both internal and external factors on the value of an oil company is depicted in Figure 3.

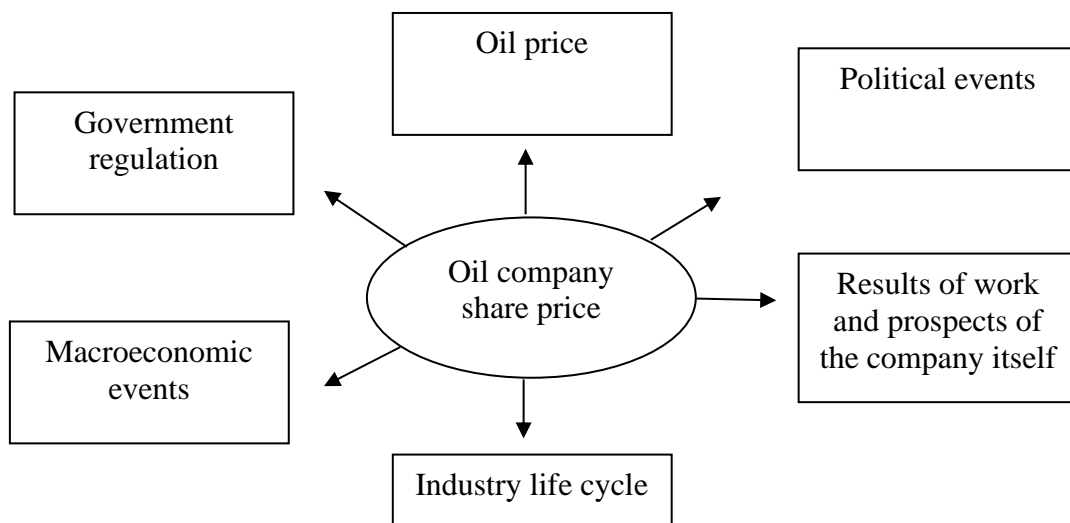
It is worth considering separately such a factor as the price of oil. Oil and gas stock prices are highly correlated with oil prices, which was proved by several researches.

Companies producing and exporting oil sell it at market prices that are posted on international commodity and specialized oil exchanges<sup>33</sup>. The revenues of these companies are directly dependent on world oil prices. The higher they are, the more their income and, accordingly, this affects their stock quotes. This is largely due to the fact that the oil and gas industry is a locomotive of development for many related industries. The proceeds received by oil companies are distributed throughout the economy, the profits are reinvested in the development of the sector. That is, the volume of orders and the volume of production in related industries are growing, which can lead to an increase in the market value of shares.

**Figure 3. Influence of factors on the value of an oil company**

<sup>32</sup>MASHA, M., YAHAYA, Y., 2018. Factors influencing the choice of performance measures for the oil and gas supply chain – exploratory study. IOP Conference Series: Materials Science and Engineering. 342 (1).

<sup>33</sup>MASHA, M., YAHAYA, Y., 2018. Factors influencing the choice of performance measures for the oil and gas supply chain – exploratory study. IOP Conference Series: Materials Science and Engineering. 342 (1).



Source: author, based on Masha, M., Yahaya, Y. (2018).

Usually, the price of a share depends on fundamental market factors - supply and demand. However, financial markets and the political dimension also play a role. In the case of fundamental price indicators depend on market needs or lack thereof. If there is a shortage of oil, prices rise, encouraging companies to increase production. If there is a surplus, prices fall and production decreases. Since one of the important factors is the work of the company itself and the prospects for its development, one should take into account the factors that have had a significant impact on the operating activities.

Changes in prices, customs duties and transport tariffs can have a significant impact on the choice of a company's range of products and supply routes that ensure the maximum netback on oil produced by the company. A steady increase in earnings is one of the main factors affecting share prices.

The oil and gas industry is highly knowledge-intensive, and the sooner various technological innovations are developed and put into use, the better and sooner the industry will develop. Currently, developments are proceeding at a moderate pace, development does not stop, new technologies periodically appear, which is a kind of guarantee of stable development of the industry. Since the reserves of raw materials are gradually depleting, the search for alternative deposits is a priority for the company. Successful implementation of plans to find new deposits will lead to an increase in the price of shares.

It is also worth noting that the oil and gas industry is very important for the development of the economy of the country and the world, and it can often be observed that the state's share in the capital of companies in this industry is fixed at a sufficiently high

level, which allows the state to significantly influence the development of the industry. In view of active government intervention, where some stability in the development of the industry can be seen.

Changes in stock prices in the market are always ahead of changes in the economy. This is due to the fact that stock prices are determined not by the success of companies today, but by the prospects for their development. The use of one or another type of share value is determined by the general objectives of the assessment and the specific situation.

## **Chapter 2. Analysis of the formation of the value of shares in the enterprise**

### **2.1 Country overview**

The United States, being one of the leaders in innovative development, occupies one of the leading places in the world in terms of key indicators characterizing both the level of economic development and the country's position in world economic relations. For many years, even decades, the economic and geopolitical leadership of the United States was not in doubt. But, since the world in the 21st century is becoming more and more polycentric, the positions of the United States are no longer so unconditionally dominant in all respects, although they remain leading in terms of key macroeconomic characteristics.

#### **Indicators of the level of economic development of the United States and their share in world economic relations**

Among the key macroeconomic indicators that reflect the level of a country's economic development, gross domestic product and GDP per capita are usually considered first. In terms of GDP, the United States in 2019 retained a stable first place with a volume of 21.5 trillion. dollars (23.6% of world GDP). The closest competitor of the United States in terms of this indicator - China was in second place with a GDP level of 14.4 trillion. dollars (15.5% of world GDP). However, if to consider these indicators taking into account purchasing power parity (PPP), then China will already be in first place, noticeably ahead of the United States - the corresponding indicators are 27.3 and 21.5 trillion. dollars. Russia ranked 11th in this list in terms of nominal GDP (\$ 1.64 trillion) and sixth in terms of PPP (\$ 4.21 trillion).

GDP per capita tell much more about the level of economic development of the country - here the United States occupies not the first, but quite advanced positions in the world. In terms of nominal GDP per capita in 2019, they were in eighth place, in purchasing power parity of currencies - in tenth. Ahead are small highly developed countries of Europe, such as Norway, Switzerland, Luxembourg, or oil-producing countries - Qatar, the United Arab

Emirates, Brunei. It is clear that all of them do not play a very noticeable role in the world economy (with the exception of the role of fuel suppliers)<sup>34</sup>.

The state of its scientific and technological potential says a lot about the level of economic development of the country. In this matter, the United States retains unconditional leadership both in the scale of this potential and in its effectiveness. So, in 2018, the United States accounted for 25.2% of all global investment in science. The absolute size of US R&D spending amounted to \$ 553 billion, ahead of all other leading countries (China - \$ 475 billion, Japan - 187 billion, Germany - 117 billion, South Korea - 88 billion)<sup>35</sup>.

An important indicator reflecting the country's position in the field of science and innovation is the so-called global innovation index, developed by the World Intellectual Property Organization. In 2019, in the ranking of countries in terms of the degree of innovative activity, the United States was in third place, behind Switzerland and Sweden. Among large countries, they are the undisputed leader (Great Britain is in fifth place, Germany is in ninth place, China is in 14th place, Japan is in 15th place, France is in 16th place, and Russia is in 46th place)<sup>36</sup>.

In the area of scientific and technological potential, the United States has secured a long-term advantage over other countries. This is reflected not only in the absolute and relative expenditures on R&D, but also in their positions on leading technologies. The effectiveness of scientific research itself is very high, which is manifested in such key indicators as the number and share of the most prestigious scientific awards, the proportion of publications and citation of American scientific articles in the total volume of world scientific production.

Thus, scientific and technological potential, being one of the main economic competitive advantages of the United States, is at the same time one of the leading indicators of the level of economic development of the country.

