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Executive Summary

In this master thesis, we have performed an analysis and valuation of Frontline Plc.

The problem statement in the thesis is defined as:

“What is the fundamental value of a share in Frontline Plc, traded at the New York Stock Exchange as of 31.12.2022?”

With a sub-problem statement:

“Should the fictive investor buy or sell the Frontline Plc stock when his objective is financial gain?”

The valuation comprises numerous analyses that form its foundation. Initially, we scrutinized the financial statement of the company, comparing historical key figures of Frontline Plc with an industry benchmark. This step aimed to enhance our comprehension of the company’s present financial standing. Subsequently, we conducted an extensive strategic analysis encompassing both internal and external facets of the company. A comprehensive examination of macro-economic factors and potential competitive advantages is crucial to grasp the company’s capacity and opportunities for future growth.

Drawing upon the insights gained from the financial statement analysis and strategic analysis, we embarked on forecasting the company’s performance for the next five years. We deliberately selected a period of five years since it becomes impractical and unrealistic to forecast cash flows over significantly longer periods. The business and economic landscape can undergo substantial transformations over extended periods, making it challenging to make precise predictions regarding future trend. In this thesis, the primary approach to valuation is the discounted cash flow (DCF) analysis and economic value added (EVA), wherein the projected variables are utilized as inputs in our models. Recognizing the inherent uncertainty associated with the value estimate from these models, we also employed an asset-based valuation together with relative valuation as control methods.

Addressing the problem statement, our conclusion asserts that the stock is presently undervalued in the market. Consequently, we recommend a buy recommendation to the fictive investor, highlighting the potential for favorable returns.

1. Introduction

This chapter serves to outline the objectives and motivations behind our thesis, as well as our rationale for selecting a specific company. Additionally, we provide an overview of the assumptions and limitations that shape our thesis, followed by an outline of the overall structure of the thesis.

1.1 Purpose

The purpose of this thesis is to conduct a comprehensive valuation of Frontline Plc's share. The primary objective is to estimate the company's fundamental value and determine whether the shares traded on the New York Stock Exchange are overpriced, underpriced, or correctly priced in relation to this estimated value. The fundamental value will be determined through the implementation of different approach such as present value approach, asset-based approach, and a relative approach. The valuation process incorporates financial theory, strategic analysis, and projected future values of the company and the shipping industry. Historical accounting figures of the company are also examined. The resulting valuation is a subjective assessment that aligns with the assumptions, estimations, and evaluations conducted throughout the thesis. It is important to note that this thesis is based solely on publicly available information.

1.2 Problem Statement

The purpose of this investigation is to evaluate whether a fictive investor should consider investing in the shipping industry, considering the current global challenges related to the industry. The shipping industry operates in a dynamic and complex environment that is influenced by various factors such as economic conditions, geopolitical events, regulatory changes, and environmental concerns. This study aims to provide a comprehensive analysis of Frontline Plc, including an assessment of market trends, competitive dynamics, and potential risks and opportunities. By examining the industry's performance, financial indicators, and growth prospects, we seek to determine the attractiveness of investing in the shipping sector and provide valuable insights for potential investors.

The problem statement for the thesis is as follows:

“What is the fundamental value of a share in Frontline Plc, traded at the New York Stock Exchange as of 31.12.2022?”

With a sub-problem statement:

“Should the fictive investor buy or sell the Frontline Plc stock when his objective is financial gain?”

1.3 Assumptions and Limitations

In this thesis, we use historical accounting data from the past six years, encompassing the financial year that concluded in 2022 as the latest period under consideration. The analysis and valuation process relies on publicly available information including annual reports, quarterly reports, news articles, and industry-specific information from reputable sources on the internet. Our approach deliberately excludes seeking information directly from the company to ensure that the valuation is conducted in a manner consistent with industry-standard practices, akin to an independent analyst’s evaluation.

1.4 Thesis Structure

Part 1 serves as the foundation for our analysis, encompassing four comprehensive chapters that delve into the shipping industry, theory, and various valuation methods. The journey commences with chapter 2, which presents a historical development of the shipping industry along with an exploration of Frontline Plc’s specific trajectory. Following that, chapter 3 offers a theoretical foundation where financial and strategic theories are presented. Chapter 4 provides an in-depth overview of valuation methodologies, highlighting the rationale behind the selection of our specific valuation method. Additionally, chapter 5 conducts strategic analyses, evaluating both internal and external factors that impact the company as well as the broader industry.

Part 2 focuses on the comprehensive evaluation of Frontline Plc’s financial statements during the analysis period. It commences with chapter 6, wherein we undertake an in-depth financial statement analysis of Frontline Plc. In this chapter, we reformulate and modify the statements to enhance their suitability for ratio analysis, forecasting and, valuation purposes. Additionally, this chapter contains our analysis of Frontline Plc’s profitability, liquidity, and solvency. Chapter 7 contains our estimation of the cost of capital.

Part 3 of this thesis encompasses the forecast, final valuations, sensitivity analysis and conclusion, providing a comprehensive culmination of our analysis. It commences with chapter 8, where we meticulously prepare our forecast, leveraging the insights gained from preceding chapters. This forecast serves as a crucial basis for our valuation process. chapter 9 is dedicated to the implementation of our valuation methods. Here, we apply these methods to estimate the value of Frontline Plc as of 31.12.2022. By employing different valuations methodologies, we aim to provide a comprehensive assessment of the company's intrinsic value. In chapter 10, uncertainty is addressed, and several simulations are performed. Finally, in chapter 11, we discuss the valuation results and present a conclusion related to the problem statement.

2. Description of the Company and the Shipping Industry

Frontline Plc holds a prominent position as a global leader in the maritime transportation of crude oil and refined products. Frontline's shares are publicly traded on the New York Stock Exchange and Oslo Stock Exchange under the ticker symbol "FRO". Frontline Plc's headquarters are located in Limassol, Cyprus.

2.1 Frontline Plc

2.1.1 History of Frontline Plc

Frontline Plc has its roots in Frontline AB, an entity established in 1985 and publicly traded on the Stockholm Stock Exchange between 1989 and 1997. In 1996, Hemen Holding Limited, a company indirectly controlled by trusts established by John Fredriksen for the benefit of his immediate family, acquired a majority stake in Frontline AB. Subsequently, Frontline AB underwent a relocation process, shifting its jurisdiction from Sweden to Bermuda, and in May 1997, it became listed on the Oslo Stock Exchange (Frontline Plc, n.d.).

The following year marked a significant milestone for Frontline AB as it merged with London & Overseas Freighters (LOF), a Bermuda-based company. As a result of the merger, LOF emerged as the surviving entity, and it was subsequently renamed Frontline Ltd. ("Frontline").

In a more recent development, shareholders of the company have granted their approval for the redomiciliation of Frontline from Bermuda to Cyprus. This significant decision was made on December 20, 2022. Subsequently, Frontline has

announced that the Registrar of Companies and Official Receiver of the Republic of Cyprus has issued a temporary redomiciliation certificate. As a result, the redomiciliation process has officially commenced and is effective as of the beginning of the year 2023 (The Royal Gazette, 2023).

2.1.2 Operations of the company

Frontline Plc (Frontline) is a prominent shipping company specializing in the transportation of crude oil and refined petroleum products. The company's fleet consists of very large VLCCs which are crude carriers, Suezmax tankers, and Aframax tankers. These vessels actively participate in both spot and time charter markets (Frontline plc, 2022). Frontline primarily utilizes its VLCCs and Suezmax tankers for the transportation of crude oil, while its Aframax tankers are primarily deployed for the transportation of refined products, fuel, and smaller-scale crude oil from various ports. Additionally, Frontline engages in vessel chartering, purchase, and sale activities. The company operates its oil and product tankers across several locations, including Norway, Singapore, Liberia, the Marshall Islands, Cyprus, the UK, Bermuda, China, and India (Global data, n.d.).

In a later stage of this master thesis, we will delve further into a detailed analysis of Frontline plc, providing additional information about the company's operational performance, considering factors such as their fleet size, vessel types, utilization rates, and industry trends. By examining these key aspects, we aim to gain a comprehensive understanding of Frontline plc's position in the shipping industry and evaluate their potential for sustainable growth and profitability.

2.2 The Shipping industry

The shipping industry has been and continues to be the primary driver of global trade, with waterways serving as the preferred mode of transportation for large-scale cargo. Data indicates that approximately 90 percent of global trade is facilitated by ships, with significant contributions from general cargo vessels, tankers, and container ships. When we refer to the shipping industry in common parlance, we are primarily referring to maritime shipping (Danish Ship Finance, n.d; Marvest, n.d).

While it is important to note that passenger ships, inland navigation, and fishing are also encompassed within the broader definition of the shipping industry, the traditional understanding of this industry primarily revolves around the trade routes across the world's oceans. The significant trade connections between Asia and Europe, as well as those spanning the Atlantic and Pacific, hold particular significance within this context. (Danish Ship Finance, n.d.; Marvest, n.d.)

The international shipping industry faced significant challenges at the beginning of the 21st century, marked by a deep crisis characterized by overcapacity and turbulence within various companies. This crisis was further compounded by declining freight and charter rates, adversely affecting shipping companies. However, the industry has responded with consolidation efforts, as many shipping companies have formed alliances or undergone mergers. Among the top 20 largest shipping companies worldwide in 2013, more than half have either exited the market or been acquired by larger competitors (Marvest, n.d.).

As a result, the shipping industry has experienced a notable recovery in profitability, with a sustained upward trajectory. Global trade has exhibited steady growth in recent decades, although it has encountered some recent downward trends due to factors such as the aftermath of the pandemic crisis, stricter regulatory compliance, armed conflicts, and volatile economic conditions like inflation pressing governmental entities to try to decrease economic activity (UNCTAD, 2022).

In 2020, the international maritime trade experienced a significant decline of almost four percent due to the repercussions of the COVID-19 pandemic. However, in 2021, as the global economy began to regain strength and pandemic-related restrictions eased, there was a notable rebound in maritime trade. Continued consumer spending contributed to this recovery, resulting in a growth of 3.2 percent, totaling 11 billion tons. Although the trade volume was slightly below the pre-pandemic level, it signified a positive trend. It is important to note that the recovery was not uniform across all sectors. Containerized cargo, gas, and dry bulk shipping witnessed expansion, while the shipment of crude oil experienced a decline from 16.0 percent to 15.5 percent of the overall maritime trade (UNCTAD, 2022).

Shipowners, in response to new environmental regulations and the need for cleaner fuel options, may opt to recycle their existing vessels and transition to more environmentally friendly ones. This shift towards greener vessels may be driven by the desire to comply with stricter environmental regulations and reduce the overall environmental impact. However, shipbuilders may face challenges due to environmental regulations imposed on the shipbuilding process, particularly regarding inputs like steel. These regulations can increase costs and create a greater emphasis on recycling practices (UNCTAD, 2022).

The International Maritime Organization (IMO) plays a crucial role in shaping environmental regulations for the shipping industry. Their regulations encompass various aspects such as air pollution control, ballast water treatment, and the implementation of double hulls for tankers. These regulations exert a substantial influence on the decision-making processes pertaining to ship design, construction, and operations, affecting both vessel producers and operators (IMO, n.d.).

Beginning at the start of 2023 we will also see three new IMO regulations be implemented, with the aim of reducing carbon emissions and mitigating the environmental impact of shipping. These regulations reflect the industry's commitment to addressing environmental concerns and promoting sustainable practices.

In our comprehensive strategic analysis, we will delve into the industry-specific details in greater depth, examining factors such as the cyclical nature of the industry influenced by its correlation with GDP and oil prices, geopolitical risks, regulatory compliance, and other pertinent considerations.

3. Theoretical Groundwork

3.1 The Concept of Value

It is important to differentiate between the notions of “Price” and “Value”. When purchasing a valuable item, the buyer agrees to a specific price. Thus, the price is an observable magnitude derived from the actual transactional cost. On the contrary, the value is determined by the buyer’s personal preferences, making it a subjective measure. Consequently, the concept of value must be understood as a perception based on subjective worth (Town, 2018). Valuation primarily involves

estimating the probable price at which the item would be exchanged in a specific market, at a particular time, and under defined conditions.

There is contention among some individuals that the market value of a company does not always accurately reflect its fundamental value. This viewpoint is grounded in the notion that it is possible to analyze whether the market value truly corresponds to the fundamental value of the company. When conducting a financial analysis of a company, an analyst must interpret and assess accessible information, resulting in uncertain projections of future economic progress. Consequently, different brokerage companies may provide disparate recommendations for the same stock, as their analysts possess varying perceptions of its value, despite having access to identical information (Dyrnes, 2011, p.81). Therefore, it appears imprudent to assume that an asset or entity of significant value possesses a solitary and definitive worth. Instead, it would be more prudent to perceive valuation as an approximation or estimation of a hypothetical price, derived from specific market assumptions. Prior to undertaking a stock valuation, it is crucial to establish the foundations of value. This raises the fundamental question of “Value for Whom”? In order to address this question, we must ascertain whether it pertains to the subjective value for an individual, the equilibrium price within a market, or the hypothetical price negotiated by a select group of parties (Dyrnes, 2011, p.92).

The International Valuation Standard Council (IVSC) employs three distinct bases of value (IVSC, 2021):

1. Open market value
2. Closed transaction value
3. Value in use

The open market value represents an estimation of the probable price that would be exchanged in a hypothetical transaction within a free and unrestricted market. Nevertheless, it is essential to comprehend and delineate the specific market where the valued object typically undergoes trading. The closed transaction value refers to an approximation of the price associated with a transaction involving two or more pre-established parties. This value serves as the inherent basis when the market value appears to be unfeasible or incongruous. The value in use is an estimation of the outcome derived from owning and utilizing the object, rather than hypothetical

transactional selling price. In accordance with IAS 36 Impairment of Assets, the value in use represents the present value of anticipated future cash flows arising from the ongoing utilization of an asset and its eventual disposal at the conclusion of its useful life (Christian & Lüdenbach, 2013, p. 304).

An additional aspect to consider when deciding which value to estimate is the premise of value. This pertains to the hypothetical circumstances under which the value will be evaluated. Considering the premise of value provides valuable insights into the specific conditions and contextual factors that influence the estimation of value. Several examples include:

- Is the company operating as a going concern, or is it on the verge of liquidation?
- If the company is to be sold, is the sale well-organized or forced?
- Are there any constraints or limitations on the revenues of the object that should be considered during the valuation process?

3.2 Reasons for Competitiveness

Our perception of a company's competitiveness is influenced by whether we align ourselves with the competitive positioning school pioneered by Michael Porter or the Resource-Based View (RBV) developed by esteemed theorists such as Barney, Wernerfelt, Penrose, and Rumelt over an extensive period. However, it is worth noting that these two theories are not mutually exclusive, which means that one theory does not automatically invalidate the other. In the context of conducting a valuation using discounted cash flow model, strategic analysis of the company holds significant importance. This is due to the fact that when estimating future cash flows, both internal and external of the company must be considered. Recognizing the interaction of these factors aids in assessing the company's potential and comprehending its competitive advantage. By integrating both the strategic insights and the financial projections, a more comprehensive and accurate valuation can be obtained.

3.2.1 Porter's Strategic Positioning

The competitive positioning school asserts that specific market positions provide opportunities for a company to foster and maintain its competitiveness. Consequently, careful market analysis is imperative for a company to identify a

viable position to pursue. This theory further proposes that a company's ability to secure an attractive market position is contingent upon the presence of entry barriers, product differentiation, and industry concentration (Gjønnes & Tangenes, 2014, p. 184). According to Porter, there are several primary sources of entry barriers, including economies of scale, capital requirements, size-independent cost disadvantages, access to distribution channels, and government policies. Entry into a market is often hindered by economies of scale, as it compels potential entrants to either enter on a large scale or accept a disadvantageous cost position. Capital requirements serve as another barrier to entry; particularly when newcomers must invest substantial financial resources to compete, especially if these funds are irrecoverable expenses tied to advertising or R&D (Porter, 1970, p. 140). Establishing companies may possess a cost advantage that remains inaccessible to competitors, irrespective of their size and economies of scale. This advantage can stem from favorable locations, access to superior sources of raw materials, or proprietary technology, such a barrier to entry is referred to as cost disadvantages independent of size.

Securing access to distribution channels is a fundamental requirement for a new entrant to effectively penetrate a market. Without the ability to distribute their products, the longevity of new player will be severely compromised. Additionally, government intervention can act as a barrier to entry by imposing licensing requirement and restrictions on access to raw materials (Porter, 1979, p. 140). Porter's renowned model, "The Five Competitive Forces" is widely employed to analyze a company's competitive landscape based on the principles of the positioning school. These five forces encompass the threats of new entrants, the bargaining power of buyers and suppliers, the threat of substitute products or services, and the intensity of rivalry among existing competitors.

3.2.2 The Resource-Based View

On the contrary, the Resource-Based View (RBV) takes an "inside-out" approach in its explanation of competitiveness and asserts that a company's competitiveness relies on its unique set of resources. To gain a competitive advantage, a company must possess or develop resources that meet specific criteria; they should be valuable, rare, costly to imitate and lacking substitutes. This framework is commonly referred to as VRIN. In the Resource-Based View (RBV) theory,

company resources encompass all assets, attributes, capabilities, organizational processes, and knowledge controlled by the company (Barney, 1991, p. 102).

According to Barney, a company can attain either a competitive advantage or a sustained competitive advantage. The former occurs when a company implements a value-creating strategy that has not been adopted by any existing or potential competitors. On the other hand, sustained competitive advantage is achieved when a company implements a value-creating strategy that not only lacks duplication from other companies but also generates benefits that cannot be replicated by them. However, it is important to note that a sustained competitive advantage does not guarantee perpetual existence. Instead, it signifies that the advantage cannot be easily eroded by attempts of duplication from other companies. Barney emphasizes the role of resources that are immobile in creating entry barriers. When company resources are immobile, they hinder the entry of competitors into the market or industry. If resources were mobile, companies seeking entry would acquire any resources enabling the implementation of strategies protected by entry barriers, thereby reducing those barriers. Therefore, immobile resources become sources of sustained competitive advantage (Barney, 1991, p. 105). Consequently, the Resource-Based View (RBV) argues that a company's strategy should be built upon resources that offer competitive advantages. Once these advantages are established, the company can proceed to determine its market position (Gjønnes & Tangenes, 2014, p. 185).

3.3 Portfolio Theory and The Relevance of Risk

Harry Markowitz introduced the Modern Portfolio Theory (MPT) in 1952, which has since become a fundamental framework for portfolio management methods employed by professionals (Mcclure, 2022b). According to the Modern Portfolio Theory (MPT), the primary challenge for investors lies in identifying the optimal combination of risky assets, taking into account both the expected return and variance of returns. It is important to note that the portfolio with the highest return is not necessarily the one with the lowest risk, as MPT assumes. The underlying concept suggests that by assuming additional risk, an investor may potentially increase the expected return of a portfolio, while a risk-averse investor may be able to decrease risk in exchange for a lower expected return. A key tenet of MPT is that the addition of another security to a risky portfolio can lead to an overall reduction

in portfolio risk. The principle holds true when investors allocate their investments across various securities in different industries, a practice known as diversification. In a diversified portfolio consisting of shares from various industries, the influence of specific companies on the stocks differs, meaning they are not correlated. The aim of such a portfolio is to have a scenario where if one stock experiences a decline in value, another stock should concurrently increase in value. These two effects counterbalance each other, thereby stabilizing the overall return of the portfolio (Bodie et al., 2018, p. 194).

The risk of a portfolio can be attributed to two sources: market risk, also known as systematic risk, and firm-specific risk, also known as unsystematic risk. Market risk pertains to risk associated with the broader market, such as inflation, interest rates, and exchange rates. On the other hand, firm-specific risk is specific to a particular company and includes factors such as mergers, new patents, management style, research and development success, and earnings uncertainty. Diversification can therefore eliminate unsystematic risk. When a portfolio's risk is solely due to firm-specific factors, diversification can substantially reduce risk, leading to low portfolio volatility. However, it is impossible to completely eliminate all risk. Since all securities are influenced by common macroeconomic factors, exposure to general economic risk remains unavoidable, regardless of the number of stocks included in the portfolio. This residual risk, persisting even after extensive diversification, is referred to as systematic risk, often denoted as beta in financial models. International diversification may further reduce portfolio risk, but similar principles apply since certain global economic and political factors affect all countries, limiting the extent of risk reduction (Bodie et al., 2018, p. 195).

3.4 Limitations of CAPM

The Capital Asset Pricing Model, commonly known as the CAPM, holds a central position in modern financial economics and is a widely used tool among market analysts. Originating from Markowitz's Modern Portfolio Theory, the CAPM was developed in early 1960's by William Sharpe, Jack Treynor, John Lintner, and Jan Mossin (Kenton, 2023a). This model aims to predict the relationship between risk and expected return in equilibrium of risky assets (Bodie et al., 2018, p. 277). According to the CAPM, investors are expected to hold diversified portfolio that effectively eliminate unsystematic risk. Consequently, the expected return of a

stock is directly proportional to its beta risk. The expected return of a stock is determined by adding the risk-free rate to the stock's risk premium.

In order to use the CAPM effectively, it is necessary to establish a set of underlying assumptions that serve as the model's foundation. While avoiding unnecessary complexities, we can outline two following key assumptions (Bodie et al., 2018, p. 278):

- Perfectly Competitive and Equally Profitable Markets: The model assumes that the markets for securities exhibit perfect competition, offering equal profit opportunities to all investors. In this scenario, no individual or group possesses an unfair advantage in term of information or resources.
- Homogenous Investors: The assumption is made that investors are identical in all aspects except for their initial wealth and risk preferences. Consequently, all investors make investment portfolio choices in an identical manner, devoid of any distinguishing characteristics beyond their starting financial position and attitude towards risk.

It is evident that these assumptions overlook numerous real-world complexities. While most empirical tests conducted in the 1970s supported the validity of the CAPM, criticisms of the model persist. One prominent critique emphasizes that even if the proxy for the market portfolio is flawless, it fails to accurately represent the correct weighting of investments made by all individuals (Kenton, 2022a). Consequently, the critical error lies in utilizing an erroneous index as a substitute for the market portfolio, as this misleading practice inadvertently validates the CAPM (Berk & DeMarzo, 2020, p. 467).

Market efficiency serves as a fundamental assumption in any asset pricing model. It posits that in an efficient market, the prices of securities fully reflect all relevant information available about those securities. However, there is empirical evidence suggesting that stock prices do not always exhibit efficiency with respect to all available information.

An additional significant finding from the studies on the CAPM is that the impact of unsystematic risk on stock pricing appears to be negligible. This implies that investors who are not adequately diversified assume risk without receiving

compensation for it. Furthermore, these results indicate that it is factors beyond systematic risk that play a decisive role in determining the expected return and cost of equity for uncertain projects. Additionally, variables such as size of a company and multiples like P/B and P/E are suggested to influence the cost of equity. However, since these factors are excluded in the CAPM, the model essentially implies their irrelevance.

Moreover, there is a degree of uncertainty surrounding the effectiveness of CAPM. The primary challenge lies in the concept of beta. Recent research focusing on share returns across the New York Stock Exchange, the American Stock Exchange, and Nasdaq discovered that variations in betas over an extended period did not account for the performance disparities among different stocks. Furthermore, the linear correlation between beta and individual stock returns also proves to be inconsistent over shorter timeframes. These findings raise doubts regarding the accuracy of CAPM, indicating that the model may be flawed (Kenton, 2023).

Roll's critique highlights that a genuine "market portfolio" would encompass all investments across various markets, spanning commodities, collectibles and essentially anything with marketable value. However, those who continue to employ the capital asset pricing model often rely on a market index, such as the S&P 500, as a substitute for the overall market return. This critique stems from economist Richard Roll's idea, initially proposed in 1977, which suggests that any effort to diversify a portfolio ultimately becomes an index endeavoring approximate diversification (Kenton, 2023a).

4. Frameworks for Valuation and Choice of Valuation method

In the subsequent subchapters, we will outline several different approaches to determining the value of a company, as well as provide an explanation of and detail the methods ultimately chosen for this thesis.

Petersen et al. (2017) define valuation as the process of estimating the economic value of a company. The value of a company is estimated on the basis of its ability to generate future cash flows discounted to present value using a discount factor that accounts for the time value of money and the risk associated with the company (Petersen et al., 2017, p. 295). Throughout the valuation process, a comprehensive

analysis is conducted on all aspects of a company to ascertain its overall value (Hayes, 2023). Valuations frequently rely on assumptions and projected figures, which raises the possibility of inaccurate assumptions and projections. Nevertheless, valuing based on projected numbers rather than current data, also allows for the identification and exclusion of anomalies and exceptional events. This approach helps in achieving a more accurate and normalized valuation by focusing on the underlying trends and long-term performance of the company.

