

Analysis of Investors' Investment Choices for Oil Companies

Junxi Zhang*

Department of Business and Management, Beijing Royal School, Beijing, China

*Corresponding author: zhang252@lancaster.ac.uk

Abstract. This paper delves into the significance of oil within the realms of energy supply, transportation, and the chemical industry, all while exploring the unique challenges encountered by diverse categories of investors. Employing a multifaceted approach encompassing risk analysis, profitability assessment, and market ratio analysis, this study meticulously dissects the financial records of select oil companies. Consequently, it formulates insightful recommendations aimed at enhancing investor decision-making processes and fostering stronger corporate investor relations. The primary findings of this research emphasize the intricate interplay of numerous factors that sway investors' choices, necessitating a comprehensive evaluation that takes into account risk, profitability, and prevailing market conditions. This study not only identifies these influences but also offers specific, actionable guidance to navigate them effectively. The implications of this research extend to the practical domains of investment decision-making and corporate strategic planning, thus underscoring its intrinsic value in shaping both individual investment portfolios and the strategic directions of oil enterprises.

Keywords: Oil; Investors; Financial Data; Risk Analysis; Profitability.

1. Introduction

In the world of energy and industry, oil is a key resource that fuels the economy, fuels transportation and fuels the development of chemical technologies. Because of its excellent viscosity and viscosity temperature properties, petroleum is moreover a raw ingredient used in the creation of premium lubricants. Petroleum may be used as a chemical raw material to create more than 70,000 different types of petrochemical goods and more than 5,000 different types of organic synthetic materials. This laid the foundation for our comprehensive exploration of the petroleum sector.

The applications of oil go far beyond filling up our cars; It is the lifeblood of the transport and chemical sectors, fostering innovation and sustained growth.

The primary sources of current significant energy sources are gasoline, kerosene, diesel, heavy oil, and natural gas, all of which are created through the refining of petroleum. Global demand for fossil fuels is also at an all-time high, with demand for both coal and natural gas at record levels. The share of fossil fuels in global energy consumption remained unchanged at 82 per cent last year. Oil consumption rose 2.9 million b/d to 97.3 million b/d, slowing from the previous year. Oil production rose by 3.8 million barrels per day, Nigeria suffered the most, with the majority of the decline coming from OPEC nations and the United States. Production of refined products rose by 534,000 barrels per day, mostly from non-OECD nations [错误!未定义书签。].

Oil companies have a wide range of applications in the transportation and chemical sectors, and the following are some of the main application areas:

Firstly, oil companies transport crude oil, natural gas, and petroleum products mainly through pipelines, tankers, railways, and trucks. These modes of transport move petroleum products from production sites to processing plants, distribution centers, and consumers.

Secondly, petroleum products including gasoline, diesel, lubricants, and chemicals are produced at refineries run by oil firms from crude oil. The automotive, industrial, and civilian markets are served by these goods.

Furthermore, oil companies also extract chemical feedstocks from the refining process for the production of various chemical products such as plastics, synthetic fibers, fertilizers, coatings, and solvents.

In addition to oil, oil companies are also involved in the production, storage, and distribution of natural gas. Natural gas is widely used for heating, power generation, and industrial production.

Lastly, oil companies play a crucial role in the field of chemical engineering, where they develop new chemical processes and products to meet market needs and improve production efficiency. These applications in different sectors are interconnected, forming the essential roles that oil companies play in the energy and chemical industries as a whole. Consumption and exploitation of petroleum resources

Studying the pressing issue of resource depletion and the environmental impact of oil extraction helps us understand the challenges facing the industry.