One of the key indicators characterizing the level of the country's economic development is labor productivity, the main indicator of production efficiency. According to

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<sup>34</sup> REINIS F., 2021. *Top 20 Largest Economies In The World by GDP Nominal (2019) | Reinis Fischer*. [online] Available at: <<https://www.reinisfischer.com/top-20-largest-economies-world-gdp-nominal-2019>> [Accessed 20 November 2021].

<sup>35</sup> HENEY, P., 2021. *Global R&D Funding Forecast: Special mid-year update, Part 1 - Research & Development World*. [online] Research & Development World. Available at: <<https://www.rdworldonline.com/global-rd-funding-forecast-special-mid-year-update-part-1/>> [Accessed 20 November 2021].

<sup>36</sup> WUNSCH-VINCENT, S., DUTTA, S. and LANVIN, B., 2020. GLOBAL INNOVATION INDEX 2020. *The Global Innovation Index 2020*, (13).



the estimates of the British organization "Expert Market", based on data from the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD), the level of labor productivity in the United States, calculated as the ratio of GDP per capita to the volume of man-hours worked, was in 2020 in eleven place in the world (36.94 thousand dollars)<sup>37</sup>. As can be seen from the above data, the United States is confidently leading among large countries, significantly outstripping its closest competitors - Germany and France.

The foreign economic positions of the United States are evidenced primarily by their place in world economic relations - in world trade and world investment flows.

The volume of US foreign trade in 2020 amounted to 4 trillion. dollars. Exports amounted to 1.9 trillion. dollars, imports – 2.1 trillion. dollars, that is, the United States had a significant negative trade balance in the amount of 65,596 billion dollars. At the same time, 25% of the foreign trade turnover of the United States is made up of services, the trade balance of which, in contrast to trade in goods, is positive - the corresponding indicators in 2018 were \$ 228 billion and \$ 791 billion<sup>38</sup>.

The average annual growth rate of American merchandise exports for the period 2010-2018, being at the EU level, amounted to 2.6%, second only to China (4.6%) and the UAE (14%) and significantly ahead of all other large countries and regions. At the same time, the share of the United States in world merchandise exports for a long period (after World War II) has been steadily declining - from 14.6% in 1953 to 8.5% in 2018, yielding the first position to China in the 21st century (12.8%). As for imports, the United States is still in first place in terms of its share in world imports (15.2%). Here, the dynamics of the US share is not as unambiguous as in the case of exports: throughout the late 20th and early 21st centuries, the US indicators either increased or decreased. For example, in 1953 the share of the United States in world imports was 13.9%, in 1973 it fell to 12.4%, then increased to 15.9% in 1993 and to 16.9% in 2003<sup>39</sup>.

Imports also help integrate the US economy into the global economy. It is not uncommon for the United States to import the same product categories as it exports. For

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<sup>37</sup> BARRACLOUGH, D., 2021. *The Most Productive Countries: How to Replicate them at Work*. [online] Expert Market. Available at: <<https://www.expertmarket.co.uk/crm-systems/the-ultimate-guide-to-work-place-productivity>> [Accessed 20 November 2021].

<sup>38</sup> U.S. BUREAU OF ECONOMIC ANALYSIS, 2021. U.S. International Trade in Goods and Services September 2021. *Bureau of Economic Analyses*, BEA 21-54.

<sup>39</sup> Wto.org. 2021. *WTO Statistics: Trade and tariff data*. [online] Available at: <[https://www.wto.org/english/res\\_e/statis\\_e/statis\\_e.htm](https://www.wto.org/english/res_e/statis_e/statis_e.htm)> [Accessed 20 November 2021].

example, in the second decade of the 21st century, the computer industry exported 45% of its products (computer systems, peripheral equipment and software), while 60% of domestic intermediate and final consumption products in this commodity group were imported.

In the middle of the second decade of the 21st century, the United States retained its position as the largest exporter and importer of capital. This concerned both the movement of capital in the United States and from the United States as a whole, including financial assets, securities, real estate, etc., and the movement of direct investment, that is, involving long-term production capital investments and participation in the management of foreign companies. In 2019, the value of American assets abroad was 28.3 trillion. dollars compared to 6.2 trillion. dollars in 2000, and foreign assets in the United States reached 39.2 trillion. dollars compared to 7.6 trillion. dollars in 2000. Thus, foreign assets in the United States exceeded American ones abroad by 10.9 trillion. dollars.

### **Resource potential and economic mechanism**

Of particular interest is the balance between US foreign direct investment abroad and foreign investment in the United States. Here the picture is different than with the balance sheet of other assets. The volume of direct accumulated investments of the USA abroad in 2019 amounted to almost 8.4 trillion. dollars (1.5 trillion dollars in 2000). In turn, foreign direct investment in the United States amounted to 9.9 trillion in 2019. dollars, having increased by 8.5 trillion since 2000. dollars. Thus, American direct investment abroad is only 1.5 trillion. dollars less than investments of other countries in the USA<sup>40</sup>.

The position of any country in the world economy is largely determined by their resource potential, as well as the mechanism of the economy's functioning. In terms of natural resources, the United States is one of the richest countries in this regard. The United States is in first place in coal reserves (491 billion tons), accounting for 27% of all world coal reserves. In terms of coal production, the United States ranks third in the world (702 million tons in 2018), behind China and India<sup>41</sup>.

In terms of oil reserves, the United States is among the top ten countries in the world, ranking ninth (61.2 trillion barrels - 3.5% of world reserves), noticeably lagging behind

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<sup>40</sup> U.S. BUREAU OF ECONOMIC ANALYSIS, 2021. U.S. International Trade in Goods and Services September 2021. *Bureau of Economic Analyses*, BEA 21-54.

<sup>41</sup> UNWIN, J., 2019. *Who are the top five coal producing countries in the world?*. [online] Power-technology.com. Available at: <<https://www.power-technology.com/features/top-five-coal-producing-countries-world/>> [Accessed 20 November 2021].

world leaders - Venezuela and Saudi Arabia (the corresponding figures are 303 billion barrels - 17.5% and 298 billion barrels - 17.2%). Nevertheless, its own resources allow the United States to be in first place in the world in oil production - 17.8 million barrels per day (18% of world production) in 2019. The next two positions are occupied by Saudi Arabia - 12.4 million barrels (12.4%) and Russia - 11.4 million barrels (11%). By increasing its own production, the United States has managed to significantly reduce its dependence on oil imports. If in 2005 the share of imports was 60% of domestic oil consumption, then in 2015 this share dropped to 24%.

Based on this paragraph, it was concluded that the macroeconomic environment in USA was favorable for period 2014 – 2019. However, as noted above, the US economy is not dependent on a neutral basis, but follows, unlike oil-exporting countries, whose budgets are heavily dependent on foreign exchange earnings from oil sales, in the US the extraction of "black gold" is not a budget-forming industry. For the US economy, the more important is the low cost of petroleum products, and hence of cheap oil.

## **2.2. ExxonMobil history overview**

Since its inception, the American oil giant ExxonMobil has become one of the most influential corporations on the planet, capable of determining US foreign policy and the fate of entire nations. Today, oil, gas and coal account for more than 87% of all energy generated in the world. Moreover, more than half of this share is accounted for only by oil and gas resources. Despite the abundance supplying energy markets today, the challenge of ensuring energy availability in the future is much more acute as the growing global economy requires more and more energy consumption.

ExxonMobil was created relatively recently, in 1999, as a result of the merger of the largest American oil companies Exxon and Mobil. In 1998, they signed an agreement on a \$ 73.7 billion merger and the new largest oil company on the planet ExxonMobil Corporation. The merger was completed on November 30, 1999. Exxon Mobil Corporation is headquartered in Irving, a suburb of Dallas, Texas.