4.1 Overview of valuation

There exist numerous methods for valuing a company, and no single method is considered superior. It is common to categorize the different valuation approaches into four main categories; present value approach, multiples approach, asset-based value approach and contingent claim valuation (Petersen et al., 2017, p. 297). The advantages and disadvantages associated with each valuation approach differ based on the specific company being valued.

4.1.1 Present Value Approach

The present value approach is a fundamental valuation method that relies on projecting future cash flows and discounting them to the valuation date using a suitable discount factor. The discount factor incorporates both the risk associated with the cash flow and the time value of money (Petersen et al., 2017, p. 300). Accurately projecting cash flows necessitates a comprehensive understanding of the company and its operating market, allowing for the generation of precise estimates based on realistic assumptions. Within the present value approach, various valuation models exist, all of which produce identical value estimates when executed correctly. Furthermore, this approach recognizes the inherent uncertainty in projecting future cash flows. It takes into account that future outcomes are subject to various risks, market fluctuations, and unforeseen events that may impact the accuracy of the projections. The present value approach incorporates this uncertainty by discounting the projected cash flows, as it captures the notion that future cash flows are inherently less valuable than immediate cash flows. Therefore, the approach provides a framework for determining the current value of future cash flows while taking into account the associated risks and uncertainties (Palmer, 2022).

4.1.1.1 Discounted Cash Flow

The discounted cash flow model is widely used in practical valuation as a present value approach. It can be expressed in two ways. The first approach involves in estimating the enterprise value and then deducting the net interest-bearing debt (NIBD), while the second approach involves estimating the equity value of the company (Koller et al., 2020, p. 182).

The enterprise value approach:

$$Enterprise\ value_0 = \sum_{t=1}^n \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{WACC-g} \times \frac{1}{(1+WACC)^n}$$

According to the discounted cash flow model (DCF), the value of a company is determined by estimating the present value of its future cash flows. These cash flows represent the funds available to all investors, including equity holders, debt holders and other stakeholders, and are discounted at the weighted average cost of capital (WACC). The WACC represents the combined cost of capital for all types of investor funding. To ascertain the equity value, the net interest-bearing debt (NIBD) is subtracted from the enterprise value (Petersen et al., 2017, p. 304). This method takes into account the various sources of capital and their associated costs, resulting in a comprehensive valuation that considers the interests of all investors.

The equity value approach:

$$Market\ value\ of\ equity_0 = \sum_{t=1}^n \frac{FCFE_t}{(1+r_e)^t} + \frac{FCFF_{n+1}}{r_e-g} \times \frac{1}{(1+r_e)^n}$$

The distinction between FCFF and FCFE lies in their treatment of debt holder transactions. FCFE considers these transactions, enabling a valuation of equity through the discounted cash flow model. Conversely, the FCFF-based discounted cash flow model provides an estimate encompassing both equity and net interest-bearing liabilities, commonly referred to as enterprise value (Petersen et al., 2017, p. 306).

4.1.1.2 Economic Value Added

The Economic Value Added (EVA) model has received increasing attention in recent years and measures the value created by the company in a single period. Similar to discounted cash flow models that are based on cash flow data, this model depends on accrual accounting data. The value of a company is determined by the book value of invested capital plus the present value of all future value created (Koller et al., 2020, p. 196). The Economic Value Added is defined as follows:

$$EV_0 = Invested\ Capital_0 + \sum_{t=1}^n \frac{EVA_t}{(1 + WACC)^t} + \frac{EVA_{n+1}}{WACC - g} \times \frac{1}{(1 + WACC)^n}$$

4.1.2 Multiples Approach

The multiples approach involves in determining the value of a company by comparing its performance or value to that of its competitors (Smith, 2022). As a result, this method does not necessitate projecting specific parameters or numbers, making it relatively straightforward. In practice, however, implementing this approach can pose challenges, as it requires the identification of directly comparable competitors and companies. For this approach to be effective, the selected competitors must closely resemble the target company in terms of size, earnings, capital structure and industry (Koller et al., 2020, p. 390). Multiples is a commonly used valuation method among analysts and investors. Furthermore, this method can provide insights and assist in summarizing and testing your valuation.

4.1.3 Asset-Based Value Approach

The asset-based approach to valuation is used to estimate the net asset value of a company using the current market value of various assets. The estimation can be performed using various measurement bases (Petersen et al., 2017, p. 328). When it comes to deciding which aspects of the company's assets and liabilities should be included in the valuation and how the value of each should be determined, there is some leeway for interpretation (Young, 2020). Net Asset Value (NAV) represents the company's net value using the market or fair values of its total assets after deducting liabilities. The term NAV is arrived at by dividing the difference between assets and liabilities by the outstanding shares. The asset-based approach is used in capital intensive industries where most of the values are represented by the assets (Chen, 2023).

4.1.4 Contingent Claim Value Approach

A contingent claim or option is a financial instrument that offers a payout based on specific conditions being met. A call option pays off if the underlying asset's value exceeds a predetermined threshold, while a put option pays off if the value falls below a specified threshold. These contingent claims allow investors to benefit from favorable market movements while limiting potential losses (Ross, 2022). Contingent claim valuation, often known as real option models, involves formulating and comparing multiple alternative scenarios with different contingencies (Damodaran, 2012, p. 23). It assigns option-like characteristics to the company assets, allowing option pricing models to be used to estimate the company's value. However, due to the complexities involved, this valuation approach is rarely used in practice. Assets with share option characteristics generate payoffs only under specific circumstances making it challenging to predict these circumstances and other variables necessary for contingent claim valuation. Consequently, this approach tends to provide a relatively uncertain estimation of value (Koller et al., 2020, p. 807).

4.2 Choice of Valuation Method for Frontline PLC

There are numerous factors to consider when determining the best valuation method for a company. Each method has its own set of advantages and disadvantages, and they are frequently viewed as complementary rather than mutually exclusive alternatives. It is critical to understand that relying on a single valuation method may not always provide a comprehensive and accurate value for the company. Therefore, many analysts use additional techniques to arrive at a more reliable value estimate. This approach takes into account the multiple dimensions and complexities of the company's financials, market conditions, and other relevant factors, thereby enhancing the valuation process. By combining a variety of valuation methods, analysts can gain a more comprehensive understanding of the company's value and minimize the limitations that may arise from relying solely on a single approach.

Our primary focus will be on the present value approach, specifically utilizing the EVA and FCFE models. Through these models, we aim to determine the enterprise value of Frontline PLC by discounting future projections using the weighted average cost of capital (WACC). By deducting the company's debt from

the estimated enterprise value, we can derive the market value of equity. While it is possible to directly determine the market value of equity by discounting free cash flow to equity by the required rate of return (R_e), we have chosen not to pursue this model. We have supplemented our valuation with the use of the Net Asset Value approach and relative valuation.

5. Strategic Analysis

The upcoming chapter aims to provide a comprehensive strategic analysis of Frontline plc and the shipping industry in its full extent. This analysis will yield valuable insights into the underlying financial and strategic conditions of both the shipping industry and Frontline plc. By establishing this understanding, we can effectively conduct quantitative accounting analysis and subsequently prepare prospects. Therefore, strategic analysis holds significant importance in the valuation process.

The strategic analysis comprises two main components: an external analysis oriented towards the industry and an internal analysis specific to Frontline plc. The external analysis involves identifying key drivers of change within the industry and examining the competitive forces at play. These aspects will be explored using the PESTEL framework to assess external influences and Porter's five forces model to evaluate the industry's competitive dynamics. In contrast, the internal analysis will concentrate on Frontline plc's diverse resources and activities, examining their suitability in creating competitive advantages for the company using a SWOT analysis.

5.1 External analysis of industry

5.1.1 PESTEL

Performing a PESTEL analysis provides valuable insights into the macroeconomic landscape and the influential factors that are expected to impact the industry's performance. By conducting this analysis, we can effectively pinpoint the crucial catalysts for change that demand attention when formulating future scenarios. These catalysts encompass political, economic, social, technological, environmental, and legal factors, collectively represented by the acronym PESTEL. Within each key driver, we have deliberately prioritized the elements that we deem most significant in their impact on the shipping industry and its transformation.

Consequently, the elements provided are not an exhaustive compilation. To initiate our PESTEL analysis, we have referenced publications from reputable organizations such as the International Maritime Organization (IMO) and the International Chamber of Shipping (ICS). These reports serve as a foundational resource and have been augmented with recent publications and news to enhance the analysis. Furthermore, the annual reports of Frontline plc will also be utilized to supplement our comprehensive PESTEL analysis.

5.1.1.1 Political

Political factors encompass the extent and manner in which government intervention influences a certain industry. This influence can manifest through direct ownership involvement or the industry's susceptibility to regulations and policies. Companies operating internationally are affected by a range of factors including foreign trade policies, trade restrictions, labor laws, and tax policies. An industry may face political exposure, direct state involvement, or both. Alterations in political conditions can swiftly impact the industry's standing and profitability (Peterdy, 2023).

The shipping industry has always been marked by continuous interference from governmental entities, and this trend is expected to persist in the future. Various authorities exert significant influence over the industry by implementing regulations, investing in infrastructure, and providing financial assistance to domestic stakeholders. Additionally, there are several limitations on foreign ownership and government aid, among other restrictions, that contribute to the enduring relationship between the shipping industry and authorities. Any modifications or enhancements in policies have a profound impact on the stakeholders involved in the shipping industry (Norwegian shipowners' association, 2021).

The prerequisite of political stability is crucial for the successful operation of any industry. Instances of instability, such as the conflict in Ukraine can have detrimental consequences for enterprises. In response to the aggressive war against Ukraine, which began on February 24, 2022, and the unlawful annexation of Ukraine's Donetsk, Luhansk, Zaporizhzhia, and Kherson regions, the European Union (EU) has implemented extensive and unprecedented sanctions against Russia

(European Council, 2023). In the realm of economic sanctions, the European Union (EU) has enforced various import and export limitations in Russia. As a result, European entities are prohibited from exporting specific products to Russia, while Russian entities are barred from selling certain products to the EU. The list of products comprises, among others, crude oil, and refined petroleum products, with limited exemptions, as well as coal and other solid fossil fuels (European Council, 2023).

5.1.1.2 Economic

Economic factors encompass the overall state of the economy and typically revolve around financial aspects. They encompass various elements such as interest rates, employment rates, inflation, and exchange rates (Peterdy, 2023). These factors have a direct and indirect impact on companies by influencing consumer purchasing power and mindset. In the shipping industry, the macroeconomic factors that hold significant importance are oil prices, inflation, economic trends, and growth in the industry (Grammenos & Arkoulis, 2002). The extent to which a company can benefit from or withstand economic factors depends on its present condition and its position within the business cycle.

Maritime transportation accounts for more than 80% of the total volume of global merchandise trade. It heavily depends on oil as a fuel source for propulsion. Due to current technological constraints and high costs, the industry is still unable to embrace viable alternative energy sources (UNCTAD, 2010a). UNCTAD conducted an empirical analysis to enhance our understanding of how oil prices affect transport costs, particularly in relation to maritime freight rates (UNCTAD, 2010b). The study focused primarily on container transport but also included dry and wet bulk trades, such as iron ore and crude oil. The analysis, presented in a technical report titled "Oil Prices and Maritime Freight Rates: An Empirical Investigation," revealed that rising oil prices have a significant impact on increasing maritime freight rates across all three trades examined as operating costs increased. The specific effects varied depending on the market segment and specifications. Notably, in container trade, the influence of oil prices on freight rates was found to be more pronounced during periods of sharp and volatile oil price increases, as opposed to periods characterized by low and stable oil prices.

Unforeseen events such as the 2008 financial crisis, the oversupply of oil in 2014, the global spread of COVID-19 in 2020, and the ongoing conflict between Ukraine and Russia have been catalysts for fluctuations in oil prices. The inherent unpredictability of these events makes it challenging to accurately forecast future oil prices, leading to economic uncertainty.

The shipping industry has experienced phenomenal growth in recent decades, playing an instrumental role in shaping the global economy. As shipping has been a significant driving force for worldwide economic development, a distinct correlation can be seen between the rise in global domestic product (GDP) and the growth of this industry (Interreg North Sea Region, n.d.).

In 2019, global economic expansion experienced a slowdown during ongoing trade disputes and considerable policy uncertainty. The growth of world GDP decelerated to 2.5 percent, falling short of 3.1 percent achieved in 2018, and was 1.1 percentage points lower than historical average from 2001-2008 (UNCTAD, 2020). The same trends were found in the growth rate of the industry as well. Subsequently, the introduction of the COVID-19 pandemic introduced substantial disruptions across the globe, notably impacting the maritime freight sector reducing the growth in the maritime sector by 3.8 percent. However, in 2021 trade bounced back with an estimated growth of 3.2 percent. According to UNCTAD (2022), maritime trade growth is expected to ease to 1.4 percent in 2022. In the span from 2023 to 2027, it is predicted to grow at an annual rate of 2.1 percent, which is slower than the average growth of 3.3 percent observed over the past thirty years.

5.1.1.3 Social

Social factors present a greater challenge in terms of quantification compared to economic factors. They encompass shifts or evolutions in the perspectives and behaviors of stakeholders towards various aspects of life and leisure, thereby exerting an influence on commercial activities. Noteworthy examples of social factors include demographic considerations, prevailing lifestyle trends, consumer beliefs, and attitudes towards working conditions (Peterdy, 2023). These factors, while essential, pose difficulties in their objective measurement and analysis within an academic context.

Companies in all sectors, and especially shipping companies, are facing increased scrutiny regarding their environmental policies. Various stakeholders, including investor advocacy groups, institutional investors, investment funds, lenders, and other market participants, are placing growing emphasis on environmental practices and considering the social implications and costs of their investments (Frontline plc, 2021).

This heightened focus and activism concerning the environment and related matters have the potential to impede access to capital. Investors and lenders may opt to reallocate or withhold capital based on their evaluation of a company's environmental practices. Deloitte (2021) affirms that there is no doubt that certain investors, both institutional and non-institutional, are redirecting their attention towards companies that prioritize sustainable economic development as a central component of their core strategy. Companies that fail to adapt to or comply with evolving investor, lender, or industry shareholder expectations and standards, or are perceived as inadequately addressing environmental concerns, regardless of legal obligations, may face reputational damage, litigation costs, and significant negative impacts on their business, financial health, and stock price (Frontline plc, 2021).

There has been an increasing change in attitude regarding working conditions and safety in the shipping industry. The Norwegian Shipowners' Association (2021) presented an article in 2021 detailing several new laws and regulations like the Transparency Act which has further requirements for the level of detail reported on human rights and working conditions. The Transparency Act tightens the legal obligations for companies to comply with both the UN Guiding principles on Business and Human Rights (UNGPs) and the OECD's guidelines for multinational companies. These new legislations show a clear shift in attitudes regarding working conditions in the industry. As a consequence, market participants might opt to affiliate themselves with companies that comply with these new standards and regulations, and potentially marginalize those who choose to overlook them.

5.1.1.4 Technological

In the contemporary business environment, technology pervades all aspects and is characterized by rapid and continuous transformation. It is imperative for management teams and analysts to comprehend the potential influence of technological factors on both organizations and industries. These factors encompass

a wide range of elements, including but not limited to automation, technology infrastructure, and cyber security (Peterdy, 2023). Keeping ahead of innovation trends is vital for adaptability, fostering growth, and differentiation from their competition. Failing to do so could render a company uncompetitive in its market (Boyles, 2022). Additionally, stakeholders need to stay informed about current and upcoming innovations to avoid investing in technology that is on the verge of becoming obsolete.

In the last few years, the need for digital transformation has become critical, necessitating businesses across all industries to evolve. Notably, the maritime sector has experienced profound technological advancements, causing a wave of change throughout the entire supply chain. Digital systems for tracking ships and cargo, along with the integration of digital tools for communication and collaboration, have become standard in this sector. However, there are additional groundbreaking solutions that provide intriguing possibilities in several areas (Sinay, 2023).

Some of the groundbreaking solutions are autonomous ships, advanced robotics, and automation which will revolutionize the ocean transportation industry. Beyond cost savings, autonomous ships might offer improved safety, reduced fuel consumption, optimized routing, and scheduling, decrease in labor shortages, and overall improved productivity (Sinay, 2023).

Recent findings from Coalition (2021), a cyber insurance specialist, indicate that commercial cybercrime is becoming increasingly profitable for those involved. According to their report, the financial consequences of failing to sufficiently protect a company's digital infrastructure from ransomware attacks nearly tripled in 2020. Notably, the average ransom demand surged to \$1.3 million in the second half of the year, compared to just over \$440,000 in the first half. Although there was a slight decline in the first half of the current year, the average ransom demand remained significant at just under \$1.2 million, as reported by Coalition.

In the section regarding industry risks in the annual report of Frontline plc (p.7), they confirm the preceding paragraph. They say that everyone in the shipping industry heavily depends on their information systems, as well as those of their ship managers, to carry out their operations. Failing to adequately safeguard these

systems against security breaches could have detrimental effects on their businesses and operational outcomes, including their vessels. Furthermore, any prolonged disruptions or unavailability of these systems could inflict harm upon their overall business including costs that could occur if they get a ransom demand.

5.1.1.5 Environmental

According to Frontline plc (2021, p.8), the performance of the shipping industry is influenced by various environmental factors, including environmental policies, public expectations, and attitudes towards green energy. Additionally, weather, climate, and air pollution are contained within this category ("Environmental effects of shipping," 2023), although quantifying their precise impact on the industry presents certain challenges. Therefore, our analysis will primarily center around the examination of environmental policies.

Shipping has a significant environmental impact encompassing various forms of pollution. This includes air pollution, water pollution, acoustic pollution, and oil pollution. Notably, ships contribute to over 18 percent of certain air pollutants, making them a significant source. Additionally, shipping is also associated with greenhouse gas emissions, further contributing to its environmental footprint ("Environmental effects of shipping," 2023). According to the International Maritime Organization (IMO), carbon dioxide emissions from shipping accounted for approximately 2.2% of global human-made emissions in 2012. According to a more recent report from Deloitte, the shipping industry accounts for 1.7% of worldwide greenhouse gas emissions (Deloitte, 2021). Thus, decarbonization has become an increasingly urgent priority.

In the fall of 2021, immediately preceding the United Nations Framework Convention on Climate Change (UNFCCC) COP26, over 200 organizations within the maritime industry endorsed the "Getting to Zero Coalition's Call to Action for Shipping Decarbonization". This initiative strongly advocates for a universal target of achieving zero emissions by 2050 within the sector and promotes the commercial utilization of zero-emission vessels by 2030. Expanding upon the foundations of the Zero-Emissions Shipping Mission, the initiative aims to expedite the realization of the decarbonization objectives proposed by the International Maritime Organization (IMO) concerning sustainable maritime practices (UNCTAD, 2022).

The involved parties pledged to create six "green corridors" by 2025, which will serve as completely decarbonized maritime pathways between two or more ports. This commitment is designed to hasten the evolution of zero-emission fuels, infrastructure that facilitates low-carbon operations, and robust legislation and regulation. It will be important for everyone in the maritime industry to address the technical and operational challenges of green corridors, regulatory framework, and infrastructure.

5.1.1.6 Legal

Legal factors refer to the ramifications arising from alterations in the regulatory framework, exerting influence over the overall economy, specific industries, and even individual enterprises within a particular sector. These factors encompass various aspects such as industry regulations, obligatory licenses and permits for operation, laws pertaining to employment and consumer protection, as well as safeguarding intellectual property rights (Peterdy, 2023). Within the preceding factors in the analysis, certain legislations pertaining to the shipping industry are included.

Shipping companies will face substantial compliance costs due to regulatory measures implemented by the International Maritime Organization (IMO) and the European Union (EU) targeting air pollution, greenhouse gas emissions, and ecosystem disruptions. Companies that have postponed investments in cleaner technology or cleaner vessel fleets may find themselves at a higher risk of being impacted by these environmental regulations (Rahm, 2015). Consequently, they may be compelled to bear costs and make essential investments for which they are unprepared. Anticipated outcomes indicate that companies' financial statements will start to reflect these costs beginning in 2016. As monitoring and enforcement systems reach a mature stage, we may observe an impact on provisions for environmental liabilities as well (Rahm, 2015). One of these measures which commenced at January 2023, the shipping industry experienced a substantial regulatory shift with the implementation of the Energy Efficiency Existing Ship Index (EEXI). This measurement is required for each vessel and forms part of their annual evaluation of the carbon intensity indicator (CII) (Sinay, 2023).

The International Maritime Organization (IMO) is working to incorporate emerging technologies into its regulatory framework. This includes weighing the advantages of new technologies against considerations such as safety and security, implications for international trade, environmental impact, effects on personnel, and the potential costs to the industry. The IMO is committed to ensuring that the rules for Maritime Autonomous Surface Ships (MASS) remain relevant in the face of rapid technological progress.

Recently, the IMO concluded a regulatory scoping exercise for MASS, which evaluated how existing IMO instruments might be applicable to ships with different levels of automation. This regulatory scoping exercise for safety treaties was finalized during the 103rd Session of the Maritime Safety Committee (MSC) in May 2021. The finalization for treaties under the oversight of the Legal Committee occurred in July 2021. This is an important legal step in the process of incorporating autonomous ships that we need to be aware of.

5.1.2 Porters Five Forces

In the subsequent sections, we adopt Michael Porter's widely recognized framework to examine the competitive forces operating within the shipping industry. The industry's structure, influenced by economic and technical drivers, determines the influence wielded by these forces (Porter 2008). By comprehending the combined impact of these forces, one can uncover the potential profitability within the industry, a critical aspect to consider when assessing its specific advantages and disadvantages.

The framework introduced by Porter outlines five fundamental forces shaping industry competition: the threat of entry, power of suppliers, power of buyers, the threat of substitutes, and rivalry among existing competitors. Porter (2008) underscores a commonly observed fallacy wherein equal weightage is assigned to all forces, disregarding the necessity for an in-depth examination of the forces that hold greater significance. Consequently, our analysis places particular emphasis on evaluating the threat of new entrants and the intensity of rivalry among established competitors.

5.1.2.1 Threat of entry

The evaluation of potential opportunities for new entrants to establish their presence in the market necessitates a careful examination of the threat of entry. This influential factor directly impacts the competitive landscape by influencing the concentration of competitors and, consequently, exerts an influence on the potential profitability of market participants. In instances where the probability of new entrants is considerable, incumbent firms are inclined to engage in price-based competition and make substantial investments in cutting-edge technologies as strategic measures to discourage potential entrants from joining the market (Porter, 2008).

The magnitude of this force is contingent upon the prevailing entry barriers and the likelihood of retaliatory actions from established firms. The existence and nature of entry barriers differ across industries, and Porter (2008) outlines seven key barriers of a general nature. Among these barriers, we deem customer capital requirements, and restrictive government policy as particularly important factors for our analysis in the context of the shipping industry.

5.1.2.1.1 Capital Requirements

The shipping industry is characterized by its high asset tangibility (Yeo, 2016). The most significant obstacle to entering the shipping industry is therefore the requirement for capital. To enter one must acquire ships, business licenses, different permits, and you may also need an export or import license. The financial commitment required for the ships alone could range considerably, starting from a few million dollars for a compact general cargo vessel and extending up to \$145 million for one of the world's most sizeable container ships. For specialized vessels like LNG tankers, the investment could potentially exceed these figures (Baxter, 2022).

Capital requirements can pose as a formidable deterrent for potential newcomers in the market. Nevertheless, according to Porter (2008), high capital demands in isolation may not serve as an effective deterrent if the industry is appealing. In scenarios where the potential for substantial profit exists within an industry, investors are likely to exhibit interest in backing new entrants, despite the high capital requirements.

Historically, shipping banks were providing generous financing terms of financial gearing (leverage) and covenants due to the industry's high profit margins. But due to macroeconomic trends in the economy and increasing pressure from regulatory entities these profit margins have been reduced and industry growth has had a setback (Shipping Finance, 2017).

As traditional shipping banks have been withdrawing from the industry, reliance on private equity and other institutional investors for capital provision has increased. However, this capital typically comes at a higher cost, with stricter terms, covenants, and often in exchange for a portion of the economic benefits. This has definitely reinforced the entry barrier of capital requirements (Shipping Finance, 2017).

5.1.2.1.2 Restrictive government policy

Regulatory government policies can directly either facilitate or obstruct new market entries, in addition to amplifying or neutralizing the effects of other barriers to entry (Porter, 2008). As we briefly mentioned under capital requirements and more thoroughly in our PESTEL analysis there has been increasing pressure from regulatory entities in the shipping industry regarding environmental and social regulations and policies. Porter (2008) specified that government policy like environmental and safety regulations can heighten other entry barriers.