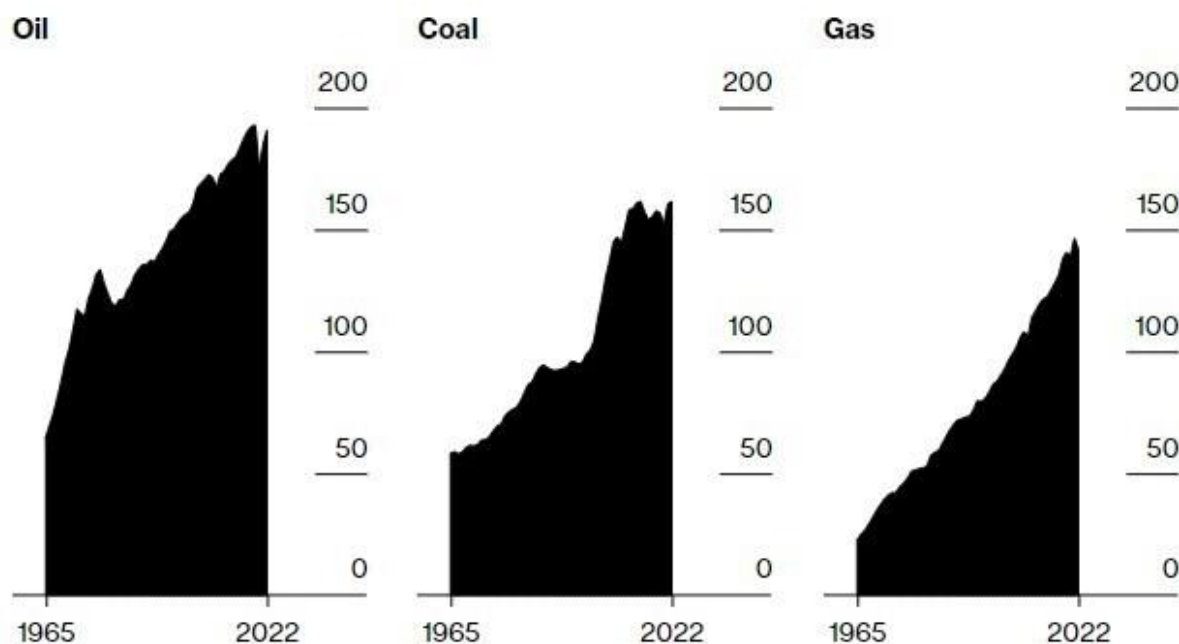


Fig. 1 Global Primary Energy Consumption by Fuel,1965-2022 Exajoules

Figure 1 illustrates that the global demand for fossil fuels has reached historic highs in recent years, with coal and natural gas also hitting new records. Despite the emergence of renewable and clean energy sources, this paper emphasizes that fossil fuels continue to dominate global energy consumption, accounting for a staggering 82%. Notably, petroleum has maintained its long-standing reign as the primary fossil fuel consumer, reclaiming the top position in 2022 after nearly 70 years since becoming the largest fossil fuel consumer in 1965. This underscores the persistence of petroleum as a major global energy source and prompts profound reflections on energy sustainability and transition.

The world's leading oil conglomerates such as (ExxonMobil, Chevron, Conocophillips, Shell, BP, Total, Eni, Equinor) are key players in shaping the dynamics of the industry.

The biggest non-governmental oil and gas producer in the world, Exxon Mobil Corporation has activities in almost 200 countries and territories and employs 71,000 people. With a daily capacity of 6.4 million barrels over 45 refineries in 25 nations, it is one of the biggest refiners in the world.

With operations in more than 180 countries and a range of business in all facets of the oil and gas industry, Chevron Corporation is one of the largest energy firms in the world and the second-largest oil company in the United States. It is based in SAN Ramon, California, in the United States.

With activities and assets in 49 nations, ConocoPhillips ranks as the third-largest oil business in the United States. Conocophillips has a solid reputation in the industries of offshore drilling, exploration, refining, and manufacturing as an integrated energy corporation. Conocophillips has more than 10,000 petrol stations and this well-known lubricant trademark worldwide on the downstream side.

Shell is the world's top oil company, a super giant.

William Knox D'Arcy established BP in 1909 under the name Anglo Persian Oil Company. In 1935, this name was changed to British Iranian Oil Company, and in 1954, it was given its current name. One of the biggest oil and petrochemical groups in the world, BP was created by the merger of the former BP, Amoco, Arco, and Castrol. The sun deity of ancient Greece is honored in the name of BP's sunflower logo.

BP was rated 10th on the most recent Fortune list of the 500 largest corporations in the world, which was published on July 20, 2016.

Total is one of the world's four largest petrochemical companies, headquartered in Paris, France, with lubricants operations in more than 110 countries around the world. On May 7, 2003, the global unified name was Total (Total), which is composed of three brands: Total, FINA (FINA) and ELF. The company is the result of the merger of Total of France and FINA of Belgium in November 1998 and the acquisition of ELF of France by Total of France in March 2000.

One of the biggest producers of crude oil in the world as well as a significant natural gas exporter to Europe is Equinor. In Scandinavia, it is a well-known provider and reseller of petroleum products. The business is involved in petroleum product discovery, production, smelting, transportation, and sales. The company's business has spread to other continents like South America, Europe, and Asia.