Exxon and Mobil are the heirs of J. Rockefeller's Standard Oil Corporation, which he founded in 1870. Over the years, the company has pursued an aggressive policy of seizing resources and markets. She actively explored new deposits, researched markets and absorbed competitors, monopolized the US oil industry.

Exxon (before the merger with Mobil) was one of the undisputed leaders in the oil business and owned assets in different regions of the world: in the USA, Canada, Australia, EU countries, in the Asia-Pacific region, in the Gulf of Mexico, in Africa.

The company operated five refineries in the United States. In addition, Exxon was a major supplier of coal, ores, chemical products (the chemical business was represented by the company in 23 countries around the world). Exxon was the leader among US oil companies in the number of patents. Mobil was the second largest company in the United States after Exxon in terms of turnover. By 1998, its activities were represented in 30 countries: in the USA, in Canada, in the North Sea, in Indonesia, in Nigeria. Refining was carried out at five refineries in the US and at eight abroad. The company had developed petrochemical and chemical divisions around the world, an extensive distribution network and a strong marketing position. The strategy of the united ExxonMobil is focused on diversification: sources of profit, sales markets, regions of presence. The organizational structure model can be different in different business units. The main thing is that they all operate in accordance with uniform corporate standards and are incorporated into a single organism of internal networks<sup>42</sup>.

In 2017, ExxonMobil's net profit increased 2.5 times compared to the previous year - to \$19.71 billion. At the end of 2016, the figure was \$7.84 billion. The company's revenue in 2017 increased by 17, 4% - up to 244.363 billion dollars. ExxonMobil's profit before taxes amounted to 18.674 billion dollars in 2017, which is 2.3 times more than in 2016. By the end of 2017, ExxonMobil reduced its hydrocarbon production by 1.7% - to 3.985 million barrels of oil equivalent per day, while the production of liquid hydrocarbons decreased by 3.5% - to 2.283 million barrels per day, and gas production increased by 0.8% and amounted to 10.211 billion cubic meters per day<sup>43</sup>.

In the annual ranking of the 500 largest companies in the world - Fortune Global 500, published by the American business magazine Fortune since 1955, the criterion of which is the company's revenue, for year 2020 ExxonMobil was ranked eleventh, behind Walmart, Royal Dutch Shell, China National Petroleum and some others.

Although in one and in the other case the company does not occupy the first positions, it still remains one of the leading in the world. ExxonMobil is currently one of the world's largest privately owned oil and gas production and refining corporation. It carries out

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<sup>42</sup>PRATT, J., 2012. Exxon and the Control of Oil. *Journal of American History*, 99(1), pp.145-154.

<sup>43</sup>SCHAAD, R., 2012. ExxonMobil 100 years of oil. *The Journal of American History*, pp.145-154.

exploration and production in 39 countries of the world, refining in 14 countries. The main resource bases of the corporation are located in the United States, as well as in the Gulf of Mexico, the North Sea and West Africa. The main owners of the corporation are investment funds, institutional and private investors. Free float is 99.85% of shares.

In 2006, agreements were signed with Tamoil Africa Holdings Limited on the sale of shares of subsidiaries and manufacturing companies in Cameroon, Cote d'Ivoire, Gabon, Kenya, Senegal and Reunion Island<sup>44</sup>.

One of the UK's largest oil fields sold for \$ 1.75 billion in 2011, reflecting the withdrawal of major oil companies from depleting assets in the North Sea. Assets account for around 10% of UK daily production, indicating that the area remains strategically important<sup>45</sup>.

In 2012, it announced the sale of 99% of Japan's refining operations to Tonen General, a joint venture partner of ExxonMobil Yugen Kaisha, in which ExxonMobil owns 50.5%, for \$ 3.9 billion. Exxon is betting on more highly developed exploration and production operations. Tonen General pays \$ 1.3 billion in cash, and the rest of the payment comes from bank loans. The company will continue to have the exclusive right to provide products and services under the Esso, Mobil and General brands to distributors and dealers<sup>46</sup>.

Exxon Mobil Indonesia in 2015 sold to state oil and gas company Pertamina 100% of the North Sumatra Offshore Block (NSO), 100% of Block B and a 30% stake in PT Arun - NGL, which operates a Natural Gas Liquefaction Plant converted into a regasification terminal. The reorganization was approved by the regulatory body. Pertamina owned 55% of the plant, ExxonMobil owned 30% and a consortium of Japanese buyers held 15%. Thus, upon completion of the deal in October, Pertamina will have an 85% stake in the Arun plant<sup>47</sup>.

In 2015, an agreement was signed with PBF Energy, Inc. the sale of its Torrance, California refinery to the Vernon lubricants distribution center, the Vernon and Atwood product terminals, and associated pipelines in California, and other physical assets, including the Southwest Terminal. The sale is the result of a strategic assessment of the property and

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<sup>44</sup>EXXONMOBIL, 2006. *About ExxonMobil*. [online] Exxonenergy.com. Available at: <<https://exxonenergy.com.theyesmen.org/html/ourcoAboutHistory.htm#:~:text=The%20history%20of%20ExxonMobil%20is,of%20the%20US%20refining%20capacity.>> [Accessed 21 February 2021].

<sup>45</sup>EXXONMOBIL, 2021. *Our history | ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/About-us/Who-we-are/Our-history>> [Accessed 10 February 2021].

<sup>46</sup>PRATT, J., 2012. Exxon and the Control of Oil. *Journal of American History*, 99(1), pp.145-154.

<sup>47</sup>SCHAAD, R., 2012. ExxonMobil 100 years of oil. *The Journal of American History*, pp.145-154.

how it fits with ExxonMobil's recycling portfolio. Depending on the timing of refinery repairs and regulatory approval, the change of ownership was to take place in mid-2016<sup>48</sup>.

In 2016, oil assets in the Bass Strait in southeastern Australia were put up for sale. The joint venture between ExxonMobil and Anglo-Australian resource giant BHP Billiton (in equal shares) has produced more than 4 billion barrels of crude oil and 0.23 trillion m<sup>3</sup> of gas since the beginning of operation in 1965. In 2016, the sale of half of 2,500 gas stations in Italy began for up to \$ 537 million. Exxon, represented by its subsidiary Esso, is trying to reduce its participation in the surplus retail market in Italy. Private equity firm Apollo is considering acquiring Esso stations to optimize its portfolio and generate higher returns. Other private equity groups, including Carlyle, have shown interest in purchasing Esso-branded stations<sup>49</sup>.

In 2016, it was agreed to sell 60% of the shares of Mobil Oil Nigeria (MON) to Nipco Investments Limited for an undisclosed amount. The Nigerian newspaper Vanguard reports that the shares were sold at substantial margins. MON will still use the Mobil branding at its filling stations and lubricants. Exxon Mobil's 60% stake is currently estimated at \$ 129 million.

In 2017, the agreement was made to sell its managed subsidiary in Norway to private equity firm HitecVision and oil company Point Resources for an undisclosed amount. The deal means that Exxon will no longer be involved in the production of fields on the Norwegian continental shelf. The deal was valued at about \$ 935 million<sup>50</sup>.

### **2.3. Financial situation of ExxonMobil**

The main owners of the company are institutional investors, individuals and investment funds. More than 99% of the company's shares are in free float on the stock market and are traded under the ticker HOM. The company's share price (Picture 1) is taken into account when calculating the Dow Jones Industrial Average and the S&P 500.