When considering government oversight and regulatory action, vessels with open registries currently face a comparatively lower burden than most onshore industries. However, there's an unmistakable trend indicating an increase in regulations and their associated costs. Over the past year, issues related to emissions and the quality of bunker fuel have consistently topped news headlines, precipitating not only a rise in the financial aspects of the business but also enhancing the technological and regulatory risk. We believe this restrictive government policy heightens the barrier of capital requirements when trying to enter the market.

With capital requirements and restrictive governmental policy in mind we assess the threat of entry to be medium instead of the medium-high threat one could observe not many years ago.

5.1.2.2 Power of suppliers

The assessment of supplier power is crucial for comprehending the interplay between an industry and its suppliers. This force significantly shapes the nature of their relationship, impacting the terms, prices, and offerings that are exchanged (Porter, 2008). Within the shipping industry, we identify ship ports, fuel costs, and ship expenses as the primary inputs over which suppliers wield substantial influence.

The maritime sector is marked by a number of shipping companies with a limited number of vessel manufacturers. The triad of China, the Republic of Korea, and Japan continues to overwhelmingly dominate the maritime ship supply sector. Collectively, these nations controlled 94 per cent of the market in 2022 (UNCTAD, 2022). Therefore, the cost of ships tends to be directly proportional to the market's supply and demand dynamics. During periods of high demand, prices escalate, and conversely, they decline in times of low demand. As such, manufacturers possess a degree of supplier power. However, this power is currently diminished, as a surge in new ship construction coincides with a decelerating growth in the industry (Murray, 2023). Given the prevailing uncertainty surrounding the most cost-effective alternative fuels and optimal methods for reducing greenhouse emissions, ship owners are exhibiting reluctance to invest in new vessels despite increased demand. Instead, they are focusing on the upkeep of their existing fleets.

Fuel costs constitute significant considerations within the maritime industry. As highlighted in the PESTEL analysis, fuel prices are inherently volatile, largely due to the fluctuating global oil prices and global economic activity. This volatility effectively reduces the leverage of fuel suppliers over maritime entities. Furthermore, a common practice among most shipping companies is to hedge against the risk of fluctuating fuel prices, thereby further diminishing the influence of fuel suppliers. Consequently, the power of fuel suppliers within the industry is generally perceived as low.

Regarding the procurement of ancillary operational resources for a shipping company, such as lube oil, paints, and repair services, the bargaining power dynamics can be outlined as such: the presence of numerous suppliers in the market

fosters a competitive environment that subsequently depresses prices. Therefore, we generally infer the overall power of these suppliers to be low.

5.1.2.3 Power of buyers

The examination of buyer power is essential for comprehending the dynamics of market competition. When buyers possess significant power, it signifies heightened competition within the market, resulting in lower industry profits. This power is amplified in cases where products in the industry are perceived as standardized and the cost of switching between suppliers is minimal. Additionally, a smaller number of buyers relative to suppliers further empowers buyers to negotiate favorable terms (Porter, 2008).

In the maritime industry, the combination of a large customer base and low switching costs enhances customer power. However, price comparison can be challenging due to the variability in services provided within the industry, influenced by factors such as volume and the specific commodities being transported. An article published by Sinclair (2022) from Trade Finance Global suggests numerous strategies by which a buyer can negotiate a deal in their favor. Nevertheless, it's acknowledged that larger corporations typically possess greater bargaining power than their smaller counterparts due to the negotiation advantages that come with shipping in larger volumes.

Given the limited information available to customers and the high number of buyers with low switching costs, we conclude that the bargaining power of buyers presents a moderate threat to the industry.

5.1.2.4 Threat of substitution

The evaluation of substitute threat is undertaken to identify alternative products or services that possess similar or equivalent functionalities to the offered product (Porter, 2008). The strength of this power is considered high when existing substitutes effectively match the performance and price of the product in question (Porter, 2008). In the context of the shipping industry, the most pertinent substitutes currently identified are road, air, and rail transport.

As previously discussed in our thesis, maritime shipping constitutes the majority of global long-distance goods transportation. Nonetheless, potential substitutes exist, such as road, air, and rail transport. According to statistics released by the European Statistics (Eurostat, 2021), the maritime and road transport sectors collectively command 92.5 percent of the total transportation market share, with shipping contributing nearly 70 percent. It is also important to note that a significant portion of road transport is associated with the onward movement of goods that have initially arrived in a country via maritime shipment. Furthermore, it is not feasible for these alternative modes of transport to match the shipping industry's cost-effectiveness and efficiency when it comes to transporting the same volume of cargo across continents.

Thus, it can be concluded that, at present, there are no effective substitutes to the maritime shipping industry, rendering the threat of substitution relatively insignificant.

5.1.2.5 Rivalry among existing competitors

Within an industry, rivalry stands as a potent and potentially detrimental force that can significantly impact profitability (Porter, 2008). Intense competition often gives rise to price-based rivalries, resulting in the transfer of profits from the industry to customers (Porter, 2008). The extent of rivalry among existing competitors is influenced by several factors, with our emphasis placed on growth, exit barriers, and price competition as key determinants.

As previously outlined in our analysis, the shipping industry has experienced growth stagnation due to global economic trends, a pattern projected to persist for some years according to UNCTAD (2022). This decline in growth, coupled with the absence of clear monopolistic trends, implies that existing companies will find themselves competing for the same existing market shares (Porter, 2008).

Exit barriers in a market are significant and often result from factors such as highly specialized assets or management's commitment to a specific business. These barriers tend to retain companies in the market, even when they experience low or negative returns. This persistence leads to the continued use of excess capacity, negatively impacting the profitability of successful competitors as fewer thriving

ones persist in the market (Porter, 2008). The demand for ships is largely confined to the same market, rendering them less readily tradable. Innovations and technological advancements, along with mounting pressure to meet the greenhouse gas reduction targets set by the IMO, will likely result in a rapid depreciation of the market value of older, used ships that perform poorly on the Carbon Intensity Indicator (CII) scale (Lampraklis, 2023).

One important precondition for price competition is the near-identical nature of competitors' products or services, coupled with low switching costs for buyers. These conditions incentivize competitors to reduce prices to attract new customers (Porter, 2008). We previously discussed this aspect while analyzing the power of buyers and concluded that it is indeed a characteristic feature of the maritime industry. We wish to reiterate this point to underscore its relevance in the context of competitive rivalry within the industry.

The shipping industry currently experiences intense competition. Factors such as a stagnant market, significant exit barriers, and prevalent price competition lead us to conclude that the level of rivalry among existing competitors is notably high.

5.1.3 Summary of the external analysis

Our external analysis reveals that the shipping industry is characterized by intense competition. It is heavily regulated by stringent political, environmental, and safety standards. Any modifications to these existing rules or the introduction of new ones necessitate compliance from all stakeholders. Nonetheless, the industry enjoys advantages from uniform market regulations, which even out the playing field, enabling firms to secure funding based on their Environmental, Social, and Governance (ESG) practices. The high number of financially involved participants and the strong competition are great drivers for innovation in the industry.

The shipping industry has been a major driver for global economic growth over recent decades, with a clear link seen between global GDP and this sector's expansion. However, 2019 saw a global economic slowdown, reflected in the shipping industry as well. The emergence of the COVID-19 pandemic brought further disruptions, significantly impacting the maritime freight sector and reducing its growth by 3.8%. A recovery was seen in 2021 with an estimated growth of 3.2%.

Future projections by UNCTAD (2022) expect a slowdown, with maritime trade growth anticipated at 1.4% in 2022, and an average annual growth rate of 2.1% from 2023 to 2027. This is slower than the 3.3% average growth rate seen over the last 30 years.

We applied Porter's five forces model to evaluate the competitive intensity in the industry, which we assessed as moderate to high. There are essentially no viable alternatives for the global and long-distance shipment of merchandise, and purchasers hold some sway in negotiating freight rates. However, the increased competitiveness in a stagnant market, coupled with battles for market shares, has heightened the competition level towards the higher end.

5.2 Internal analysis of Frontline Plc – SWOT

In order to gain a comprehensive understanding of a company's internal strengths and weaknesses, as well as external opportunities and threats, organizations often employ strategic tools such as the SWOT analysis (Kenton, 2023e). In this context, this report aims to conduct an internal analysis of Frontline plc in the shipping industry, using the SWOT framework. By examining the company's internal factors, including its strengths and weaknesses, we can identify areas of competitive advantage and areas that require improvement. Furthermore, by using our external analysis, which encompasses factors such as market trends and industry dynamics, we can uncover potential opportunities and threats that Frontline plc may encounter. This internal analysis utilizing the SWOT analysis will provide valuable insights into Frontline plc's current position within the shipping industry, helping to inform us in the later stages of our analysis and valuation of frontline plc. There will probably be some repetition from the external factors we discussed in the industry analysis as Frontline plc's internal operation is susceptible to the influence of the external factors.

Strengths:

With a global presence and a fleet of 66 owned vessels and 4 vessels held by the Company's commercial management (Frontline plc, 2022), Frontline plc has established itself as one of the largest tanker operators worldwide. As a result, the company has secured a substantial market share in the industry. This advantage grants them leverage over suppliers, enabling them to procure larger volumes at

better prices. A higher market share contributes to enhanced sales, particularly when loyal customers increase their purchases or stick with their supplier. Moreover, an impactful market share has the potential to attract new customers who are influenced by the choices of existing ones, thereby widening the overall customer base. The acquisition of market share not only strengthens and highlights a company's reputation but also facilitates the attraction of talented employees. This, in turn, bolsters sales, enhances bargaining power, and fosters the allure of the organization (Kramer, 2023).

Another strength we have observed when analyzing Frontline plc is their impressive and modern fleet of vessels that are equipped with the latest technology, enabling efficient operations and reduced fuel consumption. These vessels are designed to meet industry regulations, ensuring compliance, and reducing environmental impact. The use of advanced technologies and fuel-efficient designs enhances the company's operational efficiency and cost-effectiveness. A well-maintained and modern fleet translates to higher reliability and lower downtime for Frontline plc. (Frontline plc, 2022). This allows the company to provide consistent and timely shipping services to its customers, which is crucial in the highly competitive shipping industry. Reliable operations contribute to customer satisfaction, long-term relationships, and a positive reputation in the market. Frontline plc's diverse fleet composition offers flexibility in catering to different types of cargo and meeting specific customer requirements. The company can adapt to changing market demands and optimize vessel deployment based on cargo volumes, routes, and market conditions. This flexibility enables Frontline plc to capture opportunities and respond quickly to changing customer needs, providing a competitive edge over rivals with limited fleet capabilities (Frontline plc, 2021, p. 27). Modern vessels often feature improved fuel efficiency and lower operating costs compared to their older counterparts. Frontline plc's fleet composition allows for reduced fuel consumption and maintenance expenses, resulting in enhanced cost efficiency. This cost advantage enables the company to offer competitive pricing while maintaining profitability, attracting customers, and securing contracts in a volatile industry. A modern fleet equipped with advanced safety systems and technologies ensures compliance with stringent industry regulations and international standards. Frontline plc's commitment to safety mitigates operational risks, protects the company's reputation, and fosters trust among customers and

stakeholders. Compliance with safety and environmental regulations also enhances the company's ability to secure contracts and operate in various regions with stringent requirements (Frontline plc, 2021, p. 28).

Frontline plc also exhibits strengths in its experienced management team, with a proven track record of efficient operations, seamless logistics, and commitment to customer satisfaction. The team's expertise and leadership contribute to the company's strong performance. Additionally, Frontline plc possesses a robust financial position, with substantial financial resources at its disposal. This financial strength provides opportunities for potential investments, acquisitions, and advancements in technology. Overall, these strengths underscore Frontline plc's ability to navigate the industry successfully and remain competitive.

Weaknesses:

Previously, Frontline plc relied on customers that contributed to 10 percent or more of their consolidated revenues (Frontline plc, 2018). However, as of 2022, the company has diversified its customer base. Despite this diversification, Frontline plc still depends on a select few key customers for a substantial portion of its consolidated revenues. This dependency exposes the company to the risk of losing business or market share if these customers decide to switch to rival competitors. Such a scenario could also have detrimental effects on Frontline plc's reputation and may also prompt other industry participants to consider switching their business relationships as well.

Frontline plc does carry a significant amount of debt. While it is worth acknowledging that they have made progress in reducing their debt levels over the past five years, they still lag behind their competitors in this regard. Our industry benchmarking analysis revealed that Frontline plc falls within the upper range when it comes to debt levels within the industry. It is important to recognize that a high level of debt raises financial risk and has the potential to restrict their growth opportunities. Although the impact of this debt burden has not yet had severe consequences for the company, it remains a weakness that warrants attention and consideration.

Frontline plc faces a significant weakness regarding its exposure to market fluctuations and economic conditions, which has been identified both internally and in the industry analysis. The company's performance is vulnerable to economic downturns since the demand for shipping services is closely linked to global economic conditions. The financial performance of Frontline plc is intertwined with the price of crude oil and the demand for shipping services, both of which can exhibit volatility.

Opportunities:

Frontline plc stands to gain from the growth of global trade, which brings forth prospects of heightened shipping volumes and increased demand for transportation services (Pangestu, 2023). The company can leverage this growth by expanding its operations and capturing additional market share. Emerging markets, trade liberalization initiatives, and the establishment of new trade routes contribute to favorable conditions for Frontline plc's expansion efforts. These developments open up opportunities for the company to capitalize on the evolving global trade landscape and strengthen its position in the industry.

Advances in technology, such as digitalization, automation, and data analytics, offer opportunities for Frontline plc to optimize its operations, enhance efficiency, and improve customer experience (Sinay, 2023). Embracing technological innovations can lead to cost savings, streamlined processes, and improved decision-making, allowing the company to gain a competitive edge in the market.

Infrastructure investments, such as the expansion of ports, the construction of new terminals, and the improvement of shipping routes, can create opportunities for Frontline plc (Frontline plc, 2021). These developments facilitate more efficient and cost-effective transportation, enabling the company to enhance its service offerings, expand into new markets, and improve supply chain efficiency.

In recent years, the shipping industry has experienced a wave of mergers, acquisitions, and consolidation characterized by larger players acquiring smaller companies (Maritime Logistics Professional, 2023). This trend creates potential opportunities for Frontline plc to engage in strategic mergers and acquisitions. By participating in such activities, Frontline plc can contribute to market consolidation

and strengthen its market power. Consolidation brings advantages such as economies of scale, cost synergies, and the expansion of customer networks. Through these consolidation efforts, Frontline plc can enhance operational efficiencies, optimize costs, and broaden its reach in the industry.

Threats:

Regulatory compliance is a recurring and crucial aspect to be considered in the present business environment. The shipping industry operates within a multifaceted framework of international and regional regulations related to safety, security, environmental protection, and labor standards. Adhering to these regulations entails significant costs and diligent attention. Non-compliance with regulatory requirements or an inability to adapt to evolving regulations can lead to penalties, legal conflicts, reputational harm, and operational interruptions. Consequently, Frontline plc must prioritize regulatory compliance to mitigate associated risks and sustain smooth operations.

Frontline plc operates on a global scale, thereby encountering inherent geopolitical risks such as trade disputes, political instability, conflicts, and shifts in government policies. These risks have the potential to affect shipping routes, trade agreements, and customs procedures, leading to disruptions and creating an atmosphere of uncertainty within the industry. Geopolitical tensions and conflicts can additionally raise concerns regarding maritime security, posing risks to the safety of Frontline plc's operations.

Frontline plc operates within an intensely competitive industry characterized by a multitude of global and regional competitors. The presence of intense price competition, surplus capacity, and aggressive market strategies can significantly impact freight rates, resulting in downward pressure on profit margins. This heightened competition further presents challenges in securing long-term contracts and maintaining market share in a dynamic market environment.

5.2.1 Summary of internal analysis - SWOT

Our analysis reveals that Frontline plc enjoys a robust market position due to its exceptional modern fleet and competent management team. However, there are areas of weakness that deserve attention, such as the significant impact of certain

customers on the company's overall consolidated income and the relatively high levels of debt. Notwithstanding, Frontline plc has been making gradual progress in addressing these weaknesses.

Moreover, our analysis uncovers several promising opportunities within the market, including technological advancements and the growing demand in emerging markets. It is imperative for Frontline plc to capitalize on these opportunities to bolster its growth and market share. Additionally, it is essential for the company to remain vigilant regarding the increasingly stringent regulatory landscape and effectively manage potential geopolitical risks. By proactively handling potential crises, Frontline plc can safeguard its operations and navigate any challenges that may arise.

SWOT	
Strengths	Weaknesses
<ul style="list-style-type: none"> • Large market share • Impressive and modern fleet • Experienced management team 	<ul style="list-style-type: none"> • Key customers, covering substantial amount of revenues • High debt levels compared to competitors • Exposure to market fluctuations and economic conditions
Opportunities	Threats
<ul style="list-style-type: none"> • Emerging markets, trade liberalization initiatives, and establishment of new routes • Advances in technology • Infrastructure investments • Merger and acquisitions 	<ul style="list-style-type: none"> • Increasing regulatory compliance • Geopolitical risks • Multitude of global and regional competitors

Table 5.1: SWOT – Summary table

6. Financial Statement Analysis

In the following chapter, we are going to conduct a financial statement analysis of Frontline PLC. The primary objective of conducting a financial statement analysis is to gain insights into the past performance of a company, which in turn aids in estimating its future cash flows. It is also a useful tool for determining a company's economic wellbeing and uncovering various aspects of its performance and financial position (Petersen et al., 2017, p. 101). This analysis is based on the company's balance sheet and income statement, which provide historical data on the company's results, the assets it has invested in, its liabilities, and the relationship between activities, investments in working capital, and fixed assets (Kaldestad & Møller, 2016, s. 61). When valuing a company, it is critical to maintain a balanced approach to financial statement analysis. In other words, analysts should avoid

relying excessively on numbers from previous years, as this can lead to misleading valuations. However, historical figures can also serve as a grounding factor, preventing analysts from making unrealistic assumptions about the future. Thus, finding the right balance is imperative.

6.1 Analysis Period and “Benchmark”

This analysis is based on accounting data from Frontline PLC’s annual reports over a six-year period (2017-2022). We believe this provides a sufficient numerical foundation for analyzing Frontline PLC’s historical performance. Furthermore, we believe it is appropriate to compare Frontline’s historical performance to that of similar companies in the industry, and we have therefore chosen to create a benchmark. This figure represents an average of the following companies: Euronav NV, DHT Holdings, Star Bulk Carriers, Scorpio Tankers, and Danaos Corp. Complete calculations of all key numbers are included in our attachment.

6.2 Accounting Quality

Frontline PLC’s Annual Report has been diligently prepared in accordance with the International Financial Reporting Standards (IFRS). PricewaterhouseCoopers (PWC), a reputable firm, serves as the company’s external auditor. In conclusion section of their report, PWC states the following: *“In our opinion the accompanying consolidated financial statements of Frontline Plc and its subsidiaries and the parent company financial statements of Frontline Plc give a true and fair view of the financial position of the group and the company as at 31 December 2022, and of their financial performance and their cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRSs) as adopted by the European Union and the requirements of the Cyprus Companies Law, Cap. 113”* (Frontline PLC. Annual Report 2022, p. 124).

PWC has issued favorable and untarnished audit reports, signifying their assessment that Frontline PLC complies satisfactorily with rules and standards. Given the esteemed reputation of the selected auditor for Frontline PLC, we have no reason to question the accuracy of the accounting figures in depicting the company’s financial standing in a satisfactory manner. Additionally, there is no evidence of any anomalies in the financial reporting, further affirming its reliability.

6.3 Reorganizing the Financial Statements

Reorganizing the financial statements holds significance as it enables us to offer an investor-oriented perspective, distinguishing it from the conventional creditor-oriented viewpoint (Petersen et al., 2017, p. 112). Within this chapter, we present selected of our calculations, while the comprehensive calculation can be found in our attachment. This reorganization process serves the crucial purpose of enhancing the precision of our analysis while equipping us with improved tools to carry out a comprehensive valuation of the company. By adopting this approach, we ensure that our analysis is accurate and specifically tailored to meet the requirements of valuation.

6.3.1 Reorganization of the Income Statement

The reorganized income statement aligns with the net results reported by the company, reflecting consistency in figures. Through the classification of accounting items into operating and financing categories, we reshuffle these items to derive key numbers that are subsequently utilized in the ratio analysis of Frontline PLC.

Within the reorganized income statement, depreciation and amortization costs are extracted from operational expenses to calculate earnings before interest, taxes, depreciation, and amortization (EBITDA). By incorporating the depreciation and amortization costs back into the calculation, we obtain earnings before interest and taxes (EBIT). A comparison between these two key numbers provides insights into the impact of these mentioned costs on the overall earnings.

In order to gain a comprehensive understanding of the profit generated by the company's core operations, our objective is to determine the net operating profit after taxes (NOPAT) (Koller et al., 2020, p.214). The distinction between EBIT and NOPAT lies in the deduction of operational taxes. However, it is important to note that the company's reported income tax is influenced by both operational and financial items. To isolate the operational component of taxes, it becomes necessary to assess how net financial items impact the reported income tax. For a company with net financial expenses, there exists a tax shield equal to the tax rate multiplied by their interest expenses. Consequently, the company reports a lower income tax compared to what would result solely from its operations. Conversely, a company with net financial income experiences the opposite effect where their reported

income tax surpasses the taxes arising directly from their operations. This differentiation allows us to better understand the impact of financial factors on the reported income tax and obtain a clearer picture of the company's operational profitability (Koller et al., 2020, p.227 – 230).

Table 6.1 below presents key numbers from our reorganization of Frontline PLC's Income Statement from 2017 to 2022.

Reorganized Income Statement in USD 1 000						
	2017	2018	2019	2020	2021	2022
Operating income	646 326	742 266	957 322	1 221 187	749 381	1 438 248
Operating gains	2 381	10 206	3 422	29 902	5 893	-
Operating expenses	- 703 230	- 547 195	- 603 372	- 604 524	- 595 284	- 827 459
EBITDA	- 54 523	205 277	357 372	646 565	159 990	610 789
EBIT	- 196 271	82 711	239 522	507 795	12 216	445 619
NOPAT	- 196 661	82 048	239 088	507 806	479	448 998
Net Income	- 264 322	- 8 398	139 986	413 006	- 11 148	475 537

Table 6.1: Reorganized Income Statement of Frontline PLC

6.3.2 Reorganization of the Balance Sheet

The balance sheet reported by Frontline PLC differentiates between current and non-current assets and liabilities, following the guidelines set by IFRS (Petersen et al., 2017, p. 114). However, this categorization can be considered more aligned with a creditor-oriented perspective rather than an investor-oriented one. While creditors prioritize the company's capability to meet its financial obligations, investors are primarily interested in the company's ability to generate value and provide returns. The creation of value predominantly stems from operational activities and accounting items related to operations. Therefore, it is essential to classify the various accounting item in the balance sheet into either operating or financial categories. By doing so, a clearer distinction can be made, allowing for a more investor-oriented analysis of the company's financial position (Koller et al., 2020, p. 212 – 213).

Through the process of reorganizing the balance sheet, we gain the ability to conduct a consistent analysis of key financial ratios across different time periods. In the case of Frontline PLC, we reorganize their balance sheet into the NOA-format. This format presents the net operating assets on the left-hand side of the balance sheet, while illustrating the corresponding financing on the right side of the balance sheet. This approach allows for a structured evaluation of the company's

operating assets and their respective financing, enabling a comprehensive analysis of their financial performance over time.

NOA is derived from the disparity between a company's net operating non-current assets (NONCA) and its net operating working capital (NOWC). In the case of Frontline PLC, NONCA encompasses long-term assets and liabilities associated with their operational activities, including accounting items to vessels, equipment, and newbuildings. On the other hand, NOWC consists of current assets and liabilities linked to operations. The complementary side of the balance sheet, Equity and Net Interest-Bearing Debt (NIBD), illustrates the financing structure of the company's operations. In Table 6.2 below, we present key figures resulting from our reorganization, providing a comprehensive overview of these financial aspects.

Reorganized Balance Sheet in USD 1 000						
	2017	2018	2019	2020	2021	2022
NONCA	2 768 798	2 757 742	2 960 951	3 527 544	3 775 630	3 886 369
NOWC	112 493	138 425	143 472	97 536	128 244	277 463
NOA	2 881 291	2 896 167	3 104 423	3 625 080	3 903 874	4 163 832
Equity	1 187 629	1 164 217	1 510 208	1 611 553	1 652 542	2 259 899
NIBD	1 693 662	1 731 950	1 594 215	2 013 527	2 251 332	1 903 933
Equity + NIBD	2 881 291	2 896 167	3 104 423	3 625 080	3 903 874	4 163 832

Table 6.2: Reorganized Balance Sheet of Frontline PLC

6.4 Results from the Analysis

To calculate historical key figures for Frontline PLC and their competitors, we had to collect historical data from annual reports and other publicly available databases. For Frontline PLC, all key figures were derived using previous annual reports, while the benchmark figures were obtained from external databases. To obtain industry benchmarks, we utilized the Morningstar Terminal and Yahoo Finance, which provided historical data and key figures for Frontline PLC's competitors. This approach was adopted to allocate more time to the remaining task at hand, which is the valuation, the primary focus of the analysis. Therefore, it is of utmost importance that the external databases used are trustworthy to ensure the utmost accuracy in the comparisons made.