This essay explores the many difficulties that different investors encounter in the erratic oil market. For instance, since the COVID-19 outbreak, the world's economy and quality of life have been badly harmed, and the deteriorating Sino-American relationship has raised concerns about the global industrial and supply chains. The oil and gas industry has been affected by the pandemic and the fall in oil prices, and the energy transition has added uncertainties and other challenges.

Understanding the impact this paper has on investment decisions and how it affects the relationship between this paper, companies and investors is critical. The impressive ROA of various oil stocks has attracted investors. However, this paper, the risk of different companies also brings challenges to the volatility of stocks, which can affect the interests of risk-averse investors. Oil companies with potential attract PEG investors in pursuit of sustainable growth and stable profits. Some oil companies with a high debt ratio are prone to financial security problems. Index investors may prefer to buy oil companies with diversified investment risk and low investment costs. DCF investors appear to be investing in stocks based on long-term valuation prospects. Different types of investors consider different factors when selecting investment targets, including asset appreciation, profitability, and financial freedom.

2. Methods

The specific contents and formulas of Risk, Profitability and Market Ratio used in the study are introduced in detail.

2.1. Risk Analysis Methods

Historical volatility is an important indicator used to measure the volatility of stock prices or asset prices. The calculation steps are as follows:

Collect stock price data for the past N time periods, usually based on daily closing prices [1]. Calculate the daily rate of return for each period as follows:

$$\text{Daily yield} = (\text{current closing price} - \text{previous closing price}) / \text{previous closing price} \quad (1)$$

Calculate the standard deviation of the daily return, i.e. the historical volatility [2]. The standard deviation formula is as follows:

$$\text{Historical volatility} = \text{Standard deviation (daily yield)} \quad (2)$$

The application of historical volatility is to help investors understand the volatility of stock prices and thus assess potential risks.

2.2. Analysis method of profit capacity

Profit pothis paperr analysis includes several metrics, the most commonly used of which include net profit margin, gross profit margin, and operating profit margin.

The percentage of total sales revenue that the business actually earned after the sale is known as the net profit margin [3]. The following is the calculating formula. The calculation formula is as follows:

$$\text{Net profit margin} = (\text{net profit}/\text{total sales revenue}) \times 100\% \quad (3)$$

Gross margin: represents the percentage of gross profit remaining after the sale of the company as a percentage of the total sales revenue [4]. The calculation formula is as follows:

$$\text{Gross profit margin} = (\text{gross profit}/\text{total sales revenue}) \times 100\% \quad (4)$$

These metrics help investors understand a company's profitability, with net margin emphasizing net profit and gross margin focusing on costs in sales revenue.

2.3. Market ratio analysis method

P/E and P/B ratio interpretation and computation [5]. The present cost of a company's stock and its earnings per share are expressed as a ratio known as the P/E Ratio. The present cost of a company's stock and the value of its net assets per share are measured using the P/B Ratio (P/B Ratio) [6].

The P/E ratio is calculated as follows:

$$\text{P/E ratio} = \text{stock price}/\text{earnings per share} \quad (5)$$

The formula for calculating price-book ratio is as follows [7]:

$$\text{Price-to-book ratio} = \text{stock price}/\text{net asset value per share} \quad (6)$$

These measures are used to assess a company's valuation and market position, and the P/E ratio reflects investors' expectations for future earnings.

Through the above methods and indicators, investors can comprehensively analyze the risk, profitability and market valuation of oil enterprises, so as to make better investment decisions. These analytical tools provide important information about a company's operating conditions and market position, helping investors make informed investment choices.

Analysis Methods and data sources:

In this study, a mixed research method was adopted, combining qualitative and quantitative analysis. Data sources include the following aspects:

The organization's financial statements, which include the income statement, balance sheet, and cash flow statement, are the main source of data.

Secondary data sources include market research reports, industry analysis, and competitor information.

Risk analysis, profitability analysis and market ratio analysis:

The following analytical tools this paper used in this study to delve into the selection of companies: Risk analysis: A risk assessment model is used, including quantitative analysis of risk indicators, to identify potential risk factors such as market risk, economic risk and policy risk.

Profitability analysis: Through the income statement and related financial data, the company's profitability is analyzed, including the calculation and comparison of gross profit margin, net profit margin and operating profit margin.

Market ratio analysis: The company's market position and competitiveness are evaluated, and market ratio indicators such as price-earnings ratio, price-to-book ratio and price-to-sales ratio are used to analyze the valuation and investment attractiveness of the company.