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<sup>48</sup>EXXONMOBIL, 2006. *About ExxonMobil*. [online] Exxonenergy.com. Available at: <[<sup>49</sup>SCHAAD, R., 2012. ExxonMobil 100 years of oil. \*The Journal of American History\*, pp.145-154.](https://exxonenergy.com.theyesmen.org/html/ourcoAboutHistory.htm#:~:text=The%20history%20of%20ExxonMobil%20is,of%20the%20US%20refining%20capacity.> [Accessed 21 February 2021].</a></p></div><div data-bbox=)

<sup>50</sup>EXXONMOBIL, 2021. *Our history | ExxonMobil*. [online] ExxonMobil. Available at: <[> \[Accessed 10 February 2021\].](https://corporate.exxonmobil.com/About-us/Who-we-are/Our-history)

**Picture 1. ExxonMobil stock price**



Source: Google.com. 2021. *Exxonmobil Share Price - Google Search*. [online] Available at: [https://www.google.com/search?q=exxonmobil+share+price&source=lnms&tbm=fin&sa=X&ved=2ahUKEwiU48PatrTuAhWDulsKHdGXctwQ\\_AUoAXoECBAQAw&cshid=1611486456014&biw=1280&bih=578#scso=FFUNYKKTNIjxrgSe\\_q64Dg7:0](https://www.google.com/search?q=exxonmobil+share+price&source=lnms&tbm=fin&sa=X&ved=2ahUKEwiU48PatrTuAhWDulsKHdGXctwQ_AUoAXoECBAQAw&cshid=1611486456014&biw=1280&bih=578#scso=FFUNYKKTNIjxrgSe_q64Dg7:0) [Accessed 03 January 2021].

According to the 2020 rating of the Financial Times 500, ExxonMobil is on the top world leaders in terms of profit and assets. However, the oil and gas giant is significantly ahead of the others giant companies in the list in terms of revenue (Table 5).

**Table 8. Financial Times 500 rating**

Place in the ranking in 2019	Place in the ranking in 2020	Company	Revenue, million dollars	Profit, million dollars	Assets, million dollars
1	1	Walmart	523 964	14 881	236 495
3	5	Royal Dutch Shell	352 106	15 842	404 336
4	4	China National Petroleum	379 130	4 443	608 085
8	11	Exxon Mobile	264 938	14 340	362 597

Source: Fortune. 2021. Global 500. [online] Available at: <https://fortune.com/global500/2020/search/> [Accessed 24 December 2020].

ExxonMobil operates in many countries around the world. The oil giant sells oil to more than 120 countries. In addition, ExxonMobil owns stakes in 36 refineries. 40% of processing facilities are located in the USA, 30% in Europe, 25% in the Asia-Pacific region. This distribution of capacity gives the company great flexibility in delivering oil and petroleum products to key markets for the company. In recent years, the company has embarked on a course to improve business efficiency, selling those properties, the sale of

which can increase the long-term exchange value of shares, increase revenue and the efficiency of capital investments<sup>51</sup>.

According to the Fortune Global 500 by Fortune magazine, in 2020 ExxonMobil has a bit lost its position in the list (from 8 place in 2019 to 11 place in 2020) with a year revenue of 264 938 million dollars and profit of 14 340 million dollars.

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<sup>51</sup>EXXONMOBIL, n.d. *Global operations / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Operations/Global-operations>> [Accessed 14 February 2021].



## **Chapter 3. Application of valuation models for common shares on ExxonMobil**

### **3.1 Fundamental analysis of Exxonmobil stocks**

To analyze the investment attractiveness of shares of oil companies, it is required to analyze the shares of the oil company itself, which are in circulation. For the analysis, the fundamental method of analyzing the shares of this company will be used.

For the work, the traditional approach of fundamental analysis "top-down" will be used, since it is easier to judge the investment attractiveness from the general to the particular. The first stage - the analysis of the economic situation of the country - is already described in paragraph 2.1 and does not change when considering specific companies.

In the course of further fundamental analysis of ExxonMobil company, an absolute analysis will be conducted following by a comparative industry analysis,

#### **3.1.1. Absolute analysis**

##### ***Average annual stock return***

The first approach to assessing stock returns is reduced to calculating the average annual stock return for n periods (in the observed case, 5). First, let's calculate the stock's annualized return for each year using Formula 1.

Accordingly, in order to obtain a statistical value of the average 5-period return, it is necessary to find the return over 5 periods, and then calculate the average.

Let calculate the arithmetic average profitability for the year. This shows what the average return could be obtained in one year.

However, as it was already mentioned in the Methodology Chapter the arithmetic average will be not representation for calculating annual stock return, hence to compute investment outcomes the average geometric yield will be used.

Since the numbers include negative returns, the data was transformed to be able to calculated a geometric average.

Table 7 shows the calculations to determine the annual and average annual return on Exxon mobile shares for the period 2014 – 2019.

**Table. 9 Average annual stock return**

<b>Year</b>	<b>Year Open, \$</b>	<b>Year Close, \$</b>	<b>Cash Dividends, \$</b>	<b>Annual profitability, %</b>	<b>Annual profitability +1</b>
2019	69.69	69.78	3.43	4.79%	1.0479
2018	85.03	68.19	3.23	23.60%	1.236
2017	90.89	83.64	3.06	11.34%	1.1134
2016	77.46	90.26	2.98	-12.68%	0.8732
2015	92.83	77.95	2.88	19.13%	1.1913
2014	99.75	92.45	2.7	10.03%	1.1003
			Arithmetic average	9.4%	
			Geometric average		8.809%

Source: author

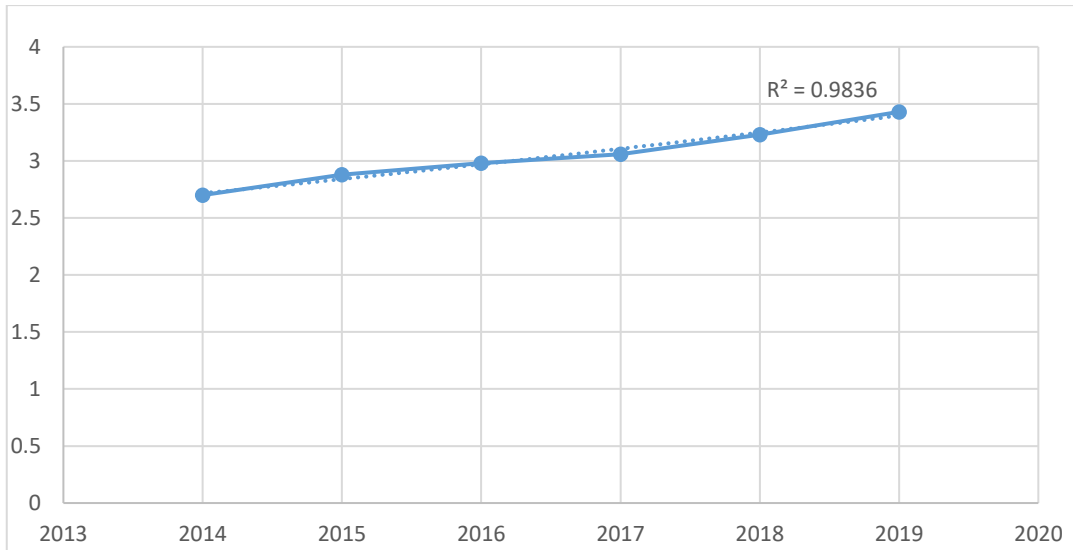
As a result, the resulting indicator of average annual profitability is extrapolated by the investor for the next year. For example, an investor assumes that the expected return on Exxon Mobil shares in 2019 will be approximately in the 8-10% range.

***Dividend discounted model (Gordons)***

Gordon's formula "works" under certain conditions. Therefore, at first there is a need to check that the dividend values obey the exponential distribution law.

So the chart (Picture 2) was built for the visibility. To check it, let's add a trend line with the value of the approximation confidence. Now one can clearly see that the data in the "Dividend" range obeys an exponential distribution law. The reliability is 98%.

**Picture 2. ExxonMobile dividend payments**



Source: author

Table 10 provides calculations of the average dividend growth rate for ExxonMobile.