Year Key Figure	Financial Statement Analysis					Average
	2018	2019	2020	2021	2022	
Return On Assets						
Frontline PLC	-0,27 %	4,13 %	10,85 %	-0,28 %	10,70 %	5,03 %
Industry Benchmark	-1,76 %	2,02 %	6,94 %	7,68 %	10,84 %	5,14 %
Return On Equity						
Frontline PLC	-0,71 %	10,47 %	26,46 %	-0,68 %	24,31 %	11,97 %
Industry Benchmark	-4,45 %	5,24 %	13,57 %	15,19 %	19,33 %	9,78 %
Return On Invested Capital						
Frontline PLC	2,84 %	7,97 %	15,09 %	0,01 %	11,13 %	7,41 %
Industry Benchmark	0,66 %	4,64 %	9,12 %	10,75 %	12,96 %	7,63 %
Current Ratio						
Frontline PLC	2,69	2,23	2,18	2,44	3,46	2,60
Industry Benchmark	1,36	1,31	1,39	1,89	1,98	1,59
Equity Ratio						
Frontline PLC	37,9 %	37,8 %	40,8 %	41,1 %	40,1 %	39,57 %
Industry Benchmark	45,1 %	43,1 %	45,1 %	51,6 %	53,3 %	47,64 %
Debt-to-Equity Ratio						
Frontline PLC	1,64	1,64	1,45	1,43	1,49	1,53
Industry Benchmark	1,57	1,28	1,14	0,90	0,83	1,14
Weighted Average Cost of Capital (WACC)	7,48 %	7,85 %	5,35 %	4,82 %	6,34 %	6,37 %

Table 6.3: Historical Key Figures of Frontline PLC and the Industry Benchmark

6.5 Profitability Analysis

Prior to formulating our forecast, a comprehensive analysis of the profitability of Frontline PLC is conducted as means of bolstering our strategic analysis. Acquiring an understanding of the fundamental factors that influence profitability and growth is of paramount importance in providing an accurate and pragmatic forecast. We used five key ratios to analyze Frontline PLC's profitability: return on assets (ROA), return on equity (ROE), residual income (RI), return on invested capital (ROIC) and economic value added (EVA). The required rate of return (Re) and the weighted average cost of capital (WACC) are used to compare to the key ratios ROE and ROIC. In this manner, actual performance is compared to the expected performance of investors.

6.5.1 Return on Assets

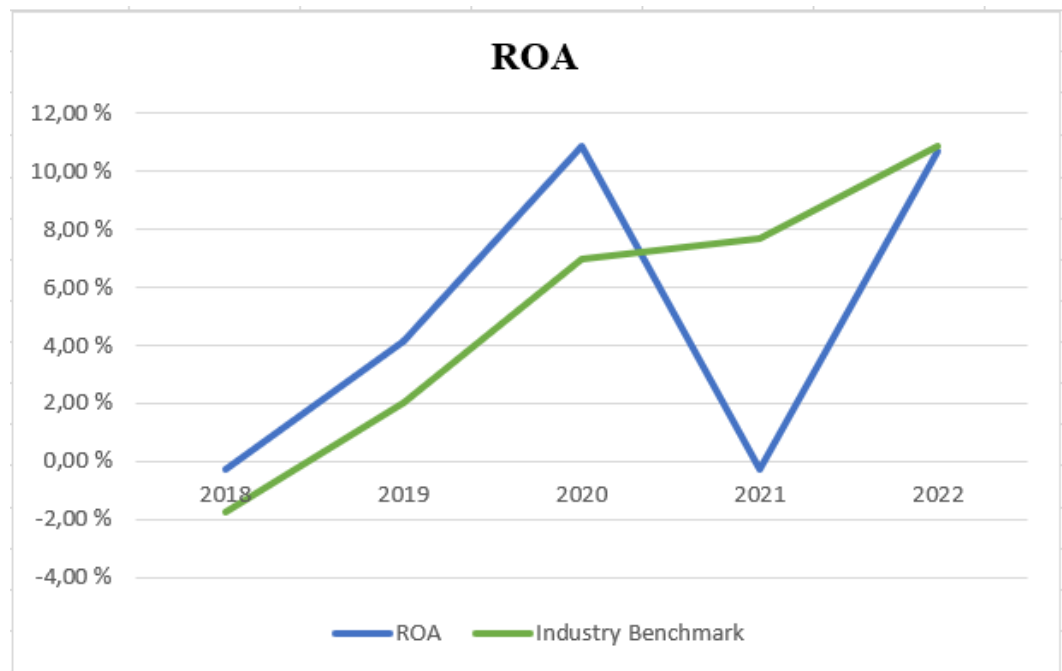
Return on assets (ROA) is a profitability ratio that is derived from dividing net income by the total assets and provides how much profit a company can generate from its assets (Hargrave, 2022b). ROA is thus an indicator of how efficiently the company's management uses its assets to generate profits. As a result, the higher the ROA ratio, the better, because the company can earn more money with a smaller investment (Hargrave, 2022b).

As stated above, the formula for ROA is:

$$ROA_t = \frac{Net\ income_t}{(Total\ Assets_{t-1} + Total\ Assets_t)/2}$$

Graph 6.4 below shows Frontline PLC's ROA from 2018 and up to 2022. The ratio is derived by dividing the company's net income by the average total assets for the fiscal year. Net income is the sum of a company's income, net expenses, taxes, and represents the financial outcome of a year's operations. The average value of total assets is used since it considers that the value of the company's assets changes over time and provides a more accurate measure of asset efficiency over a given time period (Kenton, 2022b).

One of the significant limitations of Return on Assets (ROA) is its inability to be universally applied across industries. This arises from the fact that companies in different industries possess distinct asset bases. Consequently, the asset structure of companies operating in the oil and gas industry, for instance, differ from those in the retail industry (Hargrave, 2022). While ROA is a valuable metric, it should not be considered the sole measure of a company's efficiency and financial well-being. Various other factors can influence a company's ROA, including market conditions, demand fluctuations and the changing costs of required assets (Birken & Curry, 2021). Additionally, certain analysts argue that the conventional ROA formula has limitations in its applicability and is primarily suitable for banks. This is because bank balance sheets reflect a more accurate representation of their assets and liabilities, as they are valued at market value using market-to-value accounting, or at least an estimated market value, as opposed to historical cost. Moreover, both interest expense and interest income are already incorporated into the equation of banks (Hargrave 2022).



Graph 6.4: ROA of Frontline PLC

Based on our findings, it is evident that Frontline PLC, on average, has slightly underperformed in terms of return on assets compared to the benchmark index. Over the analyzed period, Frontline PLC recorded an average ROA of 5,03%, while the benchmark index achieved a slightly higher ROA of 5,14%. It is worth noting that Frontline PLC's ROA exceeded that of the benchmark index between 2018 and 2020, suggesting a period of stronger asset performance, but experienced a decline in 2021 due to deficits during that period. However, the company managed to recover and improve its ROA in 2022.

The definition of a favorable Return on Assets (ROA) figure varies significantly across industries, considering various factors such as market conditions, industry dynamics, and company-specific factors. In the case of the crude oil and refined products shipping sector, characterized by substantial capital requirements, the standard for a satisfactory ROA tends to be lower compared to less capital-intensive industries. Generally, a ROA in the range of 5% to 10% is considered favorable within the shipping industry, although it should be evaluated in comparison to industry peers (Birken & Curry, 2021).

Overall, Frontline PLC's ROA performance has fluctuated over the analyzed period. Despite these variations, the company has maintained competitiveness

within its industry and has aligned itself with the performance of its closest competitors. To gain a comprehensive understanding of Frontline PLC's asset utilization efficiency, it is crucial to conduct further evaluation and benchmarking against industry peers. Such analysis will provide valuable insights into Frontline PLC's overall performance and positioning within the market.

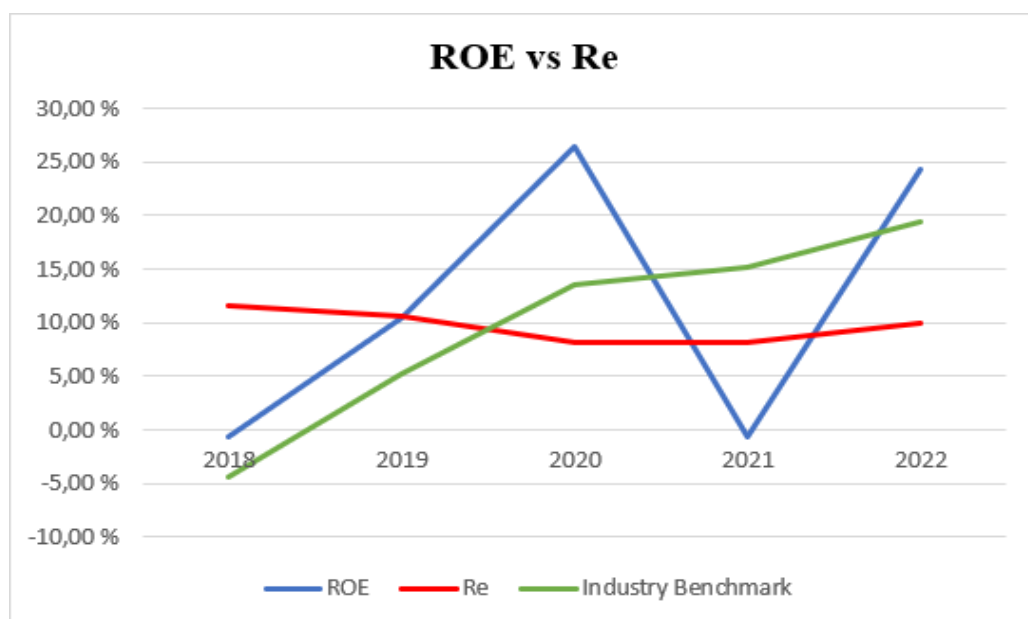
6.5.2 Return of Equity

Return on equity (ROE) is a commonly used profitability ratio that is derived by dividing net income by the book value of equity. This ratio is of considerable interest to equity investors because of the way in which net profits add to the equity value through retained earnings. Return on equity (ROE) can therefore be used as an indicator to determine how efficiently a company manages the funds contributed by their shareholders. Furthermore, this ratio can also serve as a signal of operational efficiency to potential investors and as an indicator of whether a company is adding value for its equity investors (Fernando, 2023c).

As stated above, the formula for ROE is:

$$ROE_t = \frac{Net\ income_t}{(BVE_{t-1} + BVE_t)/2}$$

Graph 6.5 below shows Frontline PLC's ROE from 2018 and up to 2022. To obtain a more precise assessment of the return on equity (ROE), we employ a similar approach to that used for calculating the return on assets (ROA). This involves dividing the company's net income by the average book value of equity (BVE) from both the current and previous year. The book value of equity comes from the balance sheet that represents a running balance of the company's entire history of changes in assets and liabilities (Fernando, 2023). The average equity is appropriate conceptually, especially for rapidly growing companies whose balance sheets change significantly throughout the year (Palepu et al., 2019, p. 178). Furthermore, because of the discrepancy between the income statement and the balance sheet, it is considered best practice to calculate ROE using average equity over a given period (Fernando, 2023). We therefore use the average book value of equity to provide a more accurate measurement of the profitability ratio, as equity can fluctuate throughout the fiscal year.



Graph 6.5: ROE and Re of Frontline PLC

According to the data presented in Graph 6.5, the return on equity (ROE) for Frontline PLC remains positive for the entire analysis period, except for the year 2021. Frontline PLC and its industry peers demonstrate average ROEs of 11,97% and 9,78% respectively. The graph illustrates that the company's ROE outperformed the industry benchmark during the years 2018 and 2020. However, there was a decline in ROE in 2021 due to deficits incurred that period. Notably, the ROE showed improvement in 2022, attributed to a high profit that significantly increased the company's equity.

Overall, our results suggests that Frontline PLC effectively utilizes the capital contributed by its shareholders and the company has not faced any significant adverse challenges impacting its performance.

6.5.3 Residual Income

The amount of additional value that a company has added for its shareholders is quantified by the company's residual income. While ROE provides an estimate of the return on equity expressed as a percentage, RI communicates whether the return is higher or lower than the expected return. If the RI is positive, this indicates that the actual return was higher than the expected one, and vice versa (Petersen et al., 2019, p. 171). In order to maintain coherence between ROE and RI estimations, RI is also determined by using the average book value of equity.

The formula for RI is given by:

$$RI_t = (ROE_t - Re_t) * \left(\frac{BVE_{t-1} + BVE_t}{2} \right)$$

Based on the data presented in Graph 6.5, the return on equity (ROE) consistently falls below the required rate of return (Re) demonstrates a lower performance during the period spanning 2018 to 2019 and in 2021. Throughout our analysis, the required rate of return (Re) ranges between 8% and 12%. However, it is worth noting that the ROE exceeds the Re significantly between 2019 and 2020, and it experiences a subsequent increase from 2022 onwards. These findings indicate that Frontline PLC's ROE has demonstrated variability in relation to the required rate of return, with periods of both underperformance and improvements. We present the estimation of RI in Table 6.6 below.

RI	2018	2019	2020	2021	2022
ROE	-0,71 %	10,47 %	26,46 %	-0,68 %	24,31 %
- Re	11,59 %	10,66 %	8,11 %	8,13 %	9,93 %
* Avg BVE	1 175 923	1 337 213	1 560 881	1 632 048	1 956 221
= RI	- 144 740,39	- 2 507,36	286 473,22	-143 906,90	281 323,43

Table 6.6: Calculation of residual income for Frontline PLC

Frontline PLC's residual income displays a negative trend in all years, except for 2020 and 2022, during the analyzed period. It is evident that the company's residual income experienced significant fluctuations over the five-year period. In 2018, the company recorded a negative residual income of 144.740 USD, indicating a substantial loss. However, there was a notable improvement in 2019, with the residual income decreasing to negative 2.507 USD, suggesting a reduction in losses. Residual income was substantially impacted in 2021. This is unsurprising given the effect of the global COVID-19 pandemic. The year's inbound equity was higher than in previous years, leading to a very negative RI. The trend reversed in 2020 and 2022, where Frontline PLC achieved a positive residual income, indicating a better return than expected.

Overall, Frontline PLC has demonstrated a positive average residual income of 55.328 USD throughout the analysis period, indicating favorable financial performance. The evaluation of residual income (RI) presented in Table 6.6 further confirms that Frontline PLC's return on equity (ROE) has been sufficient on

average throughout the analyzed period. This indicates that Frontline PLC has been successful in generating satisfactory income in relation to its equity, demonstrating efficient utilization of its resources and overall financial performance.

6.5.4 Return on Invested Capital

The return on invested capital (ROIC) is arguably one of the most accurate performance measures, used to evaluate a company's efficiency in allocating capital to profitable investments (Hayes, 2022c). This ratio serves as a comprehensive measure of overall operational profitability and offers a more accurate estimation of the actual return on capital employed within the business compared to ROE. ROIC is particularly crucial in the context of business valuation, as higher rate of return contributes to a higher value. Additionally, a company with a high ROIC is more likely to attract favorable loan terms and cheaper financing (Petersen et al., 2017, p. 142). ROIC is estimated by dividing the net operating profit after tax by the invested capital of a company.

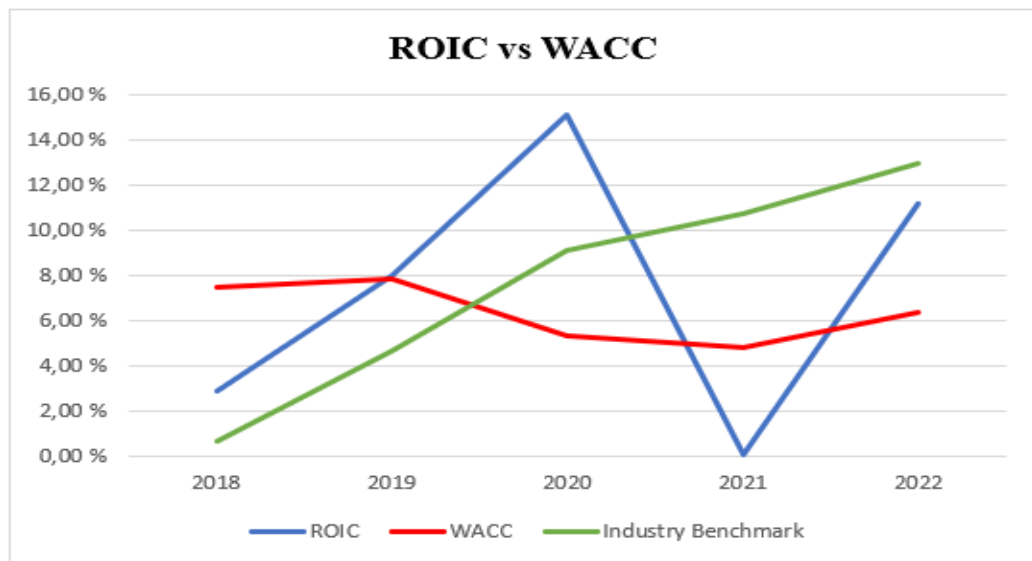
As stated above, the formula for ROIC is:

$$ROIC_t = \frac{NOPAT_t}{(NOA_{t-1} + NOA_t)/2}$$

Graph 6.7 depicted below illustrates the development in ROIC and WACC for Frontline PLC throughout the analysis period. Similar to the calculations of ROA and ROE, ROIC is determined by dividing on the average of the net operating assets from the previous and current years, thereby considering potential significant changes within the year. Unlike ROE, ROIC encompasses the profits generated by both equity and debt, providing a comprehensive assessment of capital efficiency (Hayes, 2022c). As mentioned, ROIC measures the operating return in relation to the company's invested capital. To determine the yearly cost of the invested capital, the WACC is considered. By comparing ROIC to the WACC, which represents the annual cost of the invested capital, we can assess the relative return above the required financing cost for the company's operations. If the ROIC falls below the WACC, it would indicate an unsustainable business model.

Frontline PLC's return on invested capital has on average been somewhat below the industry benchmark, with an average ROIC of 7,41% compared to the

benchmark index's ROIC of 7,63%. This suggests that Frontline PLC's performance in generating returns from its invested capital has been somewhat lower compared to the industry benchmark. Furthermore, this indicates that Frontline PLC is not utilizing its invested capital as effectively as its competitors in the industry. However, it is important to note that this is based on average figures and may vary over different time periods. It will still be more interesting to see the relationship between ROIC and WACC, to determine whether the company has achieved excess returns over the last five years.



Graph 6.7: ROIC and WACC of Frontline PLC

Based on the data presented in Graph 6.7, it is evident that Frontline PLC has achieved additional returns in the years 2019, 2020 and 2020 compared to the WACC. This indicates that the company has been able to generate higher operating returns relative to the cost of financing its operations. The average WACC for the period between 2018-2022 is 6,37% while the average ROIC is 7,41%. This suggests that Frontline PLC has, on average, been able to generate positive excess return on its investments, indicating effective utilization of the company's invested capital and potentially creating value for its shareholders.

6.5.5 Economic Value Added

Economic Value Added (EVA), also referred to as economic profit, is another measure of financial performance and value creation of a company that is closely connected to ROIC. While ROIC indicates the return generated from the invested capital, EVA goes a step further by revealing the excess return above the required

return to finance that capital. The purpose of this measure is to determine the company's true economic profit, and it is used to assess the value created by funds invested in a company (Chen, 2022).

The formula for EVA is given by:

$$EVA_t = (ROIC_t - WACC_t) * \left(\frac{NOA_{t-1} + NOA_t}{2} \right)$$

As depicted in the Graph 6.7 presented above, the ROIC has on average been higher than the WACC throughout the analysis period. This indicates that Frontline PLC has been able to generate some excess profits on average. This observation is further supported by the estimation of EVA, which are provided in Table 6.8 below.

EVA	2018	2019	2020	2021	2022	Average
ROIC	2,84 %	7,97 %	15,09 %	0,01 %	11,13 %	7,41 %
- WACC	7,48 %	7,85 %	5,35 %	4,82 %	6,34 %	6,37 %
*NOA	2 888 729	3 000 295	3 364 752	3 764 477	4 033 853	3 410 421
= EVA	- 133 996	3 677	327 942	- 180 983	193 214	41 971

Table 6.8: Economic Value Added of Frontline PLC

Table 6.8 provides an insight into the trend of EVA from 2018 to 2022, revealing a fluctuating development throughout these years. However, it is noteworthy that in 2021, there was a notable negative shift in EVA primarily driven by an unfavorable improvement in ROIC. The significant decline in EVA in 2021 is not surprising considering the challenging circumstances posed by the COVID-19 pandemic. Despite this unfavorable change, there was an improvement in ROIC in 2022, surpassing the cost of capital. As a result, the Economic Value Added for that year turned positive.

If the Economic Value Added (EVA) was negative in certain years and then became positive, it indicates a shift towards generating excess value creation of Frontline PLC. Overall, Frontline PLC has on average had an average positive EVA of 41.971 throughout the five years. This signifies that the company has generated returns above the cost of capital, indicating improved financial performance and value creation on average.

6.5.6 Summary of Profitability Ratios

Over the course of our analysis period, Frontline PLC has consistently exhibited a strong track record of profitability. Their return on assets, equity, and invested

capital have consistently showcased positive figures, frequently meeting, or surpassing the industry benchmark. Moreover, these ratios have on average indicated favorable financial performance. Consequently, these findings strongly indicate that Frontline PLC maintains a robust financial position, reflecting a positive state of affair for the company.

6.6 Liquidity Analysis

The importance of liquidity cannot be overstated for any company, as it is a critical factor that enables the payment of bills and facilitates profitable investments. Insufficient liquidity can potentially lead to bankruptcy in certain cases. Therefore, it is essential to conduct a thorough analysis of both short-term and long-term liquidity risks within the company (Petersen et al., 2017, p. 211). The need to secure financing for ongoing operational activities is the primary source of short-term liquidity risk. For instance, when a company is required to pay its suppliers before receiving payment for the goods or services it provides, a cash shortfall occurs, necessitating short-term borrowing to bridge the gap. Long-term liquidity risk, on the other hand, evaluates the company's long-term solvency by examining its ability to meet interest and debt payments over an extended period of time (Mueller. 2022).

6.6.1 Current Ratio

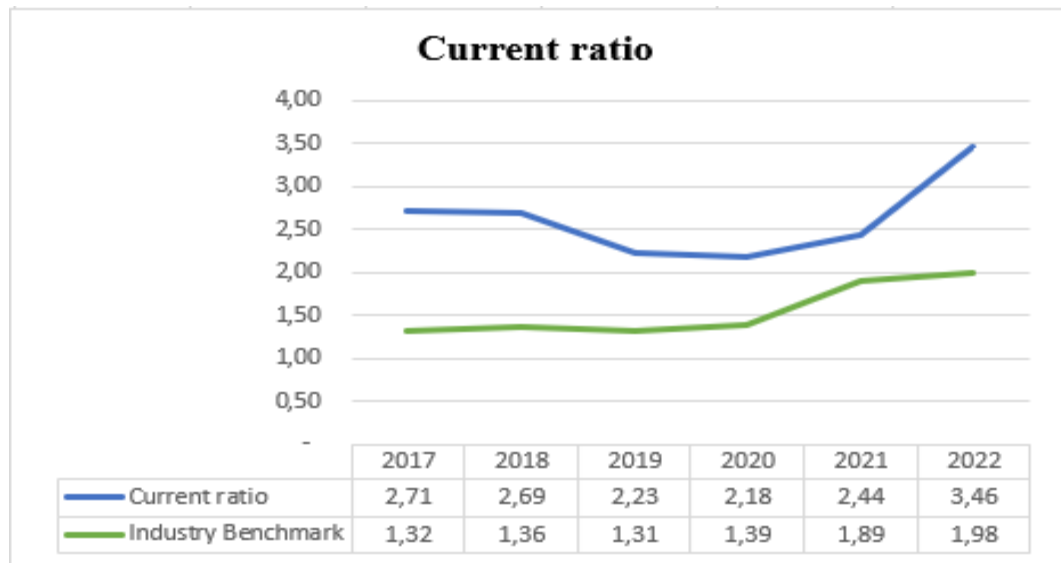
The current ratio measures the company's ability to meet short-term obligations with short-term assets. Current ratio is used to determine whether a company has sufficient assets that can be easily converted into cash to cover its short-term debts. A current ratio greater than one indicates that a company has more current assets than current liabilities, implying that it has the ability to meet its obligations. A higher current ratio is generally considered better since it indicates a stronger liquidity position (Folger, 2023).