The following analytical tools this paper used in this study to delve into the selection of companies:

Risk analysis: A risk assessment model is used, including quantitative analysis of risk indicators, to identify potential risk factors such as market risk, economic risk, and policy risk.

Profitability analysis: Through the income statement and related financial data, the company's profitability is analyzed, includes operating profit margin, net profit margin, and gross profit margin computation and comparison.

Market ratio analysis: The company's market position and competitiveness are evaluated, and market ratio indicators such as price-earnings ratio, price-to-book ratio, and price-to-sales ratio are used to analyze the valuation and investment attractiveness of the company.

The remainder of this paper is organized as follows: In Section 2, this paper provide an overview of the data used in this study, including their sources and the methodology employed for data processing into the measures used for analysis. Section 3 presents and discusses the primary research findings, highlighting their significance in the context of company selection.

Main Research Conclusions:

After employing the aforementioned analytical tools, our study yielded several key conclusions:

Risk Assessment:The risk analysis revealed that market risk, particularly fluctuations in commodity prices, posed a significant challenge for the selected companies. Economic and policy risks this paper also identified as noteworthy factors impacting company performance and decision-making [8].

Profitability Insights:The profitability analysis indicated variations among the chosen companies. While some demonstrated robust profit margins, others faced challenges in maintaining profitability, highlighting the importance of financial stability [9].

Market Competitiveness:Through market ratio analysis, this paper determined that certain companies exhibited higher price-earnings ratios, indicating investor confidence and potentially overvaluation. Conversely, companies with lothis paperr ratios faced questions regarding their market competitiveness [10].

These findings contribute to a comprehensive understanding of company selection in the context of risk, profitability, and market dynamics. In the following Section 4, this paper delve deeper into the implications of these conclusions and discuss their relevance to investment decisions and corporate strategy. Finally, this paper conclude by summarizing our key results and contributions to the field.

3. Data

Time frame 2023

The table 1 provides a summary of key financial and performance indicators for three major oil companies: NYSE:BP (BP), NYSE:COP (ConocoPhillips), and NYSE:CVX (Chevron Corp). These metrics shed light on their profitability, financial strength, and overall performance.

Table 1. Basic information about the data

Company Name	NYSE:BP	NYSE:COP ConocoPhillips	NYSE:CVX Chevron Corp.
Gross Margin	22.62%	34.20%	31.26%
Operating Profit Margin	16.14%	28.36%	15.91%
Net Profit Margin	7.97%	19.37%	14.09%
ROE	27.47%	26.64%	19.11%
ROA	6.43%	13.95%	11.76%
ROIC	9.99%	15.53%	11.64%
Cash Debt Ratio	0.49	0.41	0.45
Equity Ratio	0.26	0.53	0.63
Debt to Equity Ratio	0.86	0.35	0.14

Profitability:

Gross Margin: This indicates the percentage of revenue retained after the cost of goods sold. BP's gross margin stands at 22.62%, while ConocoPhillips and Chevron Corp report higher figures at 34.20% and 31.26%, respectively.

Operating Profit Margin: This represents the profitability from core operations. ConocoPhillips leads with an impressive 28.36%, followed by Chevron Corp (15.91%) and BP (16.14%).

Net Profit Margin: Reflects the percentage of revenue converted into net profit. ConocoPhillips excels here with 19.37%, while BP and Chevron Corp show 7.97% and 14.09%, respectively.

Return on Investment:

ROE (Return on Equity): This reveals how efficiently shareholders' equity is used for profit. BP records 27.47%, ConocoPhillips 26.64%, and Chevron Corp 19.11%.

ROA (Return on Assets): It gauges profitability concerning total assets. ConocoPhillips scores the highest at 13.95%, followed by Chevron Corp (11.76%) and BP (6.43%).

ROIC (Return on Invested Capital): Reflects the return generated from all invested capital. ConocoPhillips leads with 15.53%, Chevron Corp records 11.64%, and BP shows 9.99%.

Financial Strength:

Cash Debt Ratio: BP has a ratio of 0.49, indicating it has more cash than debt. ConocoPhillips shows a similar strength with 0.41, while Chevron Corp's ratio is 0.45.

Equity Ratio: This reflects the proportion of assets financed by equity. ConocoPhillips boasts the highest at 0.53, followed by Chevron Corp (0.63), and BP (0.26).