**Table 10. Cash dividends increase**

Year	Cash Dividends, \$	Rate of increase (g)
2019	3.43	-
2018	3.23	6.19%
2017	3.06	5.56%
2016	2.98	2.68%
2015	2.88	3.47%
2014	2.70	6.67%
	Geometric average	4.633%

Source: author

As can be seen from Table 10, with the closing price as of 12/31/2014 (\$ 2,70), the geometric average dividend growth rate of 4.63% and the current dividend in 2019 (\$ 3.43), the expected market return on shares in 2019 will be:

$$k = \left( \frac{3.43 * (1 + 0.04633)}{2.70} + 0.04633 \right) * 100\% = 9.776$$

A feature of the Gordon model is the decomposition of the indicator of the expected return on stocks into 2 factors - the increase in the expected dividend yield and the expected return on capital gains.

In contrast to the calculation of the average annual return, the use of the Gordon model gives a tangible advantage: the investor can adjust the expected return, taking into account market, structural or other market factors that affect the price and dynamics of the company's dividend growth.

***Discounted cash flow model***

To conduct the calculations based on discounted cash flow model, at the beginning there is a need to find the weighted average cost of capital (WACC) (Table 11).

**Table 11. WACC**

	<b>Value, million \$</b>	<b>Weight</b>	<b>Required rate of return</b>
Equity (fair value)	175,895	0.79	11.717%
Debt (fair value)	48,037	0.21	1.68%

Source: author, based on EXXONMOBIL, 2021. *Annual Report / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Investors/Annual-Report#Toourshareholders>> [Accessed 3 February 2021].

**Cost of Equity:**

Required rate of return on equity is estimated by using CAPM. Calculations are presented below in the sub-chapter CAPM.

**Cost of Debt:**

Required rate of return on debt is after tax. Calculation are based on the Summarized long-term debt at year-end 2020 and 2019 from the Financial Statements of ExxonMobile. The table is presented in Appendix – Table 2.

$$\text{Weighted-average interest rate} = 100 \times 1,392 \div 67,632 = 1.68\%$$

Then WACC = 9.49%

Hence, the growth rate can be calculated by follow, using the selected financial data presented in Appendix – Table 1:

$$G = 100 \times (\text{Total capital} \times \text{WACC} - \text{FCF}_0) \div (\text{Total capital} + \text{FCFF}_0) = 100 \times (223,932 \times 10.03\% - 6,207) \div (223,932 + 6,207) = 6.53\%$$

Where

Total capital - current fair value of Exxon Mobil Corp.'s debt and equity (US\$ in millions);

FCFF<sub>0</sub> - the last year Exxon Mobil Corp.'s free cash flow to the firm (US\$ in millions);

WACC - weighted average cost of Exxon Mobil Corp.'s capital.

### ***Capital Asset Pricing Model***

The Formula 13 is used to determine the expected return on ExxonMobil stock. To do this, there is a need to introduce the assumptions for the model:

R<sub>m</sub>: ExxonMobil common shares are listed on the NASDAQ exchange, so the NASDAQ Composite Index (IXIC) will be selected as the market portfolio;

R<sub>f</sub>: the arithmetic average of the yield on 10-year US Treasury bonds for 2019 was chosen as the risk-free rate;

β: The beta coefficient is computed by dividing the covariance of a stock's return with market returns by the market return variance.

Then calculation of β coefficient is based on Formula 6 presented in the Table 12.

**Table 12. β coefficient for CAPM model**

<b>Year</b>	<b>Annual return IXIC</b>	<b>Annual return ExxonMobil</b>
2019	36.69	4.79%
2018	-2.84	23.60%
2017	29.64	11.34%
2016	8.87	-12.68%
2015	6.96	19.13%
2014	14.75	10.03%
Standard deviation	2.097	161.84
Covariance		2.019
β		0.962

Source: author

The beta coefficient shows the sensitivity of changes in stock returns and market returns. In other words, it reflects the riskiness of investing in a particular asset. The beta is a measure of market risk. As you can see from the table above, the beta coefficient for ExxonMobil is close to one, which reflects that the stock's profitability is slightly less sensitive to changes in market profitability, but very close.

The expected return on ExxonMobil shares in 2020 can be calculated by:

$$R_i = 2,54 + 0.962*(12.08 - 2,54) = 11.717\%$$

As it is well seen the CAPM model predicts the annual return of the ExxonMobil stock higher than the other models studied above, which is associated with one of the main advantages in the application of the model is that the CAPM model allows to take into account the influence of external factors that do not depend on the progress of the project implementation - country and political risks.

### **3.1.2. Comparative analysis**

A comparative analysis will be conducted based on the most common multiples, as well as compare the position of the company and its change in the period under review with the sector.

As can be seen from Table 9, the P / E ratio in 2016 is 18.5. This means that the investor will receive \$ 1 of profit for an invested \$ 18.5. By purchasing shares with a low P / E, investors expect that the market value of the shares will treble towards its fair value in the long term. As a result, stock quotes will rise, as will the P / E itself.

A high ratio can mean two things: Investors give stocks a high rating because they expect strong earnings growth in the future. The second option is when the company's profits have fallen sharply, and the price of its shares has fallen less. It is the second option that is probable for Exxon. Profits for 2016 fell sharply, and the share price fell less, so the P / E went from very low to very high immediately.

#### **1. Price/Earnings ratio**

To calculate the P/E ratio let us take the average price of the stock per a year and divide it by the average earnings per share in the same year. The result is presented in the Table 13.

**Table 13. P/E calculations**

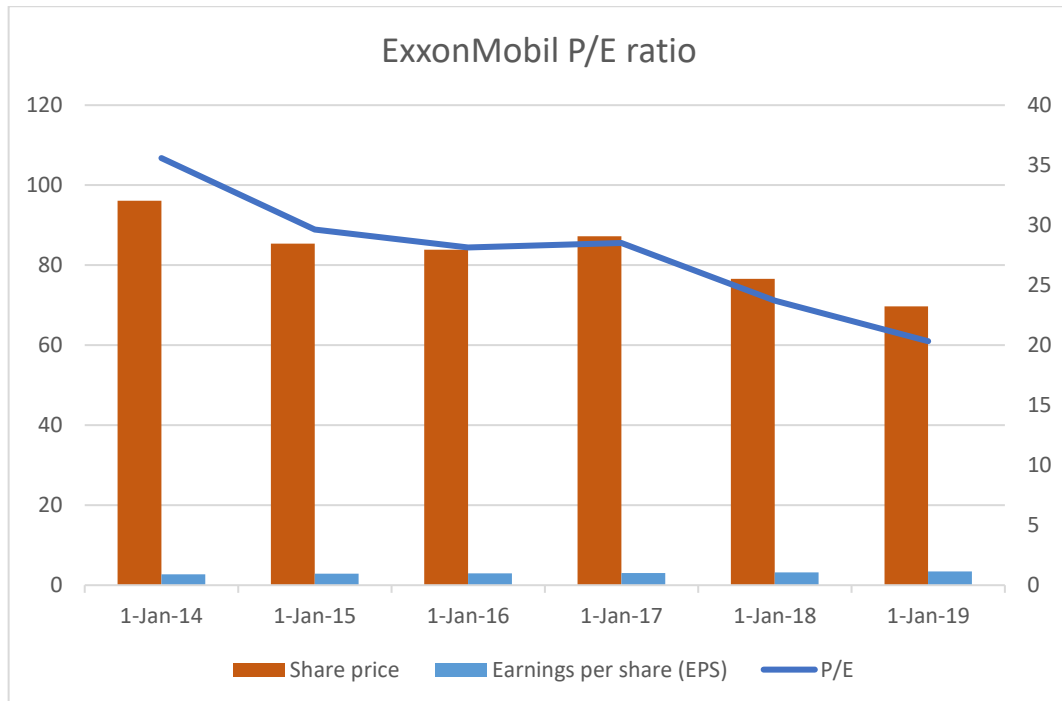
	P/E	=	Share price	÷	Earnings per share (EPS)
2019	20.3309		69.735		3.43
2018	23.71827		76.61		3.23
2017	28.51797		87.265		3.06
2016	28.14094		83.86		2.98
2015	29.64931		85.39		2.88
2014	35.59259		96.1		2.7

Source: author, based on EXXONMOBIL, 2021. *Annual Report / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Investors/Annual-Report#Toourshareholders>> [Accessed 3 February 2021].