The formula is given by:

$$\text{Current ratio}_t = \frac{\text{Current assets}_t}{\text{Current liabilities}_t}$$

The fundamental concept underlying the ratio is a subject of contention withing the academic domain due to the variability of a satisfactory ratio across different industries under analysis (Petersen et al., 2017, p. 232). However, we consider this

ratio to be useful as we compute it for Frontline PLC over multiple years, allowing us to assess the progression of current liabilities in relation to current assets.



Graph 6.9: Current ratio of Frontline PLC

Throughout the analysis period, Frontline PLC consistently outperformed the benchmark index by maintaining a higher current ratio. This sustained ratio, well above one, signifies the company's ability to effectively manage its short-term debt. Specifically, between 2017 and 2022, Frontline PLC maintained an average current ratio of 2,62, surpassing the industry benchmark index's average 1,54. This significant disparity highlights Frontline PLC's substantial current asset reserves in comparison to its short-term debt obligations. Consequently, the company comfortably surpasses the crucial benchmark and adheres to the widely recognized rule of thumb, affirming its robust liquidity to meet all short-term obligations.

6.6.2 Operating Cash Flow Ratio

The operating cash flow ratio is a measure of a company's ability to generate cash flow from its core operations to cover its short-term liabilities. The ratio can also be used to evaluate a company's short-term liquidity (Palepu et al., 2019, p. 192).

The formula for cash flow coverage ratio is:

$$\text{Operating cash flow ratio}_t = \frac{\text{Operating cash flow}_t}{\text{Current liabilities}_t}$$

An operating cash flow ratio higher than one indicates that the company can generate enough cash to pay off its current liabilities (Hargrave, 2022).

	Operating Cash Flow ratio				
	2018	2019	2020	2021	2022
NOPAT	82 048	239 088	507 806	479	448 998
+ Depreciation	122 566	117 850	138 770	147 774	165 170
-/+ Change in NOWC	25 932	5 047	- 45 936	30 708	149 219
= Cash flow from operating activities (CFO)	230 546	361 985	600 640	178 961	763 387
Operating current liabilities	81 885	116 518	82 660	88 993	112 781
Operating Cash Flow ratio	2,82	3,11	7,27	2,01	6,77

Table 6.10: Operating Cash Flow Ratio of Frontline PLC

According to Table 6.10, Frontline PLC has demonstrated a positive fluctuating pattern in its operating cash flow ratio throughout the analysis period. Notably, the company's operation cash flow ratio has consistently remained above one, indicating sufficient cash flow throughout the period. Particularly striking is the remarkable surge experienced in 2020, where Frontline PLC's ratio reached an impressive 7,27. This substantial increase signifies a significant enhancement in the company's ability to generate cash flow and effectively manage its current liabilities. However, in 2021, the ratio experienced a slight decline, settling at 2,01, likely influenced by the outbreak of COVID-19 and its associated challenges. It is worth noting that the ratio rebounded in 2022, reaching 6,77, thus maintaining a reasonably favorable position for the company.

Overall, Frontline PLC's operating cash flow ratio reveals a positive fluctuating pattern over the years, with certain periods showcasing stronger coverage of current liabilities. This trend reflects the company's effective ability to generate cash flow from its operations and underscores its potential resilience in managing short-term financial obligations (Hargrave, 2022a).

6.6.3 Cash Flow Analysis

Conducting a thorough cash flow analysis is crucial in assessing Frontline PLC's liquidity, as the company's ability to generate positive net cash flows is essential for meeting both its current and non-current liabilities. By examining the cash flow statement comprehensively, we gain valuable insights into the company's financial health and its capacity to fulfill its financial obligations in the short term as well as the long term.

Cash Flow Analysis					
	2018	2019	2020	2021	2022
NOPAT	82 048	239 088	507 806	479	448 998
+ Depreciation	122 566	117 850	138 770	147 774	165 170
-/+ Changes in NOWC	- 25 932	- 5 047	45 936	- 30 708	- 149 219
-/+ Changes in NONCA (CAPEX)	- 111 510	- 321 059	- 705 363	- 395 860	- 275 909
FCFF	67 172	30 832	- 12 851	- 278 315	189 040
+/- Changes in NIBD without cash	627	- 29 996	419 810	176 157	- 205 947
Total financial items	- 90 793	- 99 229	- 94 803	- 18 731	30 330
-/+ Tax-Shield from NFE	347	127	3	7 104	- 3 791
FCFEE	- 22 647	- 98 266	312 159	- 113 785	9 632
+/- Changes in Equity	- 15 014	206 005	- 311 661	52 137	131 820
Cash surplus	- 37 661	107 739	498	- 61 648	141 452

Table 6.11 Cash Flow Analysis of Frontline PLC

Table 6.11 portrays a fluctuating pattern in the cash surplus of Frontline PLC throughout the analysis period. Notably, the free cash flow to equity holders registers as negative in 2018, 2019, and 2021. However, despite this, the overall cash surplus remains positive in 2019, 2020 and 2022, primarily due to changes in equity. It is worth highlighting that the operations of Frontline PLC encountered significant disruption caused by the COVID-19 pandemic in 2021. As depicted in Table 6.11, the company experienced a negative cash surplus of 61.648 USD during that year. This unfavorable outcome can be attributed to the unprecedented challenges and adverse impact of the pandemic on Frontline PLC's financial performance.

6.6.4 Summary of Liquidity Ratios

Throughout the analysis period, Frontline PLC has consistently demonstrated a commendable track of liquidity. Their current ratio and cash flow ratio have consistently displayed positive values, exceeding the industry benchmarks. Furthermore, it becomes evident that these ratios meet the required threshold, indicating that Frontline PLC does not lack sufficient short-term liquidity.

6.7 Solvency Analysis

Solvency refers to a company's ability to manage losses and is commonly measured through the ratio between its equity and total capital. It serves as an indicator of a company's long-term liquidity risk (Hayes, 2022e). Typically, a high level of financial leverage combined with a low solvency ratio indicate a greater risk of facing long-term liquidity challenges. When estimating the financial leverage and solvency ratios, it is crucial to account for all financial obligations accurately

recorded in the balance sheet. The same principle applies to equity, where all relevant values should be included. Furthermore, it is important to decide whether the ratios should be based on book value or market value. Whenever market values are available, it is advisable to utilize them as they are closer to the realizable value of the company (Petersen et al., 2017, p. 218).

It is important to note that maintaining an optimal level of debt is desirable for companies since debt offers corporate interest tax shield. Debt is generally considered less expensive than equity due to its lower level of risk. The required return for debt investors is typically lower than for equity investors, as debt holders have priority in receiving payments and repayment in case of liquidation (Hayes, 2022b). However, it is important to exercise caution, as excessive debt can potentially lead to financial distress. Therefore, the decision to utilize debt as a financing tool involves striking a balance between the benefits of the corporate tax shield and the potential costs associated with financial distress (Koller et al., 2020, p. 684).

6.7.1 Equity Ratio

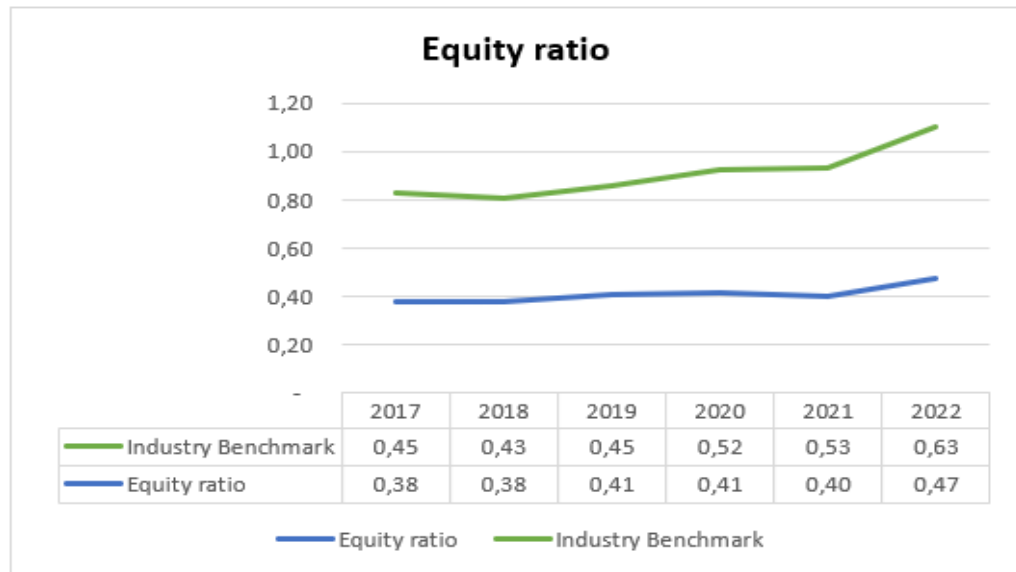
The equity ratio is a widely used solvency ratio that indicates the proportion of a company's assets financed with equity. It provides insights into the extent to which the firm's potential losses can be absorbed before incurring debt. A higher equity ratio signifies greater solvency for the company, as it demonstrates a larger portion of assets being financed through equity (Hayes, 2022d).

The formula is given by:

$$Equity Ratio_t = \frac{Equity_t}{Total\ assets_t}$$

When a company liquidates its assets and settles all its obligations, the remaining cash represents the company's equity. Shareholders' equity, comprising the common stock value, additional paid-in capital, and retained earnings, represents the actual value of a company, encompassing all these elements. As a company's shareholder equity ratio approaches 100%, it signifies that the majority of its assets are funded through equity capital rather than debt. However, while equity capital offers certain advantages, it also comes with certain drawbacks. Comparatively, it

tends to be costlier than debt financing and necessitates a partial dilution of ownership, as well as granting voting rights to new shareholders (Hayes, 2022d).



Graph 6.12: Equity Ratio of Frontline PLC

Graph 6.12 above depicts that Frontline PLC’s equity ratio has consistently remained below the industry benchmark on average during analysis. Frontline PLC maintains an average equity ratio of 41%, while the industry benchmark exhibits an average of 50%. This indicates that the company relies relatively more on debt financing or other forms of liabilities compared to its industry peers, resulting in a lower proportion of equity in its capital structure.

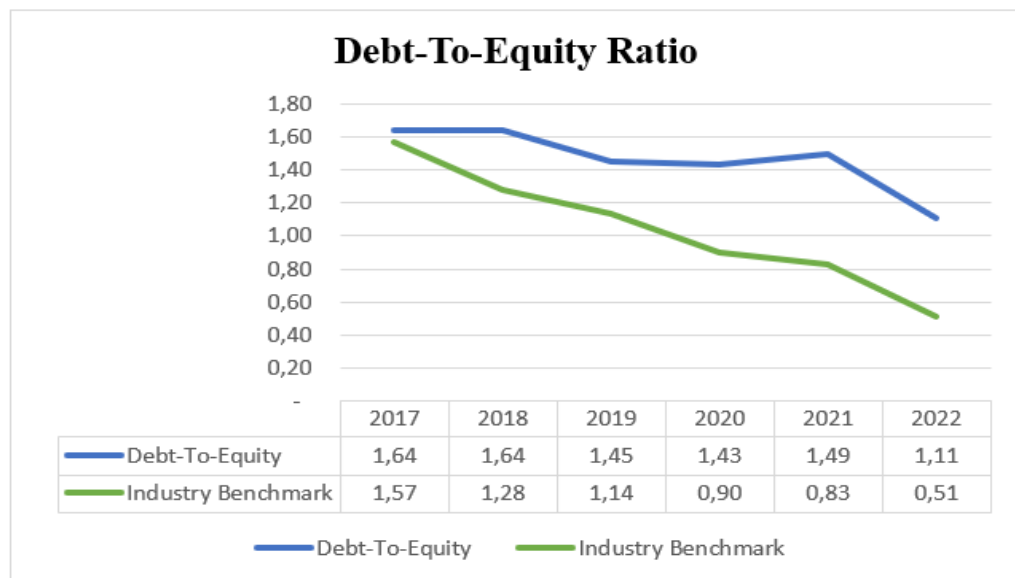
Furthermore, a lower equity ratio than their industry peers can carry certain implications for the company’s financial stability and risk profile. A higher proportion of debt in capital may increase Frontline PLC’s financial leverage, making it more sensitive to changes in interest rates and potentially increasing the risk of default. Additionally, Frontline PLC’s lower equity ratio may be intentional, reflecting the company’s strategic decisions to optimize its capital structure based on factors cost of capital, growth, opportunities, and risk management. To understand the magnitude of these small changes, we must consider them in the context of the key figure Debt-To-Equity Ratio.

6.7.2 Debt-To-Equity Ratio

The Debt-To-Equity Ratio is an important measure for determining a company's financial leverage. It provides insights into the extent to which the company's operations are funded through debt, also known as gearing or financial leverage (Fernando, 2022a). Essentially, this ratio indicates the company's ability to cover its outstanding debt during challenging times. A higher ratio implies a greater risk associated with the company's shares. One often considers relinquishing ownership of a company when the expectation is that the additional income generated from debt will outweigh the costs associated with it. However, it is important to note that there is a possibility that the cost of debt exceeds the additional revenue generated, resulting in a decrease in the company's overall value.

The formula is given by:

$$\text{Debt-To-Equity Ratio}_t = \frac{\text{Total Liabilities}_t}{\text{Equity}_t}$$



Graph 6.12: Debt-To-Equity Ratio of Frontline PLC

Based on our calculations, it is evident that Frontline PLC consistently maintains a significantly higher Debt-to-Equity Ratio compared to the companies included in the benchmark index. This observation suggests that Frontline PLC has pursued a more aggressive approach to financing their growth through debt, surpassing their competitors in this regard. However, it is important to note that capital-intensive companies typically tend to have higher D/E ratios compared to less capital-intensive ones. Therefore, in this case, it can be inferred that it is the

reference companies that possess a lower D/E ratio than what is considered normal, rather than Frontline PLC having an abnormally higher D/E ratio.

6.7.3 Summary of Solvency Analysis

Throughout the analysis period, Frontline PLC has intentionally maintained a lower equity ratio and a higher debt-to-equity ratio, demonstrating the company's strategic approach to optimizing its capital structure. This decision reflects the understanding that the shipping industry is highly capital-intensive, and having the appropriate financing structure is crucial for maintaining competitiveness. In an industry with few barriers to entry, a focus on cost management and the potential for volatile earnings. Frontline PLC recognizes the importance of aligning its capital structure with the unique demands and challenges of the sector.

7. Estimating the Cost of Capital

7.1 The Weighted Average Cost of Capital

The Weighted Average Cost of Capital is the calculated average of the required return for each category of investors. It serves as a representation of a company's overall after-tax cost of capital, taking into account all sources of funding, including common stock, preferred stock, bonds and other forms of debt. The required rate of return signifies the potential earnings an investor could attain from a comparable investment with similar risk characteristics. WACC reflects the average rate at which a company expects to finance its assets. The estimation process involves initially determining the cost of equity and debt individually. Subsequently, these costs are weighted according to the proportion of equity and debt in the company's capital structure (Hargrave, 2023).

The formula for the Weighted Average Cost of Capital is given by:

$$WACC = \frac{MVE}{MVE + NIBD} \times r_e + \frac{NIBD}{MVE + NIBD} \times r_d \times (1 - T)$$

Where:

MVE = Market Value of Equity

NIBD = Net Interest Bearing Debt

r_e = Cost of Equity

r_d = Cost of Debt

T = Tax Rate

7.2 The Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) holds significant importance as a widely used method for estimating the cost of capital in practical applications. It offers a practical approach to identifying investments that bear similar levels of risk. In the CAPM framework, the market portfolio serves as an efficient, well-diversified portfolio that represents the non-diversifiable risk inherent in the broader economy (Berk & DeMarzo, 2020, p. 444). The CAPM expresses the potential return an investor can expect to achieve in the stock market if the investor is willing to bear a certain amount of systematic risk, represented at a beta value.

The formula for CAPM is given by:

$$r_E = rf + \beta_E \times [E(rm) - rf]$$

Where:

rf = Risk-Free Rate

BE = Beta of Equity

E(rm) = Expected return on market portfolio

7.2.1 Estimation of the risk-free interest rate

The risk-free interest rate is the return we would achieve by investing in a portfolio that bears zero risk i.e., how much an investor can earn without incurring any risk (Petersen et al., 2017, p. 346). A risk-free asset is characterized by the investor having complete certainty regarding the expected return it offers. Theoretically, the expected return on a zero-beta portfolio would be the best estimate of the risk-free rate. This method has proven to be ineffective in practice due to the cost and difficulty in construction such a portfolio. To qualify as a risk-free asset over a given period, two conditions must be satisfied (Damodaran, 2012, p. 154):

- There should be no risk of default associated with its cash flows, i.e., no doubt whether the project will yield a profit.
- There must be no uncertainty regarding reinvestment rates, meaning that the project's return must always be reinvested at the same interest rate.

These assets are deemed risk-free, and the interest rate earned on them is referred to as the risk-free rate (Damodaran, 2012, p. The most employed method to estimate the risk-free rate is by using the current yield on long-term government bonds. This practice is widely adopted. From a theoretical standpoint, the most reliable

approach involves selecting a bond with duration matching the estimated cash flow duration. For instance, if the cash flows are projected over a 10-year period, a 10-year bond would be the most suitable choice (Koller et al., 2020, p. 329). According to Damodaran, only a zero-coupon government bond fulfills the criteria to be considered a risk-free rate. This is because it carries no default risk, and there are no cash flows prior to its maturity date. On the other hand, a government bond with coupons is not considered entirely risk-free, as coupons must be reinvested at prevailing rates during their respective periods. However, it is important to note that not all government bonds are risk-free, and there have been instances in history where governments have failed to meet their obligations.

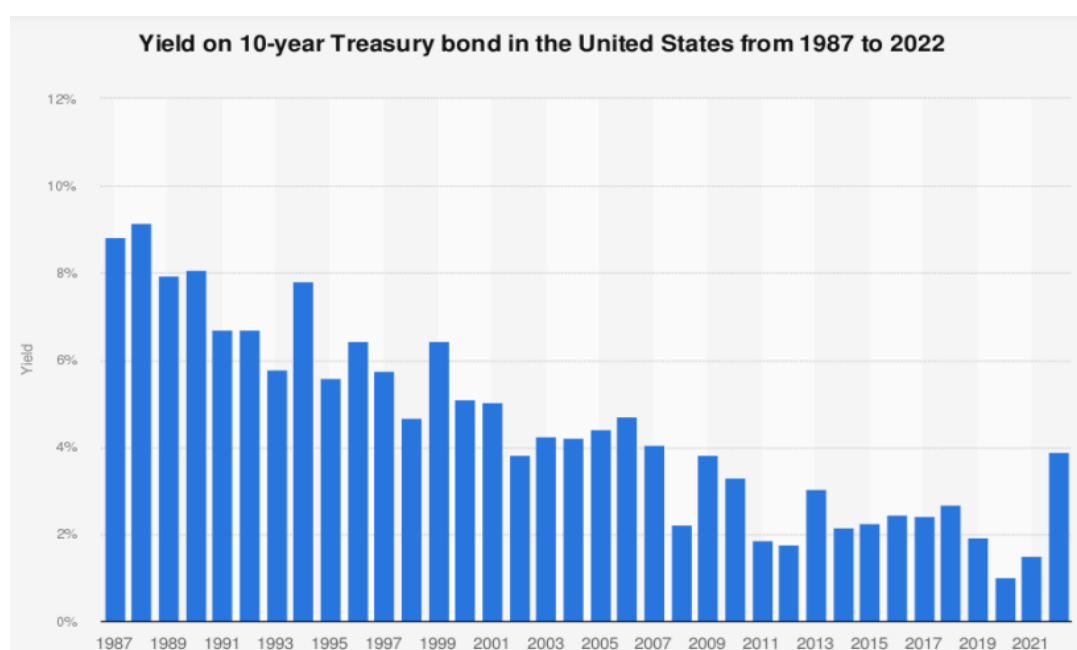


Figure 7.1: Yield on 10-year Treasury bond in the United States from 1987 to 2022. Source: IESE and Statista.

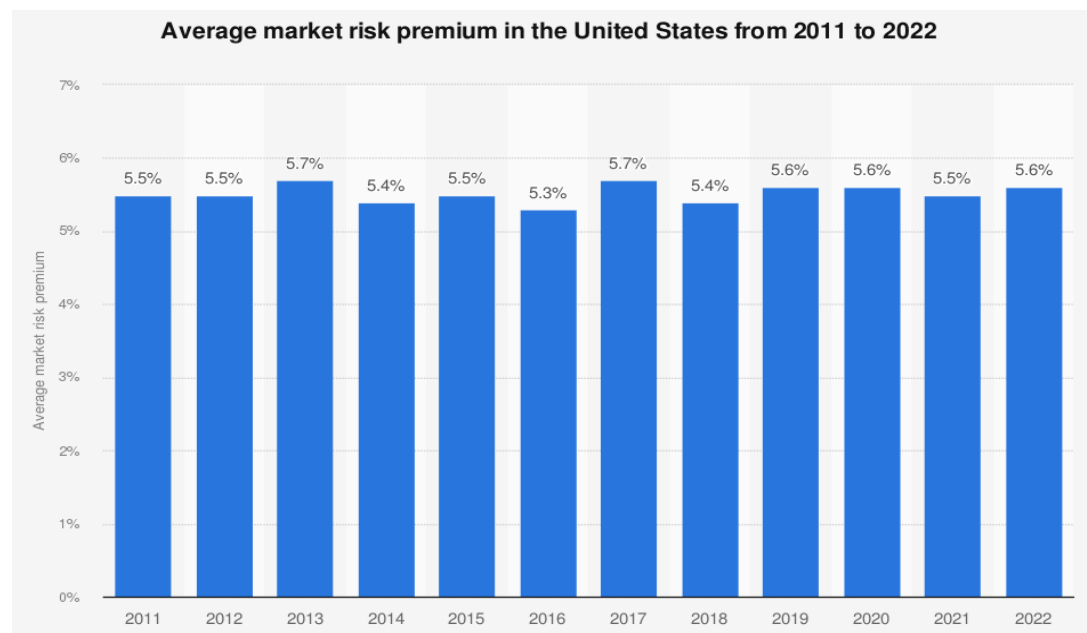
American government bonds are generally regarded as close approximation of risk-free assets. Therefore, employing a 10-year zero coupon American government bond as the risk-free rate would provide a reliable estimate that closely approximate the true value.

7.2.2 Market Risk Premium

The market risk premium represents the disparity between the expected return of the market portfolio and the risk-free rate. It characterizes the connection between portfolio returns of assets and the yields of treasury bonds. Typically, the market risk premium is estimated using historical data, implying that investors anticipate

the future risk premium to mirror the historical one. Calculation involves taking an average over a specified period, and the outcome will fluctuate based on the chosen measurement period. Opting for a longer measurement period when estimating the risk premium enhances stability and reduces volatility, leading to a lower standard deviation. On the contrary, a shorter time frame yields- a more stable target. This approach offers the advantage of providing a more accurate depiction of the economy's performance over the past 10-15 years, accounting for lower inflation levels and portfolios with greater diversification (Koller et al., 2020, s. 327).

The data presented in Figure 7.2 is sourced from a survey conducted by IESE, which periodically publishes information on market risk premiums. The survey involved the distribution of over 15.000 emails to finance and economics professors, analysts, and company executives, requesting their insights on risk-free rates and market risk premia. According to the survey results, the market risk premiums in the U.S. ranged from 5,5% to 5,7% between 2011 and 2022. Taking this into account, we will incorporate Statista's distinct market risk premiums for each year within our analysis period. Considering industry factors and future prospects, we find no compelling rationale to deviate from these values.



*Figure 7.2: United States` average market risk premium from 2011 to 2022.
Source: IESE and Statista.*

7.2.3 Estimation of Equity Beta

The equity beta is a measure of the stock's volatility relative to the overall market, indicating how responsive the stock price is to changes in the broader market (Nickolas, 2021). A higher beta suggests greater volatility, and consequently, investors demand higher compensation for bearing the associated risks when investing in such a stock. The formula for beta is as follows:

$$\beta_E = \frac{\text{Covariance}(r_{\text{Frontline}}, r_{\text{S\&P 500}})}{\text{Variance}(\text{S\&P 500})}$$

A beta greater than one signifies that the stock exhibits higher volatility compared to the market portfolio. It implies that the stock's price is likely to experience larger fluctuations in response to market movements. On the other hand, a beta less than one indicates that the stock has relatively lower volatility than the market portfolio. In this case, the stock's price is expected to be less sensitive to market changes, exhibiting more stability in comparison.