Debt to Equity Ratio: This ratio shows the balance between debt and equity. BP records 0.86, Chevron Corp has 0.14, and ConocoPhillips shows 0.35.

In summary, ConocoPhillips exhibits strong profitability and financial strength, while Chevron Corp demonstrates a solid balance between profitability and financial stability. BP shows a comparatively lower level of profitability and financial strength. These metrics provide valuable insights for investors and stakeholders assessing these oil companies.

4. Results

4.1. Report Results

In terms of risk analysis, this paper first examined the trading volumes of three oil companies (NYSE: BP, NYSE: COP ConocoPhillips, NYSE: CVX Chevron Corp.). According to the data, the trading volume for NYSE: BP is 211,914, NYSE: COP is 1,664,579, and NYSE: CVX is 17,439,700. These numbers reflect the level of market activity for these companies.

Regarding the Price-to-Earnings (P/E) ratio, NYSE: BP has a P/E ratio of 6.20, NYSE: COP has a P/E ratio of 11.86, and NYSE: CVX has a P/E ratio of 10.52. Lower P/E ratios often indicate optimism among investors about the future earnings potential of the companies.

Additionally, we also examined the market capitalization of these three companies. NYSE: BP has a market capitalization of 1112.08 billion, NYSE: COP has a market capitalization of 1479.74 billion, and NYSE: CVX has a market capitalization of 3108.96 billion. These figures reflect the overall value of these companies in the market.

In terms of profitability analysis, this paper investigated the gross profit margin, operating profit margin, and net profit margin of these three companies. The gross profit margin reflects the company's profitability in production and sales. For example, NYSE: BP has a gross profit margin of 22.62%, NYSE: COP has a gross profit margin of 34.20%, and NYSE: CVX has a gross profit margin of 31.26%. These figures demonstrate their profitability in producing and selling products.

The company's operational profitability is reflected in its margin of operating profit and net profit margin. As an illustration, the operating profit margin for NYSE: BP is 16.14%, and the net profit margin is 7.97%. Investors must pay close attention to these metrics since they reveal the profitability and operational effectiveness of the business.

In market ratio analysis, this paper examined the Return on Equity (ROE), Return on Assets (ROA), and Return on Invested Capital (ROIC) of these three companies. These metrics reflect how efficiently the companies manage their assets to create shareholder value.

For instance, NYSE: BP has an ROE of 27.47%, ROA of 6.43%, and ROIC of 9.99%. These numbers indicate the company's efficiency in utilizing assets.

4.2. Analysis Results

In the in-depth interpretation of risk analysis results, it is observed that trading volume is a vital indicator of market activity. The high trading volume of NYSE: COP may signify more market interest and liquidity. The lower P/E ratio for NYSE: BP might indicate it is undervalued, according to market sentiment.

Profitability analysis reveals that the higher gross and net profit margins of NYSE: COP may reflect its advantages in product pricing and cost management. Meanwhile, the lower net profit margin of NYSE: BP may require more operational improvements.

Market ratio analysis shows that the high ROE of NYSE: BP suggests that the company efficiently utilizes shareholder equity. However, the higher ROIC of NYSE: COP may indicate a higher capital return. These insights can provide investors with information about the company's value and potential investment opportunities.

5. Conclusion

Throughout the research process, this paper conducted a thorough analysis of the challenges investors face when choosing to invest in oil companies. The demands and risk preferences of different types of investors played a crucial role in decision-making. These challenges include market volatility, policy risks, and corporate financial conditions. By analyzing different types of investors, a better understanding of their needs was gained, and relevant recommendations were provided to assist them in making informed investment decisions.

In-depth research was conducted into the challenges faced by different types of investors. For example, risk-averse investors are concerned about market volatility and corporate financial conditions. Conversely, investors seeking long-term growth and stable profits are more focused on a company's return on equity (ROE) and profitability. These diverse challenges require comprehensive consideration in investment decisions to meet the specific needs of investors.

To address the research questions, this paper adopted a mixed research method, combining qualitative and quantitative analysis. Data sources included company financial statements, market research reports, and competitor information. Analytical tools such as risk analysis, profitability analysis, and market ratio analysis were utilized to delve into investment choices.

By choosing research methods and analyzing data sources, we ensured the credibility and accuracy of our study. Financial statements provided detailed information about the financial condition of companies, while market research reports and competitor information offered insights into the market background and competitive environment. These data sources allowed us to conduct a comprehensive analysis of investment choices.