As a result, the price / earnings ratio shows the investor in how many years his investment in this business will pay off. In the case of ExxonMobil, this is 20 years for year 2019. In the end, as it was said, the lower the P / E ratio, the better.

As it is well seen from Graph 1 there is a good trend of a decreasing P/E ratio in ExxonMobil company in the years 2014 -2019.

**Graph 1. ExxonMobil P/E ratio trend**



Source: author

However, to understand if this is an attractive indicator, there is a need to compare it with the sector. In Table 7 the results of P/E ratio for Oil and Gas sector are presented.

**Table 14. P/E Sector comparison**

	<b>Exxon Mobil Corp.</b>	<b>Oil &amp; Gas Producers</b>
2019	20.3309	24.86
2018	23.71827	15.80
2017	28.51797	18.37
2016	28.14094	74.32
2015	29.64931	24.07
2014	35.59259	11.21

Source: Gurufocus.com. 2021. *Oil & Gas Industry - GuruFocus*. [online] Available at: <[https://www.gurufocus.com/industry\\_overview.php?industry=Oil-and-Gas](https://www.gurufocus.com/industry_overview.php?industry=Oil-and-Gas)> [Accessed 29 March 2021].

As it is well seen from the P/E Sector comparison table, ExxonMobil in the observed years was doing in average the same as the industry was, however at the some years, the sector was much better, as for example in year 2016.

## 2. Price/Sales ratio

Table 15 shows the calculations of a Price per Sales ration in the in the period under review.

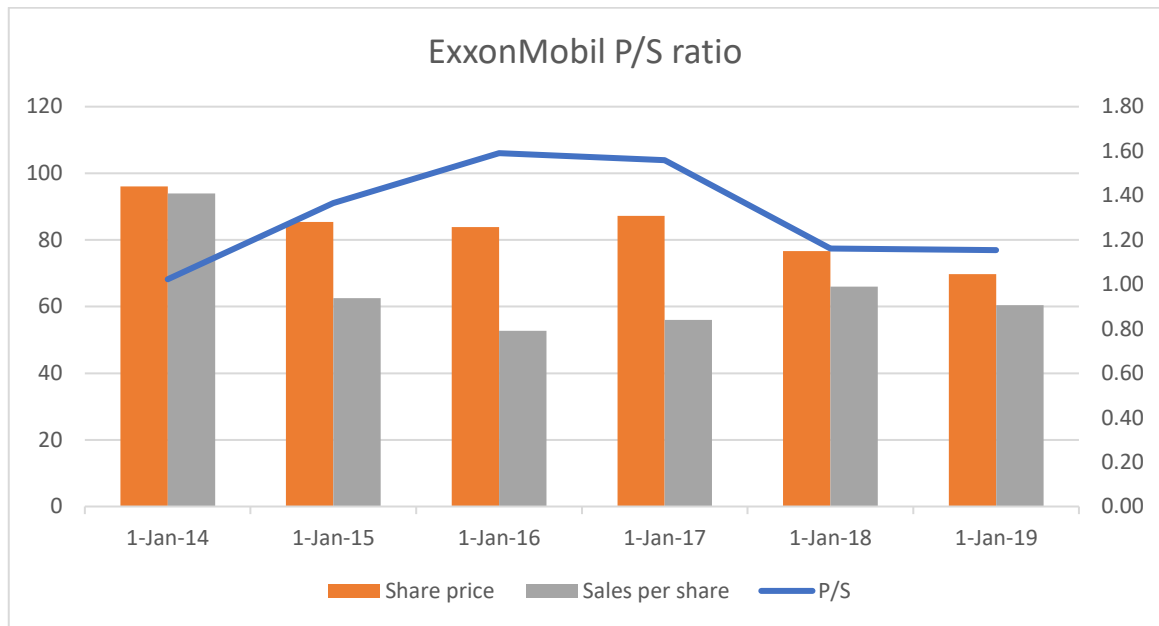
**Table 15. P/S calculation**

	<b>P/S</b>	<b>=</b>	<b>Share price</b>	<b>÷</b>	<b>Sales per share</b>	<b>=</b>	<b>Sales and other operating revenue (in millions)</b>	<b>÷</b>	<b>No. shares of common stock outstanding</b>
2019	1.15		69.735		60.39		255,583		4,232,190,744
2018	1.16		76.61		65.96		279,332		4,234,802,431
2017	1.56		87.265		55.97		237,162		4,237,462,159
2016	1.59		83.86		52.72		218,608		4,146,513,819
2015	1.37		85.39		62.49		259,488		4,152,756,609
2014	1.02		96.1		93.95		394,105		4,194,690,266

Source: author, based on EXXONMOBIL, 2021. *Annual Report / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Investors/Annual-Report#Toourshareholders>> [Accessed 3 February 2021].



**Graph 2. ExxonMobil P/S ratio trend**



Source: author

The lower the P / S, the better, and the less the investor pays for every dollar the company receives from sales. As it can be seen from the Graph 2, there was no a trend in the observed period. The ratio was firstly growing, then decreasing and in the last observed year was stable.

As well as the previous indicator P/S ratio of the company cannot be taken independently, since will not be representative. There is a need to compare the results with the sector indicator (Table 16).

**Table 16. P/S Sector comparison**

	<b>Exxon Mobil Corp.</b>	<b>Oil &amp; Gas Producers</b>
2019	1.15	1.09
2018	1.16	1.29
2017	1.56	1.43
2016	1.59	1.66
2015	1.37	1.28
2014	1.02	0.98

Source: Source: Gurufocus.com. 2021. *Oil & Gas Industry - GuruFocus*. [online] Available at: <[https://www.gurufocus.com/industry\\_overview.php?industry=Oil-and-Gas](https://www.gurufocus.com/industry_overview.php?industry=Oil-and-Gas)> [Accessed 29 March 2021].

It can be noticed from the table that from 6 observed years in 4<sup>th</sup> the ExxonMobil ratio was higher than the industry, but since the difference is very small and can be taken as an error, it can be claimed that the company is on a par with the industry.

As for the application of this ratio, there is an opinion that the P / S multiplier is more suitable for evaluating service companies, for example, telecommunications, while the P / E ratio is universal and can be used for evaluating companies from any industry.

### 3. Price/Book Value

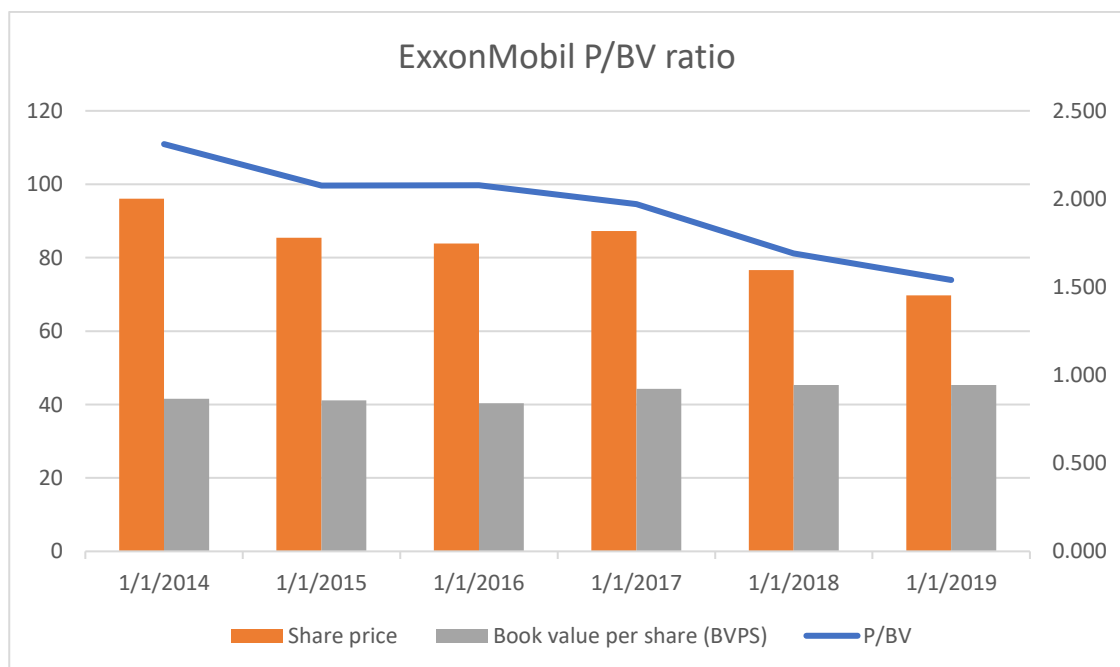
Table 17 shows the calculation of the Price/Book Value of ExxonMobil.