We utilize the Standard & Poor's 500 Index, commonly referred to as the S&P 500 Index, as our benchmark to measure the market portfolio. This widely recognized stock market index tracks the performance of approximately 500 prominent publicly traded companies in the United States (Kenton 2023b). By replying on the S&P 500 Index, we can capture a comprehensive representation of the market's behavior. To estimate the equity beta, we analyze monthly returns of both Frontline PLC's shares and the S&P 500 Index, which are traded on the New York Stock Exchange. By calculating the covariance between these two variables and determining the variance of the S&P 500 Index, we employ the aforementioned formula to derive the equity beta. This process allows us to assess the sensitivity of Frontline PLC's stock returns to the overall market movements.

Year	Variance Frontline	Variance S&P 500	Covariance	BETA
2017	4,27 %	0,12 %	0,270 %	2,29
2018	4,07 %	0,13 %	0,247 %	1,95
2019	3,85 %	0,13 %	0,236 %	1,83
2020	3,74 %	0,16 %	0,233 %	1,42
2021	3,57 %	0,16 %	0,206 %	1,29
2022	3,52 %	0,18 %	0,205 %	1,12
Average	3,90 %	0,14 %	0,24 %	1,76

Table 7.3: Estimation of the beta from 2017-2022.

7.2.4 Blume`s Beta Adjustment

From 1926 to 1961, Marshall Blume, a prominent American economist, and the Howard Butcher Professor of Finance at the University of Pennsylvania, conducted a comprehensive analysis encompassing 415 different companies. Marshall Blume`s study revealed an interesting phenomenon known as “Beta Smoothing” (Koller et al., 2020, p. 334). This refers to the tendency of betas to converge towards the mean of all betas over time, which is 1. In other word, there is a gradual movement of beta value towards 1, indicating a convergence of volatility with the overall market. When the beta value is 1, it suggests that the portfolio`s fluctuations align closely with those of the market portfolio. A beta value of 2, on the other hand, indicates that the portfolio tends to fluctuate approximately twice as much as the market portfolio. This comparison provides a measure of the relative volatility and sensitivity of the portfolio in relation to the market movements (Blume, 1975).

As a result, the following adjustment model was developed:

$$\beta_{Adjusted} = (B * P) + (1 * (1 - P))$$

Where:

P = the estimation error

1.0 = the beta value of the market portfolio

Year	Variance Frontline	Variance S&P 500	Covariance	BETA	Blume`s Adjusment
2017	4,27 %	0,12 %	0,270 %	2,29	1,87
2018	4,07 %	0,13 %	0,247 %	1,95	1,64
2019	3,85 %	0,13 %	0,236 %	1,83	1,56
2020	3,74 %	0,16 %	0,233 %	1,42	1,28
2021	3,57 %	0,16 %	0,206 %	1,29	1,20
2022	3,52 %	0,18 %	0,205 %	1,12	1,08
Average	3,90 %	0,14 %	0,24 %	1,76	1,51

Table 7.4: Estimation of the adjusted beta from 2017-2022.

By applying the formula for adjusted beta, we derive the corresponding beta values as presented in Table 7.4 above. Throughout our analysis period, we will employ the adjusted beta for each year. Since the model assumes that betas more often move towards one over time, it would be natural to use the adjusted beta in our forecast horizon.

7.3 Estimating the Cost of Equity

In the preceding sub-chapters, we conducted estimations for the different components that form the basis for determining the required rate of return to equity.

We have aggregated the yearly values of each component and computed the corresponding cost of equity, as depicted in Table 7.5 below.

Cost of equity	2017	2018	2019	2020	2021	2022
Risk-free rate (rf)	2,42 %	2,74 %	1,92 %	0,94 %	1,53 %	3,88 %
Beta	1,87	1,64	1,56	1,28	1,20	1,08
E(r _m -rf)	5,7 %	5,4 %	5,6 %	5,6 %	5,5 %	5,6 %
Re	13,08 %	11,59 %	10,66 %	8,11 %	8,13 %	9,93 %

Table 7.5: Estimated Cost of Equity for Frontline PLC.

7.4 Estimating the Cost of Debt

The cost of debt refers to the present cost incurred by a company when borrowing funds to finance its projects. It is primarily influenced by factors such as the company's default risk, prevailing interest rates, the tax advantages associated with debt (Damodaran, 2012, p. 211). Estimating the cost of debt becomes relatively straightforward when a company has outstanding long-term bonds. In such instances, the market price of the bond, combined with its coupons and maturity, can be utilized to calculate the cost of debt.

Considering that Frontline PLC does not have rated bonds, we have two alternatives to estimate the cost of debt. The first option is to estimate a synthetic rating for the company. This entails utilizing the interest coverage ratio and the size of the company as metrics and comparing them to similar companies that have rated debt. By benchmarking against these companies, we can derive a synthetic rating that reflects the creditworthiness of the company. The second option involves evaluating the recent borrowing history of the company. In this approach, we examine the interest rate paid on the net interest-bearing debt in previous years and derive an estimation of the cost of debt for the company (Damodaran, 2012, p. 212).

These alternatives provide us with means to estimate the cost of debt, despite the absence of rated bonds of Frontline PLC. Due to the time-consuming nature of the synthetic rating approach and the fact that it may not accurately represent the actual interest paid by the company for its debt, it has been decided not to employ it in this analysis. Instead, the interest rate paid by Frontline PLC during the period 2017-2022 has been estimated and utilized as the cost of debt, as shown in Table 7.6 below.

Cost of Debt	2017	2018	2019	2020	2021	2022
NIBD	1 693 662	1 731 950	1 594 215	2 013 527	2 251 332	1 903 933
Interest expense	69 815	93 275	94 461	72 160	61 435	45 330
Rd	4,12 %	5,39 %	5,93 %	3,58 %	2,73 %	2,38 %

Table 7.6 Estimated Cost of Debt

7.5 Estimated Weighted Average Cost of Capital (WACC)

Prior to estimating the cost of capital, it is necessary to calculate the market value of equity and debt. In the case of equity, this is achieved by multiplying the outstanding shares by the share price. In cases where the book value of equity is lower than the market value of equity, relying solely on book values would result in underestimating the weighted average cost of capital. Consequently, this underestimation would lead to an overestimation of the company's value. This is primarily because using book values underestimate the proportion of equity relative to debt capital, thereby skewing the calculation of WACC (Dumrauf, 2015).

Equity (USD 1 000)	2017	2018	2019	2020	2021	2022
Outstanding shares 31.12	169 809 324	169 821 192	196 894 321	197 692 321	203 530 979	222 622 889
Closing share price	3,49	4,21	9,88	5,78	6,57	12,14
MVE (USD 1000)	592 635	714 947	1 945 316	1 142 662	1 337 199	2 702 642
BVE (USD 1000)	1 187 629	1 164 217	1 510 208	1 611 553	1 652 542	2 259 899

Table 7.7 Market Value and Book Value of Equity.

In our specific scenario, the market value of equity for Frontline PLC is lower than the book value for all years except 2022. Using the market value in our calculations would consequently lead to an underestimation of the weighted average cost of capital (WACC), potentially resulting in an overestimation of the company's value. To mitigate this issue and ensure accurate calculations, we have made the decision to employ book value of equity for the period spanning 2017 to 2021 and the market value of equity for 2022. By doing so, we avoid distorting the calculation of WACC and maintain the integrity of our valuation analysis.

Due to the principles of fair-value accounting, we can reasonably expect that the market value of net-interest bearing debt (NIBD) will be closely aligned with its book value. This implies that the market value of debt is anticipated to be close to the value stated on the balance sheet (Christian & Lüdenbach, 2013, p. 518). As a result, we can obtain this value from the reformulated balance sheet presented in NOA-format. Based on our calculations above, we are now able to estimate the WACC for Frontline PLC, as shown in Table 7.8 below:

WACC	2017	2018	2019	2020	2021	2022
Re	13,08 %	11,59 %	10,66 %	8,11 %	8,13 %	9,93 %
Rd	4,12 %	5,39 %	5,93 %	3,58 %	2,73 %	2,38 %
Tax rate	12,50 %	12,50 %	12,50 %	12,50 %	12,50 %	12,50 %
BVE (MVE for 2022)	1 187 629	1 164 217	1 510 208	1 611 553	1 652 542	2 702 642
NIBD	1 693 662	1 731 950	1 594 215	2 013 527	2 251 332	1 903 933
BVE + NIBD	2 881 291	2 896 167	3 104 423	3 625 080	3 903 874	4 163 832
WACC	7,51 %	7,48 %	7,85 %	5,35 %	4,82 %	6,34 %

Table 7.8 Estimated WACC for Frontline PLC

8. Forecasting

The subsequent sections comprise the third segment of our thesis, focusing on our anticipated trajectory for Frontline plc. These forecasts are derived from the understanding acquired through our earlier chapters. Moreover, these predictions are used later in the conclusion of our thesis question. In this particular section, we project the evolution of Frontline plc and demonstrate this through projected income statements, balance sheets, and cash flow statements. The essential figures from these forecasts are used in Chapter 8 to estimate the market value of Frontline plc's equity. Refer to the attached excel file for a comprehensive breakdown of the calculations.

Stemming from our strategic evaluation and the central question of our thesis, we have formulated a five-year forecast. This prediction is grounded on the historical data from 2017 to 2022, with a forecast horizon from 2023 through 2027.

A company's market value embodies the anticipated future profits and growth (Tarver, 2022). We illustrate how projections of changes in income statements influence Frontline plc's corresponding financial status in its balance sheets and cash flows. The outcome is an all-encompassing forecast, although the key value determinants are primarily anchored in the proportional growth of operating income. The projections outlined in this chapter serve as a numerical overview of the macroeconomic and company-specific trends disclosed in the preceding sections of this thesis.

Our projected figures and subsequent valuation warrant a degree of discretion in interpretation, given the various assumptions. As highlighted in section 5.1, the macroeconomic elements and trends distinctly outlined in this thesis do not encompass all possible factors influencing Frontline plc, the shipping sector, or

general economic growth. Acknowledging this, we recognize the potential for erroneous assumptions and projections.

The upcoming subsections present our forecasts along with the consequent income statement and balance sheet for Frontline plc. For a comprehensive breakdown of the calculations, please refer to the attached excel file.

8.1 Prognosis of Income Statement

A forecast commences with the principal driver for operating revenue growth - sales growth - and how this is anticipated to deviate from historical sales according to an analyst's assessment. We started our forecasting of Frontline plc's income statement with revenue growth. For Frontline, the primary source of revenue is predominantly freight services.

By the end of 2022, the shipping industry was experiencing a deceleration in growth, a trend expected to persist, at least in the near term. Frontline plc's historical revenue growth somewhat mirrored this market trend. The company, a significant player in the global maritime market, saw a highly volatile average annual operating income increase of 24 percent throughout our historical period. Additionally, we have witnessed Frontline plc acquiring new vessels, indicating their ongoing optimism and alignment with the prevailing inflation and economic trends in our global landscape. Nevertheless, we acknowledge that this situation has started to transition. Despite market challenges, we project Frontline plc to sustain revenue growth into our forecast period from 2023, given the company's established network and given their immense size and footprint in the industry. We account for a possibly stagnant market by projecting the growth to rise at a slower pace compared to the historical trend. Starting with an operating income growth of 7 percent in 2023, the relative growth is progressively reduced, culminating in an annual growth rate of 1.4 percent in the terminal period. As we stated in our strategic analysis the industry growth rate estimated by UNCTAD (2022) was to be 1.4 percent in the next upcoming years so we think it's appropriate that Frontline plc will move towards this rate long term.

According to Kenton (2023d), operating expenses encompass the costs incurred by a company during its regular operational activities. Over the past five years,

Frontline plc has experienced a consistent rise in operating expenses relative to its operating income. As a result, we calculate our value driver for operating expenses as a percentage of operating income. It is worth noting that in 2017, there were distortions caused by significant impairment losses. Similarly, in 2021, costs exceeded revenues proportionally due to the high fixed costs incurred during the COVID-19 pandemic, which negatively impacted revenues. To provide a more accurate representation, we have excluded these anomalies when calculating the average for our value driver. This approach is justified as we cannot predict future impairment losses or global crises, ensuring a more realistic portrayal of the company's financial situation.

The depreciation value driver is determined as a percentage of noncurrent operating assets (NCOA), given that this combined accounting item encompasses ships and other depreciable assets. The NCOA, and consequently depreciation, is projected to increase throughout the first three years of our forecast horizon, and then slightly decline. In addition, Frontline plc conducted an assessment of the useful lives of its vessels and determined that a modification was necessary, reducing the useful life from 25 to 20 years. As a result of this adjustment, the expected depreciation expense is projected to increase by 69 million. Consequently, we have made a strategic decision to set a financial value driver that exceeds the historical average value of -4.19% to -6%. This adjustment accounts for the anticipated increase in depreciation expenses, taking into consideration both the expected growth in the fleet through acquisitions and the impact of the revised useful life of the vessels. Therefore, the total increase in depreciation after our estimates from 2022 to 2023 will be approx. 80 million.

Frontline plc determines its net financial expenses by calculating them as a percentage of net interest-bearing debt (NIBD) without cash in our forecast. We anticipate a slight increase in NIBD from 2022 to 2026, followed by a small downturn in 2027. In the subsequent subchapter, we provide an explanation for our expectations regarding the growth of NIBD's components. Given the close relationship between net financial expenses and NIBD, it is reasonable to assume that the former will follow a similar pattern to the latter during the forecasted period. Hence, we have opted to forecast the net financial expenses based on the historical average.

8.1.1 Summary Prognosis Income Statement

Table 8.1 showcases the projected income statement derived from our forecast. The historical trend of escalating revenues and expenses, along with a profit lower than that of 2022, is expected to persist for several years. While we anticipate a consistent growth in NOPAT, it is projected to remain below the current 2022 level. As the shipping industry faces increasingly challenging conditions, we envision a modest and stable growth in the coming years. However, given Frontline plc's substantial market share, abundant capital, and ongoing investments in ships and technology, we consider this estimate to be appropriate.

FRONTLINE PLC	Forecast horizon				
	2023	2024	2025	2026	2027
Operating income	1 538 925	1 615 872	1 672 427	1 705 876	1 729 758
Operating expenses	- 937 906	- 984 801	- 1 019 269	- 1 039 655	- 1 054 210
EBITDA	601 020	631 071	653 158	666 221	675 548
Depreciation	- 245 446,28	- 252 564,23	- 256 175,89	- 256 073,42	- 254 465,28
EBIT	355 573	378 506	396 982	410 148	421 083
- Tax as reported (O+F)	- 44 447	- 47 313	- 49 623	- 51 268	- 52 635
-/+ Tax-Shield from NFE	- 10 154,01	- 10 459,00	- 10 619,46	- 10 626,32	- 10 570,85
= Operating tax expense	- 54 600,67	- 57 772,29	- 60 242,22	- 61 894,79	- 63 206,22
NOPAT	300 972,61	320 734,03	336 739,90	348 252,96	357 876,76
Total financial items (F)	- 81 232,07	- 83 672,00	- 84 955,65	- 85 010,55	- 84 566,81
+/- Tax-Shield from NFE	10 154	10 459	10 619	10 626	10 571
Net Income	229 895	247 521	262 404	273 869	283 881

Table 8.1: Forecasted income statement

8.2 Balance Sheet

We initiate by discussing our projection of the left side of the restructured balance sheet, which encompasses four crucial figures: non-current operational assets (NCOA), non-current operational liabilities (NCOL), operating current assets (OCA), and operating current liabilities (OCL). Together, these compose the Net Operating Assets (NOA). Value drivers for each of these essential numbers are computed as a fraction of operating income, given that Frontline plc's earnings are derived from their operational activities. From our analyses, we're aware that Frontline plc has recently acquired at least two new crude oil tankers and plans to pursue growth even amidst an industry slowdown. Consequently, we project an initial surge in NCOA, corresponding to these new acquisitions from 2022 to 2024. Looking ahead, we anticipate further investments due to the regulatory demands and advancements in technology we discussed in our strategic analysis, leading to a gradual increase in NCOA. However, this rate of growth will be modest and at one point slightly decreasing given the industry's current stagnation and the likelihood that new investments will offset older equipment they get rid of in the

balance sheet. In parallel with the projected increase in NCOA, it is anticipated that NCOL will exhibit a rise throughout all the forecasted years. This escalation can be attributed to the expansion of liabilities associated with ships, operations, and provisions, as explained earlier, albeit to a marginal extent. We did leave the observation for 2019 as we calculated the historical average rate as this was a year with a number of provisions that didn't reflect the historical data.

OCA encompasses trade accounts receivable, various types of receivables, inventories, voyages in progress, as well as prepaid expenses and accrued income, all of which are intrinsically tied to operations. We believe that a fair estimate would be the average growth in this item, corresponding with the increase in estimated revenue. The majority of OCL comprises payables and accrued expenses, which aligns with the anticipated trend of estimated operational income, similar to OCA. On the right side of the restructured balance sheet, we observe equity and net interest-bearing debt (NIBD), which together total the same value as NOA. NIBD is comprised of interest-bearing debt (IBD) subtracted by financial assets (FA). The value driver of IBD is calculated as a proportion of NOA, exemplifying the share of Frontline plc's assets financed by interest-bearing debt. This particular value driver has shown a historical trend of increasing in close proximity to the historical average. Therefore, we have made the decision to retain it as is.

The value driver of FA without cash has been calculated as a percentage of NOA. During the final years of our historical horizon, marketable securities comprised the entirety of this accounting line. As it is uncertain how they may modify this accounting line in the future, we have chosen to maintain it constant in proportion to NOA.

Equity does not possess a value driver in terms of a percentage. Variations in equity are attributable to annual profits, dividends distributed, and the infusion of additional capital. To simplify matters, we have made the decision to distribute the entire free cash flow to equity as dividends to equity holders. By doing so, we aim to maintain a consistent cash level from 2022 throughout the forecast period, while changes in equity are dependent on variations in other accounting lines.

8.2.1 Summary Prognosis Balance Sheet

Table 8.2 illustrates the impact of the projected growth on Frontline plc's financial position, as depicted in the balance sheet. Throughout the projected years, there is a gradual and consistent rise in NCOL, while NCOA experiences a slight increase in the initial three years followed by a slight decline in the subsequent years. Despite this, the overall net operating non-current assets (NONCA) are expected to exceed those of the historical horizon every year. The marginal increases observed annually in OCL and OCA contribute to a gradual and steady growth in net operating working capital (NOWC). However, in a firm with a significant proportion of non-current assets, the impact of NONCA holds greater significance, and we observe that the trend of net operating assets (NOA) closely aligns with that of NONCA.

Frontline PLC					
Balance sheet, key figures in USD 1 000	Forecast horizon				
	2023	2024	2025	2026	2027
ONCA	4 090 771,39	4 209 403,76	4 269 598,24	4 267 890,40	4 241 088,05
ONCL	- 32 459,24	- 34 082,20	- 35 275,08	- 35 980,58	- 36 484,31
NONCA	4 058 312,15	4 175 321,56	4 234 323,16	4 231 909,81	4 204 603,73
OCA	398 273,88	418 187,58	432 824,14	441 480,63	447 661,35
OCL	- 153 430,86	- 161 102,40	- 166 740,99	- 170 075,81	- 172 456,87
NOWC	244 843,02	257 085,18	266 083,16	271 404,82	275 204,49
NOA	4 303 155,18	4 432 406,73	4 500 406,31	4 503 314,63	4 479 808,22
Equity	2 225 137,90	2 284 328,14	2 315 468,27	2 316 800,13	2 306 035,46
Cash	- 254 525,00	- 254 525,00	- 254 525,00	- 254 525,00	- 254 525,00
IBD	2 576 729,32	2 654 125,15	2 694 843,30	2 696 584,80	2 682 509,16
FA without cash	- 244 187,04	- 251 521,55	- 255 380,26	- 255 545,30	- 254 211,40
NIBD without cash	2 332 542,28	2 402 603,60	2 439 463,04	2 441 039,51	2 428 297,76
Equity+NIBD	4 303 155,18	4 432 406,73	4 500 406,31	4 503 314,63	4 479 808,22

Table 8.2: Forecasted balance sheet

8.3 Forecasted Cash Flows

Table 8.3 presented below displays the projected cash flow for the forecast period, incorporating the outcomes derived from the anticipated key figures in the income statement and balance sheet. According to the table, it is evident that Frontline plc's free cash flow to the firm (FCFF) is estimated to be approximately 161 million dollars in 2023. It is expected to experience a slight increase the following year and subsequently grow more significantly. This growth can be attributed to the reduction in investments in net operating current assets (NCOA), while maintaining a modest growth in operating income.

Furthermore, based on our forecasted figures, we anticipate a positive free cash flow to equity holders (FCFE) in 2023. However, it is important to note that FCFE

fluctuates over the forecast period. These fluctuations can be attributed to the initial increase in IBD in the first year, followed by a gradual decrease over subsequent years, while financial items and tax-shields remain relatively stable. Despite the reduction in the growth of IBD, the gradual increase in FCFF year by year contributes to the subsequent rise in FCFE, even after the decrease in 2024.

Cash Flow	2023	2024	2025	2026	2027
NOPAT	300 973	320 734	336 740	348 253	357 877
+ Depreciation	245 446	252 564	256 176	256 073	254 465
-/+ Changes in NOWC	32 620 -	12 242 -	8 998 -	5 322 -	3 800
-/+ Changes in NONCA (CAPEX)	- 417 389 -	369 574 -	315 177 -	253 660 -	227 159
FCFF	161 649	191 482	268 740	345 345	381 383
+/- Changes in NIBD without cash	174 084	70 061	36 859	1 576 -	12 742
Total financial items	- 81 232 -	83 672 -	84 956 -	85 011 -	84 567
-/+ Tax-Shield from NFE	10 154	10 459	10 619	10 626	10 571
FCFE	264 656	188 331	231 264	272 537	294 645
+/- Changes in Equity	- 264 656 -	188 331 -	231 264 -	272 537 -	294 645
Cash surplus	-	-	-	-	-
Cash 01.01.	254 525,00	254 525,00	254 525,00	254 525,00	254 525,00
Cash surplus	-	-	-	-	-
= Cash 31.12	254 525,00	254 525,00	254 525,00	254 525,00	254 525,00

Table 8.3: Forecasted Cash Flow statement

9. Valuation

Drawing upon the insights gained from our previous chapters, we are equipped with the necessary information to proceed with the valuation of our FCFF model and EVA model to find our estimated fundamental value. Additionally, we will evaluate the company's net asset value (NAV) as part of our valuation process. To further support our findings, we will employ multiples in a relative valuation approach, providing additional guidance and validation to our overall analysis.

9.1 Present Valuation Models

Present value models are utilized to determine the inherent value of a company by discounting projected cash flow forecasts to the valuation date using a suitable discount factor (Petersen et al., 2017). In our analysis, we have specifically selected EVA and FCFF as they are deemed suitable for our intended purpose. By employing both models, we ensure the accuracy of our calculations, as they converge to the same market value of equity. These models rely on pivotal figures extracted from our forecast in chapter 8, which are then discounted by the weighted average cost of capital (WACC). By employing both models, we have conducted a comprehensive valuation of Frontline plc, leading to the determination of its market value as of 31.12.2022. In this present value analysis, we have assumed a consistent

weighted average cost of capital (WACC) for each scenario, with the WACC being calculated for each respective valuation year. Detailed calculations of the WACC can be found in Chapter 7.

9.1.1 EVA Model

The EVA model holds significant popularity among valuation practitioners (Petersen et al., 2017). As clarified in preceding chapters, this model provides an estimate of a company's market value by incorporating the present value of projected excess returns into the existing net operating assets. Excess return, represented by EVA, signifies the value generated by the company beyond the required return for financing invested capital, as discussed earlier. EVA is calculated annually from the first forecasted year to the fifth forecasted year by deducting the cost of capital associated with the previous year's net operating assets (NOA) from the expected net operating profit after taxes (NOPAT) in the initial year. These excess returns are then discounted using the weighted average cost of capital (WACC) to determine their present value. A positive EVA indicates that the company generates surplus returns for its shareholders. Conversely, a cost of capital that exceeds NOPAT implies that the company is unable to generate excess profits, signifying a reduction in shareholder value.

9.1.1.1 Valuation EVA Model

The following table presents the market value calculations for Frontline plc as of 31.12.2022, utilizing the EVA model. Our analysis indicates that the net operating assets (NOA) are projected to increase during the first four years until 2026, followed by a slight reduction. Conversely, the net operating profit after taxes (NOPAT) is expected to progressively increase throughout the forecast period.