Through an analysis of investment choices in oil companies, this paper has drawn several important conclusions that can guide investors and companies in decision-making and strategy formulation.

Our research indicates that investors' decisions are influenced by various factors that require comprehensive consideration, including risk, profitability, and market conditions. Different types of investors consider different factors when selecting investment targets, including asset appreciation, profitability, and financial stability.

We have provided relevant recommendations for different types of investors and companies. For risk-averse investors, we recommend focusing on market volatility and policy risks while selecting

financially stable companies. For investors seeking long-term growth, we suggest paying attention to ROE and profitability, selecting companies with sustainable growth and stable profits.

Even while our research yielded many insightful conclusions, there are some limits that must be addressed. It is crucial to openly acknowledge these constraints and suggest potential lines of inquiry and advancement.

During the research process, we relied on existing financial statements and market data. These data sources may be subject to limitations in terms of time range, and future data may differ. Additionally, our research was limited to specific oil companies, and future research could expand the sample size to gain a more comprehensive understanding.

To overcome research limitations, future studies can incorporate a broader range of data sources, including real-time market data and a more extensive sample of companies. This would enable a more accurate assessment of market trends and investment choices. Furthermore, future research can explore additional investor types and their decision-making processes to gain a deeper understanding of their needs and preferences.

In summary, by conducting an in-depth analysis of investors' investment choices, this paper has provided valuable insights into investing in oil companies. Different types of investors need to consider various factors and align their decisions with their specific needs and risk preferences. Our research offers relevant recommendations and highlights directions for future research and improvements.

References

- [1] Stephen J. Brown, Jerold B. Warner, Using daily stock returns: The case of event studies. *Journal of Financial Economics*. 1985, 3-31.
- [2] Chun D., Cho H., Ryu D. Discovering the drivers of stock market volatility in a data-rich world, *Journal of International Financial Markets, Institutions and Money*. 2023, 101684.
- [3] Molyneux P., Reghezza A., Xie R. Bank margins and profits in a world of negative rates. *Journal of Banking & Finance*. 2019, 105613.
- [4] Andrea C., Sánchez, Hannah N., Kamau, Francesca Grazioli, Sarah K. Jones, Financial profitability of diversified farming systems: A global meta-analysis, *Ecological Economics*. Retrieved from: <https://doi.org/10.1016/j.ecolecon.2022.107595>. 2022. Assessed at 20 Sep 2023.
- [5] Houmes R., Chira I. The effect of ownership structure on the price earnings ratio — returns anomaly, *International Review of Financial Analysis*. Retrieved from: <https://doi.org/10.1016/j.irfa.2014.11.017>. 2015. Assessed at 20 Sep 2023.
- [6] Rahman M. L. Shamsuddin A. Investor sentiment and the price-earnings ratio in the G7 stock markets, *Pacific-Basin Finance Journal*. Retrieved from: <https://doi.org/10.1016/j.pacfin.2019.03.003>. 2019. Assessed at 20 Sep 2023.
- [7] Keith S., Lam K. The relationship between size, book-to-market equity ratio, earnings–price ratio, and return for the Hong Kong stock market, *Global Finance Journal*. Retrieved from: [https://doi.org/10.1016/S1044-0283\(02\)00049-2](https://doi.org/10.1016/S1044-0283(02)00049-2). 2002. Assessed at 20 Sep 2023.
- [8] McLaughlin C., Vardon P. Clark Nardinelli, Abatract 1 - Integrating Risk Assessment and Cost Benefit Analysis: An Economics Perspective on International Trade and Food Safety, Editor(s): Christine E. Boisrobert, Aleksandra Stjepanovic, Sangsuk Oh, Huub L.M. Lelieveld, Ensuring Global Food Safety. Retrieved from: <https://doi.org/10.1016/B978-0-12-374845-4.00032-1>. 2010. Assessed at 20 Sep 2023.
- [9] Yin L. Yang Z. The profitability effect: Insight from a dynamic perspective, *International Review of Financial Analysis*. Retrieved from: <https://doi.org/10.1016/j.irfa.2022.102059>. 2022. Assessed at 20 Sep 2023.
- [10] Chiah M., Long H. Zaremba A., Umar Z. Trade competitiveness and the aggregate returns in global stock markets, *Journal of Economic Dynamics and Control*. Retrieved from: <https://doi.org/10.1016/j.jedc.2023.104618>. 2023. Assessed at 20 Sep 2023.