**Table 17. P/BV calculation**

	P/BV	=	Share price	÷	Book value per share (BVPS)	=	Total ExxonMobil share of equity (in millions)	÷	No. shares of common stock outstanding
2019	1.540		69.735		45.28		191,650		4,232,190,744
2018	1.692		76.61		45.29		191,794		4,234,802,431
2017	1.970		87.265		44.29		187,688		4,237,462,159
2016	2.078		83.86		40.35		167,325		4,146,513,819
2015	2.076		85.39		41.13		170,811		4,152,756,609
2014	2.311		96.1		41.58		174,399		4,194,690,266

Source: author, based on EXXONMOBIL, 2021. *Annual Report / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Investors/Annual-Report#Toourshareholders>> [Accessed 3 February 2021].

**Graph 3. ExxonMobil P/BV ratio trend**



Source: author

P / BV > 1, now the value of the ExxonMobil company exceeds its equity capital - the market values the issuer more expensive than its total assets. Not the most positive signal -

the company is “expensive”. However, there are always nuances. Imaginary "overvaluation" can arise simply due to the efficient use of its capital by the company and it should be compared with the sector.

**Table 18. P/BV Sector comparison**

	<b>Exxon Mobil Corp.</b>	<b>Oil &amp; Gas Producers</b>
Dec 31, 2019	1.540	1.28
Dec 31, 2018	1.692	1.63
Dec 31, 2017	1.970	1.58
Dec 31, 2016	2.078	1.74
Dec 31, 2015	2.076	1.54
Dec 31, 2014	2.311	1.76

Source: Source: Gurufocus.com. 2021. *Oil & Gas Industry - GuruFocus*. [online] Available at: <[https://www.gurufocus.com/industry\\_overview.php?industry=Oil-and-Gas](https://www.gurufocus.com/industry_overview.php?industry=Oil-and-Gas)> [Accessed 29 March 2021].

As it is well seen from the table, the ExxonMobil Price/Book Value ratio is consistent with the Oil & Gas Producers sector. And the assumption above about a bad sign can be omitted since the indicator value is normal for the considered industry.

### **3.3 Results interpretation**

As it is seen from the research conducted above, different stock evaluation models giving different results since focusing on different aspects. To understand the common picture there is a need to use all the presented models together. At the same time, it should be noted that technical analysis and fundamental analysis should supplement each other.

One of the drawbacks of fundamental analysis as a method of assessing the growth prospects of stocks of companies in general is the lack of a clear indication of the time required for the stock to be valued by the market as a whole, which can force participants of the stock market to keep an asset for a long time without income, while the shares of other companies are in pronounced trends, allowing their investors to get significant profits.

Another drawback is the impossibility of predicting short-term and, at the same time, quite powerful movements associated with local changes in the market situation and revaluation of general market risks.

Such movements, however, can affect the return on investment to a sufficiently large extent. All of this is the reason why private investors, who tend to speculate on the stock market rather frequently, prefer technical analysis to fundamental analysis, thereby replacing the study of the causes of price movements with the study of the trends themselves.

At the same time, the fundamental analysis represents itself a scope of models, that also have their advantages and disadvantages.

	Advantages	Disadvantages
Discounted cash flow model	It will accurately determine the riskiness or profitability of an investment in a stable asset that constantly generates a certain cash flow.	Requires a lot of guesswork. In particular, regarding the value of the cash flow, its stability and the company's growth rates in the post-forecast period. All this affects the accuracy of the calculations.  Another disadvantage of this approach is the infinitely long forecasting period.
Comparative analysis	In comparative valuation, one determine the value of assets based on the market price of similar assets.	When conducting a comparative analysis, the valuation of one company by two different analysts may differ, depending on which firms were selected for the comparative valuation or, for example, which initial data were used in the comparison (forward, current, etc.)
Dividend discounted model (Gordons)	It is a simple and straightforward model that is suitable for assessing sustainably developing "defensive" companies in a mature stage of their life cycle.	Due to the fact that the model uses a single indicator of the growth rate, it is not suitable for evaluating companies whose cash flows are characterized by a high degree of volatility or which are on the verge of significant changes.
Capital Asset Pricing Model	Allows you to take into account the influence of external factors that do not depend on the progress of the project - country and political risks, rates of return	It is directly related only to companies that are open joint stock companies and, therefore, their shares are traded on the stock markets.  It is difficult to determine which of the investments can be considered risk-free,

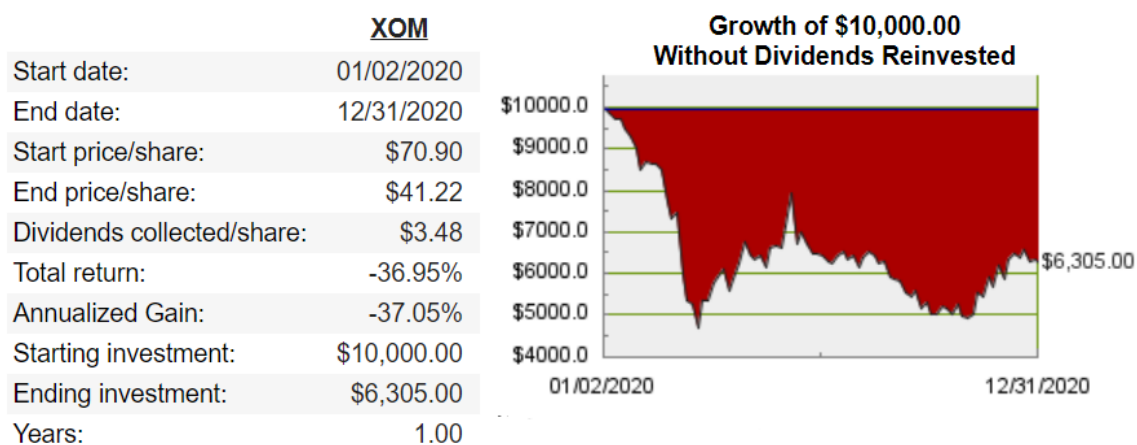
	(excluding risky, industry and average market)	applies only to companies that have sufficient statistics to calculate their beta coefficient or have the ability to find an analogous company whose beta coefficient could be used in the calculations.
--	--	--

Source: author

Taking into account all the observed methods expected stock returns in 2020 should be in the range of 7 - 11%. However, as it is seen on the ExxonMobil, not all the events can be predicted. Calculating various coefficients is not a problem in our time, but the numbers do not take into account the human factor. One can measure past and current P / E ratios, but not how much value investors will be willing to pay for a stock in the future. In addition to planned events and indicators, the market is strongly influenced by factors that cannot be predicted in advance. Such factors are called force majeure, or black swans.