Based on our forecast, the cost of capital remains below the predicted NOPAT for all years within the forecast period. As a result, EVA remains positive throughout these years. Consequently, the discounted present value of all future EVAs amounts to a positive value of 1.3 billion USD. This value is incorporated from the NOA of the valuation year, with net interest-bearing debt (NIBD) deducted.

Considering this scenario, the market value of equity for Frontline plc amounts to 3.577 billion USD. Consequently, the estimated share price is projected to be 16.07 USD per share.

EVA-model	Explicit forecasting period					
Summary of key data	2022	2023	2024	2025	2026 2027 (Terminal)	
Period	0	1	2	3	4	5
NOA	4 163 832,00	4 303 155,18	4 432 406,73	4 500 406,31	4 503 314,63	4 479 808,22
WACC	6,34 %					
NOPAT		300 972,61	320 734,03	336 739,90	348 252,96	357 876,76
Cost of capital		264 026,52	272 860,94	281 056,71	285 368,53	285 552,95
EVA		36 946,09	47 873,09	55 683,18	62 884,43	72 323,81
Discount factor		0,94	0,88	0,83	0,78	
PV of EVAs in Expic 31.12.2022		34 743,05	42 334,11	46 304,42	49 174,62	
PV of EVAs in terminal at 31.12.2027					1 463 763,19	
PV of EVAs in terminal per 31.12.2022					1 144 639,35	
PV of all EVAs per 31.12.2022	1 317 195,54					
EV per 31.12.2022	5 481 027,54					
NIBD per 31.12.2022	1 903 933,00					
MVE per 31.12.2022	3 577 094,54					
Outstanding shares	222 622 889,00					
Share price	16,07					

Table 9.1: EVA model

9.1.2 FCFF Model

As discussed in a preceding chapter, the discounted cash flow (DCF) model is widely regarded as the most reliable approach. This model operates on the principle that the market value of a company is derived from its free cash flow to the firm (FCFF). FCFF represents the cash generated by the company's operational activities, excluding the cash associated with its investment activities.

In the case of valuing Frontline plc's equity, we have employed our FCFF forecast from the previous chapter. Subsequently, we have discounted the FCFF using the weighted average cost of capital (WACC) and adjusted for net interest-bearing debt. This process yields the market value of equity for Frontline plc.

9.1.2.1 Valuation FCFF Model

Table 9.2 illustrates our computations of Frontline plc's market value of equity as of 31.12.2022, utilizing the FCFF model. As expounded upon in our forecasting chapter, we have projected FCFF to be approximately 161 million USD in 2023, with a subsequent steady increase throughout the remaining forecast periods.

Through the application of the weighted average cost of capital (WACC) to discount the free cash flow, we ascertain a present enterprise value of 5.51 billion USD. Upon deducting the net interest-bearing debt, we arrive at a market value of

3.61 billion USD, which coincides with the market value of equity derived from the EVA model, previously calculated as 3.57 billion USD. Additionally, our calculations suggest an approximate share price of 16.27 USD, aligning closely with the estimated share price derived from the EVA model, which was 16.07 USD.

FCFF-model	Explicit forecasting period					
	2022	2023	2024	2025	2026	2027 (Terminal)
Summary of key data						
Period	0	1	2	3	4	5
FCFF		161 649,44	191 482,47	268 740,32	345 344,64	381 383,17
WACC	6,34 %					
Discount rate		0,94	0,88	0,83	0,78	0,74
Present value of FCFF in explicit		152 010,53	169 327,67	223 476,17	270 053,97	
PV of terminal per 31.12.6					6 014 605,84	
PV of terminal per 31.12.0					4 703 325,34	
EV per 31.12.0	5 518 193,68					
NIBD per 31.12.0	1 903 933,00					
MVE per 31.12.2022	3 614 260,68					
Outstanding shares	222 622 889,00					
Share price	16,23					

Table 9.2: EVA model

9.2 Asset-Based Valuation (NAV)

Net asset value, or NAV, is a valuation approach that equates a company's value to the disparity between its assets and liabilities. In instances where the current market values of assets and liabilities significantly deviate from their book values, like in the shipping industry, the current values are employed to determine the NAV. When companies possess physically held assets as their primary source of value and face negative or non-existent future cash flow streams, analysts frequently rely on NAV as a means to evaluate their worth (Garg, 2020). This asset-based approach offers several notable advantages. Firstly, it is a widely recognized and familiar method within the shipping sector, making it a sector-specific metric that resonates well in the industry. Secondly, this approach effectively aligns equity value with industry metrics, providing a meaningful connection between a company's assets and its overall value. Additionally, adjustments can be made to account for factors such as new-building contracts or the order book, allowing for flexibility in the valuation process (Tsai, 2011).

However, there are certain disadvantages associated with the asset-based approach. One major drawback is the absence of a standardized definition of NAV within the industry, which can lead to inconsistencies in its application. Furthermore, relying on secondhand prices, which may not always be readily available for all ship types, introduces challenges and can lead to significant fluctuations in valuation. The prices of these ships are also subject to fluctuations influenced by the volatile nature

of shipping markets and broader macroeconomic trends. Lastly, this approach does not inherently factor in any premium associated with management capabilities, potentially overlooking the impact of skilled leadership on a company's value (Tsai, 2011).

Our analysis involved calculating the NAV not only for Frontline plc but also for our selected competitors. This step was taken to establish a benchmark that will be useful when we incorporate price-to-NAV ratios into our relative valuation at a later stage. However, it is important to note that proceeding with the net asset valuation requires caution. The lack of a standardized method and limited information regarding industry competitors necessitated numerous assumptions, which may deviate from the actual reality of our competitors.

9.2.1 Net Asset Value - Frontline Plc

To initiate the assessment of Frontline plc's NAV, the first task is to determine the market value of their vessels. For this purpose, we employed a website known as Marine Traffic, which is primarily a ship-tracking and information service. Through this platform, we were able to obtain extensive information about each individual ship in their fleet by conducting specific searches using each of the ship's names. From there, Marine Traffic provided us with estimated market values for each individual vessel.

During the assessment of the other long-term and current assets, we opted to retain them at their book value minus their financial assets. This decision was made considering that their market value closely aligns with the book value. By doing so, we aimed to facilitate a more straightforward comparison in our relative valuation, particularly when examining the price-to-NAV ratio in relation to their competitors. In our calculation of the market value of debt, we utilized the Net Interest-Bearing Debt (NIBD) as it represents the closest approximation to the market value of debt. This approach allowed us to conduct a net asset valuation using NIBD as well as an asset valuation using the book value of debt at a later stage. By employing both methods, we aimed to enhance the comparability of our analysis with competitors in subsequent stages.

Then finally we calculated the orderbook. An order book is an electronic list of buy and sell orders for a security or other instrument organized by price level (Kenton, 2022c). In a shipping context it represents a comprehensive listing of vessel orders. We needed to include this as these are assets that will not show up on the balance sheet and must be considered when calculating NAV. Typically, the orderbook represents the overall aggregate demand for vessels. However, in our specific context, the orderbook pertains to the vessels associated with each respective firm. Although newbuildings are present on the balance sheet, they merely reflect the costs associated with the contracts and do not capture the true value of the ships themselves. To account for this, we identified the expected delivery of six aframax vessels to Frontline and valued them based on the value of their most recent aframax vessels.

The table presented below illustrates the total net asset value, which amounts to 3.8 billion. Furthermore, the NAV per share is calculated at 17.23 USD, suggesting that the company may be undervalued considering its overall asset base.

NAV Valuation (USD)	Frontline PLC
Market Value Owned Fleet	4 703 700
Other non-current assets	236 741
Current assets-FA	390 244
NIBD	- 1 903 933
Value of orderbook	409 800
Net Asset Value	3 836 552
Outstanding shares	222 623
NAV/Share	17,23
Share price 31/12/2022	12,14

Table 9.3: NAV – Frontline plc

9.2.2 Net Asset Value – Industry

In addition to conducting a net asset valuation for Frontline plc, we also performed a similar assessment for its competitors. This enabled us to compare the price-to-net asset valuation (P/NAV) ratio as part of our relative valuation analysis. While conducting these calculations, we employed a creative approach, recognizing that it may have introduced some deviation to reality. However, despite the challenges, we obtained results that appeared reasonable and justifiable.

The initial and most significant challenge we encountered was acquiring the market value of the fleets belonging to other firms. Upon analyzing both the vessel market and Frontline plc's fleet, we promptly identified a distinct correlation between a ship's tonnage and its age. Specifically, we observed that ships capable of carrying greater tonnage and those that are younger hold higher value in the current market. Therefore, our initial step involved determining the age of Frontline plc's fleet, as well as the ages of the fleets belonging to other companies. Subsequently, we computed the relative fleet age in comparison to Frontline plc. Additionally, we calculated the book-to-market ratio for Frontline's fleet. Utilizing the relative fleet age and the obtained book-to-market ratio, we multiplied them together and added one to create a growth factor. This growth factor was then applied to the book value of fleets across all the firms, resulting in our estimated market values for the fleets.

	Euronav NV	DHT Holdings	Star Bulk Carriers	Scorpio Tankers	Danaos Corp
Fleet Age	7,10	8,90	10,00	5,10	6,80
Relative fleet age compared to Frontline	0,85	0,68	0,60	1,19	0,89
Book to market ratio Frontline	0,29	0,29	0,29	0,29	0,29
Relative fleet age*B/M Frontline indicator	1,25	1,20	1,17	1,34	1,26
Book value fleet	3 287 124	1 261 998	2 881 551	3 089 254	2 721 494
Market Value Fleet	4 094 418	1 509 252	3 384 010	4 145 482	3 419 361

Table 9.4: Market value of fleets

To simplify the valuation process, we decided to retain the book value for other assets and liabilities. Attempting to determine the market value for each individual asset and liability would have been a challenging task, and we believe that they are reasonably close to their book values. Similarly, when assessing the orderbooks of other firms, we followed a similar approach. By projecting their outstanding vessel orders, which were not yet reflected in the balance sheet, we utilized the most up-to-date market values for each respective vessel among their orders.

Displayed in the table below are the outcomes of our net asset value assessment within the industry. Although we made various assumptions, we were astonished to observe that the net asset value per share for many companies was remarkably similar to their share price. Additionally, we incorporated Frontline plc in the analysis, employing the book value of liabilities and assets to facilitate a more accurate comparison with their competitors, which lowered their NAV/Share to 16,72 USD.

NAV Valuation (USD)	Frontline PLC	Euronav NV	DHT Holdings	Star Bulk Carriers	Scorpio Tankers	Danaos Corp
Market Value Owned Fleet	4 703 700	4 094 418	1 509 252	3 384 010	4 145 482	3 419 361
Other non-current assets	236 741	74 890	10 887	49 981	782 560	306 213
Current assets	881 050	607 059	235 589	502 092	687 349	372 521
Current liabilities	- 390 635	- 304 900	- 64 374	- 282 555	- 473 251	- 228 407
Non-current liabilities	- 2 117 909	-1 863 438	- 370 514	- 1 131 727	- 1 579 104	- 611 407
Value of orderbook	409 800	388 000	136 600	223 500	301 100	145 900
Net Asset Value	3 722 747	2 996 029	1 457 440	2 745 301	3 864 136	3 404 181
Outstanding shares	222 623	201 784	162 653	102 857	61 263	20 350
NAV/Share	16,72	14,85	8,96	26,69	63,07	167,28
Share price 31/12/2022	12,14	15,12	8,34	18,41	53,29	51,34

Table 9.5: NAV – Frontline plc and industry

9.2.3 NAV – Discussion

When considering the acquisition of a maritime shipping company, ideally, the price of the company should align with its net asset value (NAV). However, our NAV industry analysis reveals that this is not always the case. While some companies exhibit net asset values per share that are closely aligned with their share prices, others demonstrate significant disparities. This begs the question: Why do such discrepancies exist?

From an investment perspective, there exists a theoretical opportunity for arbitrage and potential profit within undervalued shipping equities. This involves buying stocks or selling ships when the stock is trading below its net asset value (NAV), and selling stocks or buying ships when the stock is trading above its NAV. However, it is crucial to acknowledge that the relationship between NAV and share price is not always straightforward, as various factors have been identified to contribute to the differentiation between NAV and share price.

Andrikopoulos et al. (2022) recently conducted a study that explored the factors contributing to discounts and premiums in net asset value, thereby investigating the reasons behind share prices being below or above the corresponding NAV. To comprehensively analyze the factors contributing to NAV discounts and premiums, Andrikopoulos et al. (2022) employed both qualitative and quantitative research methods. Through qualitative interviews with equity analysts and quantitative analysis using unique panel data, the study investigated and empirically examined the underlying reasons for deviations in market capitalization from NAV. The findings revealed that firm-specific factors, including capital structure, stock

liquidity, fleet acquisition cost, operating performance, institutional ownership, cost of capital, corporate governance, dividend policy, and related party transactions, are associated with the observed discrepancies.

According to Amit Mehrotra, a shipping analyst at Deutsche Bank, the focus on long-term equity value creation in the shipping industry lies not in net asset value but in sustainable cash flow that can be attributed to equity holders. In his recently published "Primer on Valuing Shipping Companies," Mehrotra highlights that sustainable cash flow is the crucial factor for assessing the value and potential of shipping companies. After extensive research and analysis of multiple sources, we have identified a prevailing trend emphasizing the importance of evaluating cash flows and operational aspects rather than solely relying on NAV. It is evident that if NAV alone determined share prices, there would be a perfect alignment between the two.

However, considering the enduring significance of NAV within the industry and its compatibility with our valuation, we have chosen to incorporate the net asset value approach into our final assessment. Despite the growing inclination to deviate from NAV, we recognize its continued significance and industry-wide recognition.

9.3 Relative Valuation

A commonly employed method for determining the worth of a company involves assessing its value by comparing it to similar firms in the market. Relative valuation relies on two key steps: identifying comparable firms and gathering their respective multiples. A comparable firm is one that shares similarities in terms of cash flows, growth potential, and risk with the firm being appraised. Typically, comparable firms are chosen from within the same industry as the evaluated company. The competitors we have selected primarily operate in the crude oil tanker and refined petroleum products transportation sectors. Additionally, we have included a few competitors who may not operate in the exact same market but still possess certain similarities to Frontline plc.

In our valuation, we have employed four multiples: P/E (Price-to-Earnings), P/B (Price-to-Book), EV/EBITDA (Enterprise Value-to-Earnings Before Interest, Taxes, Depreciation, and Amortization), and P/NAV (Price-to-Net Asset Value).

Despite the debate surrounding the use of median as a more robust measure unaffected by extreme deviations, we have chosen to calculate the average of each selected multiple. We have made this decision based on the limited number of firms in our comparable list and the absence of any unreasonable deviations in the collected data.

9.3.1 Price/Earnings

The price-to-earnings ratio, often referred to as the P/E ratio, is a valuation metric used to assess a company's current share price in relation to its earnings per share (EPS). This ratio is also alternatively known as the price multiple or the earnings multiple (Fernando, 2023b). On the contrary, the P/E ratio, which relies on earnings per share, can sometimes be misleading. Companies can report positive earnings while experiencing negative free cash flow, indicating that they are spending more than they are earning (Tamplin, 2023). Additionally, the P/E ratio does not take into account their capital structure, further supporting the argument that earnings alone are not the best measure.

P/E	
Multiple	5,83
Net profit	475 537
Value of equity	2 773 332
Shares outstanding	222 623
Value per share USD	12,46

Table 9.6: P/E – Value per share USD

As of December 31, 2022, Frontline plc's P/E ratio stands at 5.34, whereas the industry average is approximately 5.83. Based on this industry average, the calculated value per share amounts to \$12.46 USD. Comparing this estimate to the value per share derived from the discounted cash flow (DCF) analysis, we observe that it is slightly below the DCF value but slightly higher than the market value per share. Specifically, it exceeds the market value by \$0,38 USD but falls \$3.78 USD short of the DCF analysis. Once again, using the P/E estimate suggests that Frontline plc is undervalued in the market.

9.3.2 Price/Book

The price to book ratio is widely utilized by investors to assess a company's market capitalization relative to its book value, aiding in the identification of potentially undervalued firms. To compute this ratio, one divides the company's current stock price per share by its book value per share (Fernando, 2022).

P/B	
Multiple	0,98
Book value of equity	2 259 899
Value of equity	2 214 701
Shares outstanding	222 623
Value per share USD	9,95

Table 9.7: P/B – Value per share USD

As of December 31, 2022, Frontline plc's P/E ratio stands at 1,12, while the industry average is approximately 0.98. This discrepancy could indicate that Frontline plc is overvalued or that the comparable firms are undervalued. Using the industry average estimate, the value of Frontline plc's stock is calculated at \$9.95 USD per share. In contrast to the values derived from the discounted cash flow analysis and P/E ratio, P/B ratio suggests that Frontline plc's stock is overvalued by \$2,19 USD compared to market value. It is important to consider the result of the P/B ratio, especially in asset-heavy industries. The P/B ratio tends to be a reliable indicator in such sectors. Therefore, the overvaluation suggested by the P/B ratio for Frontline plc's stock holds significance and should be given due consideration in our final conclusion.

9.3.3 Enterprise value/EBITDA

The enterprise multiple, also referred to as the EV multiple, is a ratio utilized to assess the value of a company. It examines a company from the perspective of a potential acquirer by factoring in the company's debt. EBITDA, which is calculated as the enterprise value divided by earnings before interest, taxes, depreciation, and amortization, the enterprise multiple provides a comprehensive view. It proves valuable for international comparisons as it disregards the distorting impacts of individual countries' taxation policies and depreciation policies (Hayes, 2022a).

EV/EBITDA	
Multiple	7,91
EBITDA	610 789
NIBD	1 903 933
Minority interest	- 472
Value of equity	2 927 880
Shares outstanding	222 623
Value per share USD	13,15

Table 9.7: EV/EBITDA – Value per share USD

As of December 31, 2022, Frontline plc's EV/EBITDA ratio is 9.03, while the average ratio of comparable firms stands at 7.91. Considering the industry average, the calculated value per share amounts to \$13.15 USD, surpassing the current share price of \$12.14 USD by \$1,01 USD. However, this value remains lower than the estimated value per share derived from our discounted cash flow model and NAV model. Nevertheless, these findings collectively support our assessment that Frontline plc is undervalued, albeit to a slight extent.

9.3.4 Price/Net Asset Value

In a previous section of this chapter, our attempt was to calculate the net asset value for Frontline plc and its competitors. In a sense, this measure can be considered similar to the P/B ratio, but it provides a more comprehensive evaluation of their net assets, encompassing both the market value and unrealized assets not yet reflected on the balance sheet. It is important to note that the measurement of competitors' NAV has been a challenging estimation process based on Frontline plc's NAV, which may have influenced the results. However, due to the lack of a universally agreed-upon approach for NAV and the limited availability of data for competitors, we believe that our efforts still yielded relevant and suitable outcomes.

P/NAV	
Multiple	0,76
Net Asset Value	3 722 747
Value of equity	2 822 315
Shares outstanding	222 623
Value per share USD	12,68

Table 9.8: P/NAV – Value per share USD

As of December 31, 2022, Frontline plc's P/NAV ratio stands at 0.73, whereas the industry average is approximately 0.76. By utilizing the industry average P/NAV ratio to calculate the value per share, we arrived at a figure of \$12.68. This value per share exceeds the current share price by \$0,27, further reinforcing the notion, as supported by our other valuation methods, that Frontline plc is undervalued even though that it is a minor increase.

10. Sensitivity Analysis

To underscore the inherent uncertainty involved in conducting a valuation, we employ two sensitivity analyses. Initially, we will perform a sensitivity analysis on the EVA model, which offers a comprehensive overview of how minor variations in forecasted growth percentages for the terminal value can substantially influence our estimated market value for Frontline plc. Additionally, this analysis highlights the corresponding changes in the WACC in relation to the aforementioned growth adjustments. Subsequently, we will execute a Monte Carlo simulation on the FCFE model, allowing us to observe the impact of fluctuations in NCOA, growth in terminal value, and alterations in WACC on our estimated market value for Frontline plc.

10.1 Sensitivity analysis – Terminal Value – WACC & Growth rate

Considering that a substantial portion of the estimated firm value in the EVA model relies on the EVA projected in the terminal period, it is intriguing to examine how modifications in the growth rate and weighted average cost of capital (WACC) during this period impact the value per share. In our EVA valuation model, we employed a growth rate of 1.4% and a WACC of 6.34% for the terminal period, resulting in a value per share of 16.07 USD. The subsequent table illustrates the effects of varying the growth rate from -3% to 4% and the WACC from 3% to 11%.

Sensitivity Analysis - Terminal Value		Low			Normal				High			
WACC & Growth Rate		WACC										
Growth Rate		3%	4%	5%	6%	6,34%	7%	8%	9%	10%	11%	
Not satisfactory	-3,0%	1 205 397	1 033 197	904 048	803 598	774 266	723 238	657 489	602 698	556 337	516 599	
	-2,50%	1 314 978	1 112 674	964 318	850 868	818 055	761 303	688 798	628 903	578 591	535 732	
	-2,0%	1 446 476	1 205 397	1 033 197	904 048	867 093	803 598	723 238	657 489	602 698	556 337	
	-1,50%	1 607 196	1 314 978	1 112 674	964 318	922 386	850 868	761 303	688 798	628 903	578 591	
	-1,0%	1 808 095	1 446 476	1 205 397	1 033 197	985 210	904 048	803 598	723 238	657 489	602 698	
Expected development	-0,50%	2 066 395	1 607 196	1 314 978	1 112 674	1 057 219	964 318	850 868	761 303	688 798	628 903	
	0%	2 410 794	1 808 095	1 446 476	1 205 397	1 140 583	1 033 197	904 048	803 598	723 238	657 489	
	0,50%	2 892 953	2 066 395	1 607 196	1 314 978	1 238 220	1 112 674	964 318	850 868	761 303	688 798	
	1,0%	3 616 191	2 410 794	1 808 095	1 446 476	1 354 138	1 205 397	1 033 197	904 048	803 598	723 238	
	1,40%	4 520 238	2 781 685	2 008 995	1 572 257	1 463 763	1 291 497	1 095 815	951 629	840 975	753 373	
	2,0%	7 232 381	3 616 191	2 410 794	1 808 095	1 666 082	1 446 476	1 205 397	1 033 197	904 048	803 598	
	2,50%	14 464 763	4 821 588	2 892 953	2 066 395	1 882 967	1 607 196	1 314 978	1 112 674	964 318	850 868	
Above expected development	3,0%		7 232 381	3 616 191	2 410 794	2 164 768	1 808 095	1 446 476	1 205 397	1 033 197	904 048	
	3,50%	14 464 763	14 464 763	4 821 588	2 892 953	2 545 761	2 066 395	1 607 196	1 314 978	1 112 674	964 318	
	4,0%	7 232 381		7 232 381	3 616 191	3 089 506	2 410 794	1 808 095	1 446 476	1 205 397	1 033 197	

Table 10.1: Sensitivity analysis of EVA in terminal period – EVA

Upon observation, it becomes apparent that the highest EVA in the terminal period amounts to 14.46 billion USD, while the lowest outcome (excluding the two negative values in the lower left corner) is 516 million USD. Clearly, an EVA of 14.46 billion USD is highly implausible, underscoring the significance of conducting thorough research and analysis when forecasting inputs for the model. Failing to utilize sound inputs entails the risk of generating unrealistic outputs from the model. Notably, the blue shaded region in the table above encompasses the EVA values that closely align with our estimated EVA of 1.463 billion USD which can be found in the center of the blue shaded region.

We also generated a chart that depicts the relationship between changes in WACC and growth in terminal value in relation to the market value per share. We restricted the observations in the chart to exclude extreme values on the far right and left. Specifically, we focused on observations with a terminal growth rate ranging from -1% to 3.5% and a WACC rate between 1.5% to 8.5%. This narrower range allows for a more precise assessment of how slight variations in these critical factors within our model can significantly impact the overall market value of Frontline plc.