In the beginning of 2020 global oil prices have dropped more than 50% as the coronavirus pandemic sapped demand and Saudi Arabia and OPEC boosted supply, with the benchmark Brent crude closing at \$31.48 per barrel on April 9. Which in turn influenced a lot the stock price of ExxonMobil.

**Figure 4. XOM performance in year 2020**



Source: TICKERTECH, 2021. *XOM YTD Return*. [online] Ytdreturn.com. Available at: <<https://www.ytdreturn.com/xom/>> [Accessed 18 February 2021].

XOM shares have fallen 40% (Figure 4) since the beginning of the year 2020 due to weak oil prices. The company posted a net loss of \$ 1.08 billion in the second quarter. They have increased debt to the level that is appropriate to provide liquidity, given the

uncertainty in the market. Based on the current forecasts, they do not plan to increase it, as it was said by the head of the company.

Moreover, Exxon Mobil posted a net loss of \$ 22.4 billion in 2020. This was the first annual loss for an oil company in at least four decades, Bloomberg notes, and for the first time since the company went public. Exxon Mobil finished the previous year with an annual profit of \$ 14.3 billion. Revenue in 2020 fell by 30.7%, to \$ 46.5 billion.

Due to a sharp deterioration in financial performance, Exxon Mobil has refused to raise its dividend - for the first time since 1982. It was also excluded from the Dow Jones Industrial Index, which reduced demand for the company's shares among investors. As a result, Exxon Mobil shares lost more than a third in 2020.

## **Conclusion**

Ordinary shares are securities that give the investor rights to a certain share of ownership (and risk) in a company.

The actual value of an ordinary share is defined as the price at which it can be sold as a result of a voluntary agreement between the buyer and the seller under the conditions that the transaction should not be carried out urgently, and both parties (buyer and seller) are competent in valuation issues, are not subject to pressure and have sufficiently complete and reliable information about the object of sale.

The estimation of the fair value of the share is based on the assumption that neither the seller nor the buyer of the share has a real advantage in the market.

Methods for determining the true value of a share and predicting its market value are based on two fundamentally different approaches: fundamental and technical. It should be borne in mind that if fundamental analysis is suitable for all stocks, then technical analysis is only for liquid ones (which are actively traded on the stock market).

Thus, fundamental analysis makes it possible to understand whether the shares of a particular company are undervalued or overvalued at the moment, that is, whether they now need to be included in your long-term investment portfolio. And technical analysis allows you to determine the best moment to make deals. The fundamental is used more for long-term investments, while the technical one is used for short-term speculative transactions in the market.

In practice, a combination of the two is often used. These methods complement each other well, and their simultaneous application allows you to get a complete picture and

understanding of the general market picture and most accurately calculate the further direction of price movement.

However, fundamental analysis is less popular, since it is used in long-term investment or in determining the most attractive asset for investment. Recently, fundamental analysis in the stock market has gradually faded into the background.

At the same time, fundamental analysis consists itself from two groups of analysis: absolute and relative.

When valuing based on absolute models (such as discounting cash flows), based on basic variables such as cash flows, growth rates and risk characteristics, it is assumed that the markets make mistakes, correct them over time, and errors can often cover entire sectors or even the entire market.

Comparative valuation assumes that, while the markets do err on the part of individual stocks, on average those estimates are correct. In other words, when one evaluate a company, for example, from the oil and gas sector, relative to other comparable companies, it is assumed that, on average, the market assessed these companies correctly, even if it could make mistakes in assessing each of them separately.

Thus, a share may be overvalued in terms of the discounted cash flow estimate but undervalued in the comparative valuation if all of the comparative valuation companies are revalued by the market. If the entire sector or market were underestimated, the opposite would happen.

To conclude, the assessment of the real value of a financial instrument in comparison with its real market value is the main criterion for making managerial decisions on the implementation of financial investments.

At the same time, related factors are also taken into account, which can affect decision-making in the field of financial investments.

So, in the process of choosing financial investment instruments, an investor sets himself two key tasks, namely: to maximize income and minimize risk. Due to the contradictory nature of these tasks, the justification process is of an optimization nature. For optimization, you can also use various models for evaluating financial instruments in terms of identifying the optimal scale of the ratio of the levels of return and risk, including: the capital assets valuation model - CAPM model; discounted cash flow model, dividend-discounted model - Gordon's model, etc.

The use of these models allows, in aggregate, to form a system of practical principles and methods for assessing the profitability and risk of financial investment instruments.



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## Appendix

**Table 1. Selected Financial Data (US\$ in millions)**

	<b>Dec 31, 2019</b>	<b>Dec 31, 2018</b>	<b>Dec 31, 2017</b>	<b>Dec 31, 2016</b>	<b>Dec 31, 2015</b>
<b>Interest expense</b>	830	766	601	453	311
<b>Net income attributable to ExxonMobil</b>	14,340	20,840	19,710	7,840	16,150
<b>Effective income tax rate (EITR)</b>	34.00%	38.00%	33.00%	13.00%	34.00%
<b>Interest expense, after tax</b>	548	475	403	394	205
<b>Add: Dividends, common shares</b>	14,652	13,798	13,001	12,453	12,090
<b>Interest expense (after tax) and dividends</b>	15,200	14,273	13,404	12,847	12,295
<b>EBIT(1 – EITR)</b>	14,888	21,315	20,113	8,234	16,355
<b>Notes and loans payable</b>	20,578	17,258	17,930	13,830	18,762
<b>Long-term debt, excluding due within one year</b>	26,342	20,538	24,406	28,932	19,925
<b>Total ExxonMobil share of equity</b>	191,650	191,794	187,688	167,325	170,811
<b>Total capital</b>	238,570	229,590	230,024	210,087	209,498
<b>Financial Ratios</b>					
<b>Retention rate (RR)</b>	-0.02	0.33	0.33	-0.56	0.25
<b>Return on invested capital (ROIC)</b>	6.24%	9.28%	8.74%	3.92%	7.81%
<b>Averages</b>					
<b>RR</b>	0.07				
<b>ROIC</b>	7.20%				

Source: EXXONMOBIL, 2021. *Annual Report / ExxonMobil*. [online] ExxonMobil. Available at: <<https://corporate.exxonmobil.com/Investors/Annual-Report#Toourshareholders>> [Accessed 3 February 2021].

**Table 2. Weighted-average effective interest rate for debt**

Interest rate	Debt amount	Interest rate × Debt amount	Weighted-average interest rate
2.40%	1150.00	28	
1.90%	750.00	14	
1.12%	500.00	6	
1.19%	750.00	9	
1.57%	2750.00	43	
2.73%	1250.00	34	
3.18%	1000.00	32	
2.02%	1000.00	20	
2.71%	1750.00	47	
2.99%	2807.00	84	
3.04%	2500.00	76	
2.28%	1000.00	23	
3.29%	1000.00	33	
2.44%	1250.00	31	
3.48%	2000.00	70	
2.61%	2000.00	52	
3.00%	750.00	22	
4.23%	2091.00	88	
3.57%	1000.00	36	
4.11%	2500.00	103	
3.10%	1500.00	46	
4.33%	2750.00	119	
3.45%	2750.00	95	
0.14%	1841.00	3	
0.52%	1227.00	6	
0.84%	1227.00	10	
1.41%	1227.00	17	
6.10%	192.00	12	
6.75%	294.00	20	
6.38%	227.00	14	
0.44%	2461.00	11	
8.73%	1680.00	147	
0.20%	20,458	41	
<b>Total</b>	<b>67,632</b>	<b>1,392</b>	
			2.06%

Source: author, based on EXXON MOBIL CORPORATION, 2020. *ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934*. [online] Available at: <<https://www.sec.gov/Archives/edgar/data/34088/000003408821000012/xom-20201231.htm>> [Accessed 20 November 2021].