		Terminal Growth									
		-1.0%	-0.5%	0.0%	0.5%	1.0%	1.4%	2.0%	2.5%	3.0%	3.5%
W A C C	1.5%	63.82	76.11	96.59	137.55	260.42	1 243.39	- 231.07	- 108.20	-	-
	2.00%	51.29	58.70	69.81	88.34	125.38	199.47	-	- 208.03	- 96.89	- 59.85
	2.5%	42.35	47.10	53.76		80.37	104.57	213.47		- 185.81	- 85.99
	3.0%	35.65	38.82	43.06	48.98	57.87	68.99	102.33	191.24		- 164.40
	3.50%	30.44	32.62	35.42	39.15	44.38	50.35	65.28	91.41	169.80	
	4.0%	26.28	27.80	29.69	32.13	35.38	38.88	46.76	58.13	80.88	149.13
	4.5%	22.88	23.95	25.25	26.87	28.96	31.11	35.64	41.49	51.23	70.72
	5.00%	20.05	20.80	21.69	22.78	24.14	25.50	28.23	31.50	36.40	44.58
	5.5%	17.66	18.18	18.78	19.51	20.40	21.26	22.93	24.84	27.50	31.50
	6.0%	15.62	15.96	16.36	16.84	17.40	17.95	18.96	20.08	21.56	23.64
	6.34%	14.39	14.64	14.93	15.28	15.68	16.07	16.78	17.54	18.53	19.87
	7.0%	12.31	12.43	12.57	12.73	12.91	13.09	13.40	13.73	14.13	14.65
	7.5%	10.94	10.99	11.05	11.11	11.19	11.26	11.38	11.50	11.65	11.84
	8.00%	9.74	9.73	9.73	9.72	9.71	9.70	9.69	9.68	9.67	9.65
	8.5%	8.66	8.61	8.56	8.50	8.43	8.37	8.27	8.16	8.04	7.89

Table 10.2: Change in market value per share – EVA

10.2 Monte Carlo Simulation

The Monte Carlo simulation is a method employed to simulate the likelihood of various outcomes in a process that is difficult to predict due to the involvement of random variables. This technique allows for a better comprehension of the influence of risk and uncertainty (Kenton, 2023c). To conduct a Monte Carlo simulation, it is necessary to assign multiple values to an uncertain variable, generating multiple outcomes. These results are then averaged to derive an estimate. Within the realm

of finance, the Monte Carlo simulation serves as a valuable tool for modeling the components of cash flow that are susceptible to uncertainty.

In the valuation of a shipping company, we deemed it relevant and noteworthy to incorporate the change in NCOL (which is mostly vessels) since this is the factor influencing the change in NONCA the most, alongside the WACC and the projected growth in terminal value, into our simulation. Our simulation was executed using Microsoft Excel, wherein we initially replicated our forecasting and valuation charts. Subsequently, we established a reference cell to our forecasting and valuation models, and employed the NORM.INV command, which calculates the inverse of the normal cumulative distribution for the specified mean and standard deviation of our chosen variables. The mean and standard deviation values were meticulously determined based on prior stages of our forecasting process. We utilized the =RAND() command to generate random numbers, ultimately conducting this simulation 1000 times. The resulting outcomes were then presented in the table below.

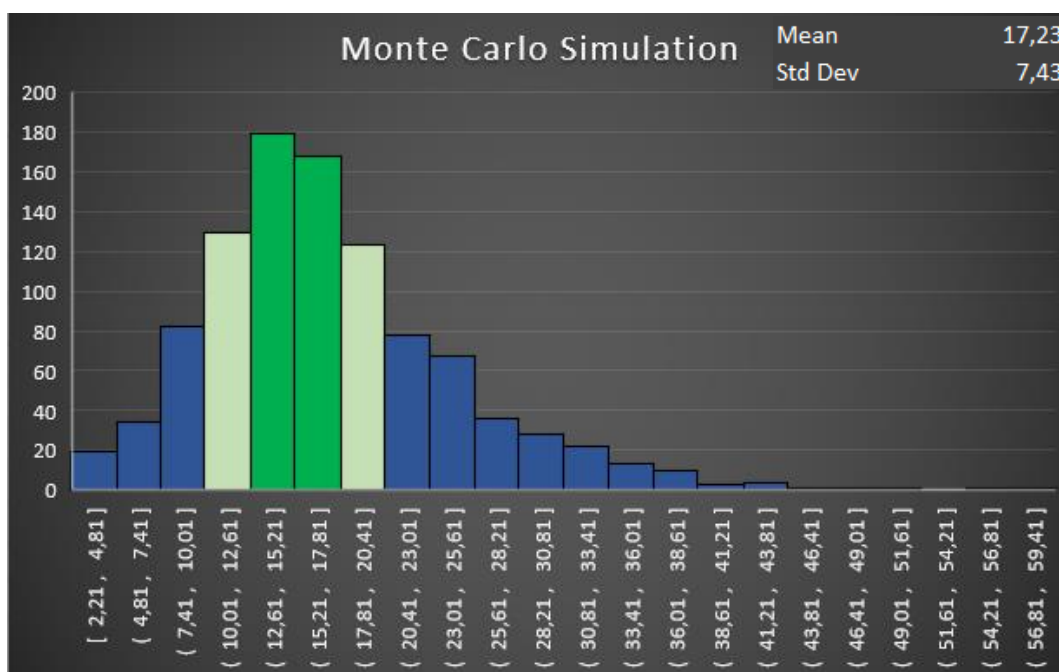


Table 10.3: Monte Carlo Simulation – FCFF

The computed mean value from our simulation amounted to \$17.23 USD per share, accompanied by a standard deviation of \$7.43. As illustrated by the four green pillars when examining the table below, we observe fluctuations in the share price ranging from \$10.01 USD per share to \$20.41 USD per share. Among these, the two bright green pillars with the highest number of observations displayed a range

from \$12.61 USD per share to \$17.81 USD per share. These findings suggest a significant likelihood of the stock price of Frontline plc experiencing an increase in the future. However, it is important to acknowledge the presence of risks that may result in the stock price falling below the current market value. The Monte Carlo simulation algorithm operates independently of economic and financial theories. As a result, it is advisable to approach the output with a critical perspective, scrutinizing the realism of the most extreme outcomes and questioning their plausibility.

11. Conclusion

The objective of this thesis has been to assess the fundamental value of Frontline plc's market value per share and utilize this estimation to offer a recommendation to either buy or sell. The results obtained from the FCFF model and EVA model indicate that Frontline plc's stock is undervalued by approximately 33%. This conclusion is further reinforced by the majority of our alternative valuation methods, as depicted in the table below. The multiples used in our relative valuation corroborate the findings of our FCFF and EVA models, with the exception of the P/B multiple. The positive multiples, however, suggest a relatively lower market value. Additionally, we attempted to value the company based on its net asset value. The NAV, calculated on the company's market value of assets, resulted in the highest percentage increase in estimated value per share at 42%. When applying the P/NAV multiple within the industry, we obtained a lower estimated value, albeit still positive. Lastly, we conducted a Monte Carlo simulation, which produced the second-highest estimate, indicating a potential increase of 41.9%.

Valuation method	50 %		20 %			30 %		
	FCFF	EVA	P/E	P/B	EV/EBITDA	NAV	P/NAV	Monte Carlo Simulation
Value per share USD	16,23	16,07	12,46	9,95	13,15	17,233	12,68	17,23
Current Market value USD 12.31	12,14	12,14	12,14	12,14	12,14	12,14	12,14	12,14
Change in USD	4,09	3,93	0,32	-2,19	1,01	5,0934	0,54	5,09
% Change	33,7 %	32,4 %	2,6 %	-18 %	8,3 %	42,0 %	4,4 %	41,9 %
Recommendation	Buy	Buy	Buy	Sell	Buy	Buy	Buy	Buy

Table 11.1: Valuation – Summary

In conclusion, we opted to employ a weighted average approach to arrive at the most accurate estimate of our valuation. Given the extensive time and resources dedicated to gathering quantitative and qualitative data for our FCFF and EVA models, we assigned them the highest weight of 50%. The multiples, excluding the P/NAV, were assigned a weight of 20% (6.66% each) as they serve as quick

indicators rather than highly reliable methods. The two NAV approaches were granted a weight of 20% despite being experimental, as we found the results to be reasonable and invested considerable effort in their refinement. Considering the Monte Carlo simulation's reliance on our comprehensive quantitative and qualitative data, we deemed it appropriate to allocate a weight of at least 10% to this method.

After running the weighted average with our respective weights, we got an estimated market value per share of 15,16 USD as of December 31. Nevertheless, it is crucial to underscore the inherent uncertainty associated with such estimates before offering any recommendations to the investor. However, based on this valuation, it appears that Frontline plc is undervalued, prompting a recommendation for the hypothetical investor to consider purchasing Frontline plc stock with the aim of attaining financial gains.

Weighted average Market value	<u>15,16</u>
Average Change in USD	3,02
Average % Change	24,9 %
Average recommendation	Buy

Table 11.2: Valuation – Weighted average, final recommendation

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Appendix: Preliminary Thesis

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Introduction/Problem area and motivation

With over 80% of the world's trade being imported and exported by sea, we can identify the shipping industry as the backbone of the world's economy. It is a complex and multifaceted industry with a number of risk factors and interest holders. Carl E. McDowell and Helen M. Gibbs (1999) said that "Ocean shipping is an industry characterized by great complexity and by a magnitude of interests. These interests include the designers of the ship, the shipbuilder, the vessel owner or operator, the cargo owner, the holder of the mortgage on the ship, the creditor of cargo owner, other creditors, agents and trustees, and the consignee."

Frontline plc is one of the world's largest shipping companies. It is arguably the world's largest shipping supplier when it comes to crude oil and refined oil products. The company has succeeded in positioning itself as a large international shipping company, especially in the Arabian Gulf, West Africa, North Sea, Caribbean, Russia, and the USA.

Not only do we have to take into account the complexity of the operational aspect of the company, but a great deal of focus should be put towards the different external risk factors as this could greatly impact the value and future cashflows of Frontline plc and the entire shipping industry.

Empirically we know that the shipping industry is an exceptionally volatile and cyclical industry. Our chosen company Frontline plc deals mostly in crude oil and refined products which possibly makes their operations even more volatile. The changes in the supply and demand for oil and oil products may adversely affect the rates payable and the amounts they will receive in respect for their vessels. Some of the factors that may lead to a such a decrease are an increase in the refining capacity in the Arabian Gulf or West Africa, the armed conflict between Ukraine and Russia and the following sanctions, change in trade patterns in the most important geographical areas, and the development and availability of natural gas, coal, nuclear energy, and other substitute sources of energy.

Another immense challenge for the shipping industry, especially Frontline plc which ships oil products, is how our society is steadily trying to shift to a more sustainable world. As a consequence, we get newer and stricter environmental

regulations and laws in the form of international conventions and treaties, national, state and local laws and national and international regulations in force in the jurisdictions in which their vessels operate or are registered. One of the issues arising from compliance with such laws and regulations are a requirement of operational changes and installation of costly equipment. This can negatively affect the cost of operations at least in the short term.

Because of our change in societal environmental norms, Frontline plc will not only incur costs related to governmental changes in regulations and laws. As a shipping company primarily shipping oil products, they will experience an increase in scrutiny and changing expectations from all the market participants with respect to their ESG (Environmental, Social and Governance) policies. Investors, investment funds, and a lot of other market participants has placed increasing importance on the implications and social cost of their investments. The increased focus and activism on ESG and sustainability may impede access to capital, as market participants may decide to reallocate capital or not commit any capital as a result of the company's ESG practices. Certain investors and lenders have already begun to exclude oil shipping companies from their investing portfolios. With these constraints in both equity and debt capital markets it may affect Frontline plc's ability to generate satisfactory cash flows and growth in the future.

In late 2019 we had an outbreak of an international pandemic virus COVID-19. Despite being an unpredictable event, COVID-19's initiation, evolution and desired termination, as well as the magnitude of its impact, remain in flux. So, it is definitely something that is still relevant to a certain degree as operations got adversely affected and still can be if the virus flairs up again and we get new governmental responses equal to the last time.

After only taking a look at the tip of the iceberg we can see that this is a very complex industry with a lot of different factors to take into account when we are going to do our analysis and valuation. We are intrigued by the performance of Frontline plc and its ability to generate shareholder returns whilst operating in a highly volatile and competitive business area. In our primary master thesis, we will do a comprehensive analysis of all these factors and other factors we find when conducting our research before valuating the firm.

Literature review

The world bulk shipping market has been in a peak period since 2003, and this has lasted an incredibly long time considering that the markets are much more complex than before. “An analysis of freight rate volatility in dry bulk shipping markets” (Jing et al., 2008) investigates the characteristics of volatility in dry bulk freight rates of different vessel sizes (capesize, panamax and handysize). They examined the daily returns of freight rate indices of three different types of bulk vessel in the sample period. They concluded that in these highly competitive markets the fierce volatility of freight rates makes the trend unpredictable and has brought great risks as well as opportunities to operators. They did also acquire some other interesting things that we will elaborate upon in the final master thesis that ventured away from the former literature. That was because they say that the market is way more complex now than prior to 2003. This study may be a little bit outdated for our thesis, but it can be nice to have some literature to support our findings in the earlier years of the company and to see if it still is consistent with today’s data.

COVID-19 was a global virus that affected almost every segment in our society. This was no exception for the shipping stock market and the shipping industry. The authors of the article “COVID-19 impact on the shipping industry: An event study approach” (Gavalas et al., 2021) saw that there where little effort yet to investigate how external shocks, and in particular the COVID-19 outbreak, may impinge on the shipping markets. This article tried to fill in this gap by studying how a sanitary incident might influence shipping freight rates and stock values. What is interesting for us is their results regarding how “pandemic-proof” the dry market, the tanker market, and the shipping stock market have proven to be. We will try to use their results in order to get a sense of which factors Frontline plc has done right or wrong in order to be or become “pandemic-proof”.

We will analyze the above mentioned factors (both from our introduction and too short literature review), and contribute further to theories on these subjects in our valuation of Frontline plc. We will also like to emphasize that we will look at a lot more relevant literature upon beginning our primary master thesis.

Frontline Plc

Frontline plc is one of the largest leading shipping groups in the entire world. Frontline traces its origins to Frontline AB, which was founded in 1985 and listed on the Stockholm Stock exchange from 1989 to 1997. In 1996, Hemen Holding Limited became the majority shareholder in Frontline AB. This was a Company which was indirectly controlled by trusts established by John Fredriksen. Frontline AB was listed on the Oslo stock exchange in May 1997 after they were re-domiciled from Sweden to Bermuda. The year following the re-domiciliation from Sweden to Bermuda Frontline AB was merged with London & Overseas Freighters (“LOF”). Subsequently LOF was renamed Frontline Ltd. On December 20, 2022, at the Special General Meeting they decided to re-domicile the company to the Republic of Cyprus under the name of Frontline plc.

Frontline Plc’s primary business objective seems to be returning value to their shareholders. Frontline shares began trading on the New York Stock Exchange in August 2001. Frontline has consistently returned value to its shareholders in the form of cash dividends and shares of Frontline subsidiaries.

Corporate Governance and Dividend Policy

Frontline plc states in their annual report that in accordance to an exception under the New York Stock Exchange (NYSE) listing standards available to foreign private issuers, Frontline plc is not required to comply with all of the corporate governance practices followed by U.S. companies under NYSE listing standards. But, pursuant to section 303A.11 of NYSE Listed Company Manual, they are required to list the significant differences between their corporate governance practices and the NYSE standards applicable to listed U.S. companies.

They have only three independent directors contrary to the regular requirement of maintaining a majority of independent directors. These directors are Ola Lorentzon, James O’Shaughnessy and Tor Svelland.

The NYSE also usually requires U.S. listed companies have a nominating/corporate governance committee of independent directors. They do not currently have a nominating or corporate governance committee.

The same goes for the requirement of having a compensation committee. They do not currently have a compensation committee. Their audit committee consists only of one independent director of the board, James O'Shaughnessy, opposed to the usual requirement of at least three independent directors.

As for their dividend policy Frontline plc aspire to distribute quarterly dividends to shareholders equal to or close to earnings per share adjusted for non-recurring items. The last dividend they paid in September 2022, they had a dividend yield of 1.06% which was slightly below the industry average and a payout ratio of 12.79% (Tipranks, 2022).

The Shipping Industry and Peers

Frontline plc operates within the shipping industry, specifically in the segment that transports crude oil and refined products. Frontline plc has established themselves as an international player within the industry and a world leader in the seaborne transportation of crude oil and refined products.

As previously mentioned, the company owns and operates one of the largest and most modern fleets in the industry, consisting of several technologically advanced tankers. Due to their significant scale, financial flexibility, and brand, it holds a unique position among its peers. Even though Frontline plc is a relatively stable company some of its peers like Teekay Tankers Ltd and Scorpio Tankers Inc has outperformed Frontline plc in the recent times.

1-year Chart comparison: FRO, SFL, STNG, TNK

- Frontline Ltd (FRO) Price % Change
- Teekay Tankers Ltd (TNK) Price % Change
- Scorpio Tankers Inc (STNG) Price % Change
- SFL Corp Ltd (SFL) Price % Change



For our primary master thesis, we will conduct a strategic analysis of Frontline Plc. This will include an external analysis of the shipping industry and its peers in which Frontline plc operates.

Methodology

Valuation

In order to provide an accurate valuation of Frontline plc, several time-consuming processes are required. To begin, we are going to give a presentation on Frontline plc, covering topics such as who they are, how they operate and an overview of the industry in which the company operates, being the shipping industry.

Thereafter, we are going to conduct a comprehensive strategic analysis of the shipping industry in order to gain a deeper understanding of Frontline plc's operations, and to identify potential advantages or disadvantages. By conducting a macroeconomic analysis of the industry, we hope to identify factors that may be beyond Frontline plc's control which may impact their opportunities. In order to provide a brief overview of the macroeconomic findings, a PESTEL analysis will be a useful tool. This tool will provide us with a clear view of the opportunities and threats that are facing the company. Furthermore, we will assess what internal strengths and weaknesses exist in order to capitalize on or mitigate them. As a result, we will emerge from the strategic analysis with an understanding of the

market, as well as the foundation necessary for making assumption (forecasts) about the future.

In addition, we will assess the accounting quality of Frontline plc. The financial statements should provide users with an unbiased view of Frontline plc's financial position. To determine if this is actually the case with Frontline plc, we will go through a number of procedures that are required in order to assess the accounting quality. In our final thesis, we will go into greater detail regarding each of these parts. In order to compare historical data over time, we need to reformulate the annual reports such that they are more suitable for further analysis and provide better insight into what truly creates value. The reformulation of the annual reports will serve as the foundation for our future forecasts and valuation of Frontline plc. An analysis of the company's profitability, growth and liquidity will also be conducted and commented using a variety of ratios. We will also look at the peers in the same industry to see if we can compare them with each other to construct a benchmark.

Valuation Models

In general, the value of a company is future estimated income or cash flows discounted to present value using a discount factor that takes into consideration of the time value of money and the risk associated with the company (*Petersen et al., 2017, s. 295*). There are many different approaches to valuation, and they can be used in conjunction with one another. In fact, a number of approaches should be combined to get the most accurate estimate of the equity (*Damodaran, 2012*). The choice of method on the other hand, is dependent on the company and the stage it is at its life cycle, the availability and quality of information.

Public traded companies that have reached the maturity phase of their life span are typically distinguished by consistent cash flows and simple access to data that is readily available to the general public in the form of annual reports. Frontline plc is a publicly traded company with consistent cash flows that is obligated by law to provide detailed annual reports that include balance sheets, income statements, and cash flow statements. As a result, a valuation should be carried out based on a fundamental analysis method.

We intend to devote approximately five or six months to this thesis, so there is plenty of time available to meet the deadline. Moreover, properly implementing the various techniques takes time and requires significant amount of attention to depth. To determine the share price, we will look at different present value models and conduct a relative valuation based on multiples compared to the peers in the industry.

Discounted Cash Flows

The discounted cash flow method is one of most used present value approaches in practice and can be expressed in two ways according to Koller et. al. One way is based on estimating the company`s equity value, while the second way is based on estimating the enterprise value and subtract the net interest bearing debt (NIBD). We will estimate the enterprise value by discounting the free cash flows with the weighted average cost of capital (WACC).

The market value of equity is given by:

$$\text{Market value of equity}_0 = \sum_{t=1}^n \frac{FCFE_t}{(1+r_e)^t} + \frac{FCFE_{t+1}}{r_e - g} \times \frac{1}{(1+r_e)^n}$$

The enterprise value is given by:

$$\text{Enterprise value}_0 = \sum_{t=1}^n \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{t+1}}{WACC - g} \times \frac{1}{(1+WACC)^n}$$

When determining the present value of future cash flows, we must first estimate a required rate of return that will be discounted. The WACC is the company`s weighted average cost of capital. This is determined first by estimating the cost of capital for both the equity and debt separately. Thereafter, these are weighted against the proportion of equity and debt.

The WACC is given by:

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

Multiples

Valuation based on multiples is a frequently used approach among investors. This is based on the prices at which comparable companies are traded on the market. This approach is not time-consuming and is straightforward with a low degree of complexity. Examples of multiples that are frequently used:

- Price/Earnings
- Price-to-Book
- Enterprise Value/EBITDA

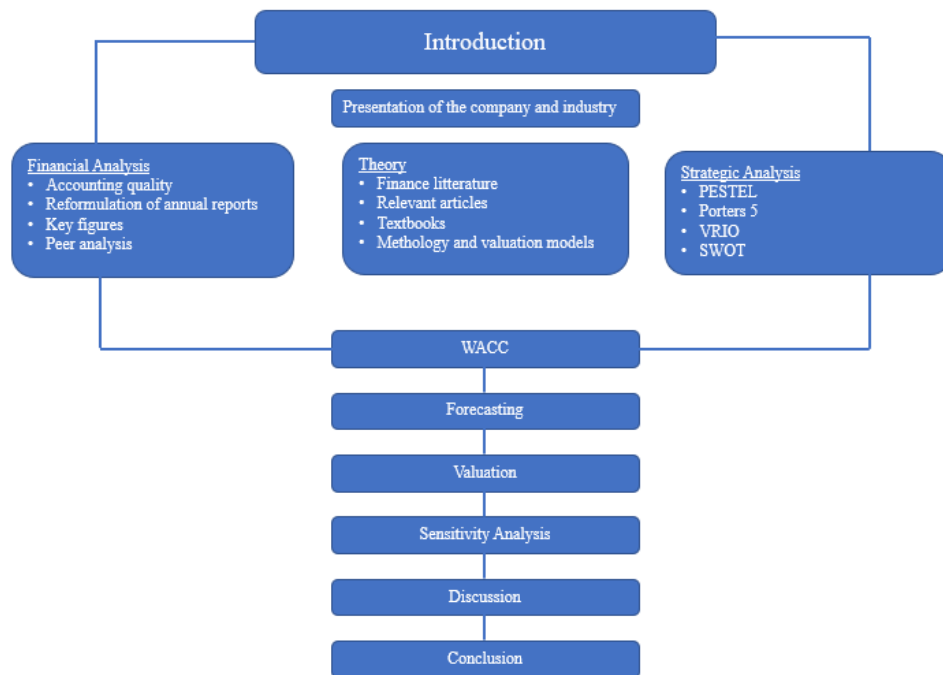
Data Sources

In our thesis, we will use secondary data and we will apply a quantitative research method by studying the annual reports of the company. Since Frontline plc is a publicly listed company, there are a variety of useful information that can be found, such as annual reports. In addition to other publicly available sources, these annual reports will be supplemented by relevant articles for our area of study. The secondary data from the annual reports will be imported to Excel to get a good view of the numbers and calculations. We might have to use data sources such as Morningstar Direct, Bloomberg, or Eikon to extract financial information about the competitor's profitability, performance, and share values. Furthermore, the theories presented in this thesis will be highlighted. As the work moves forward with the master thesis, we are aware that it is possible that more relevant data will become available.

Preliminary implementation schedule for the valuation

The submission deadline for our master thesis is July 3, 2023. At the time of writing this preliminary report on the thesis, we are confident that this deadline will be met. We have developed a tentative schedule for the rest of the thesis. To complement each section, each will be thoroughly analyzed and elaborated. This visualization illustrates how we will proceed in our analysis and valuation. Note that this

preliminary tentative draft of the schedule, and additional methods will be considered as we move further out into the thesis.



Thesis progression

January:

- Finish the Preliminary Thesis Report
- Gathering data about the company and industry
- Provide an overview about Frontline and the shipping industry
- Import historical data from the annual reports into excel
- Start reformulating the annual reports

February:

- Finish the reformulation of annual reports
- Gathering and process data about the macroeconomic factors in the industry
- Conduct a comprehensive strategic analysis (PESTEL; Porters 5 forces, SWOT)
- Theory about the different valuation models and our methodology
- Estimate the cost of capital and WACC
- Start conversations with our supervisor

March:

- Complete the strategic analysis (PESTEL; Porters 5 forces, SWOT)
- Forecasting
- Starting on valuation
- Conversation with our supervisor about our analysis and results so far in the process

April:

- Complete the valuation
- Sensitivity analysis (Scenario analysis)
- Gather information about how to conduct Monte Carlo simulations
- Conduct Monte Carlo simulation
- Conversation with supervisor about our results from the valuation and the sensitivity analysis/simulations

May:

- Complete the Monte Carlo simulations
- Go through our analysis

June:

- Overview over the master thesis
- See if we have missed something
- Correct spelling mistakes

July 3, 2023 – Deadline

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