UNIVERSITY OF THESSALY
SCHOOL OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING

FINANCIAL VALUATION OF DRY BULK SHIPPING COMPANIES : METHODOLOGIES AND MARKET IMPLICATIONS

by

MARIOS KARADIMAS

Submitted in partial fulfillment of the requirements for the degree of Diploma in Mechanical Engineering at the University of Thessaly

Volos, 2024

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Approved by the Committee on Final Examination:

Advisor Dr. George Saharidis,

Associate Professor, Department of Mechanical Engineering, University of Thessaly

Member Dr. Pandelis Dimitrios,

Professor, Department of Mechanical Engineering, University of Thessaly

Member Dr. Stamatelos Tassos,

Professor, Department of Mechanical Engineering, University of Thessaly

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To all who have walked alongside me on this journey, your contributions have been instrumental in bringing this thesis to fruition. Thank you.

Ευχαριστίες

Πρώτα απ' όλα, θα ήθελα να ευχαριστήσω την οικογένειά μου, ιδιαίτερα τον πατέρα μου, τη μητέρα μου και τον αδελφό μου, που ήταν πάντα δίπλα μου, ενθαρρύνοντάς με σε όλο αυτό το ταξίδι. Χάρη σε εσάς βρίσκομαι εδώ που βρίσκομαι σήμερα. Στους αγαπημένους μου φίλους, σας ευχαριστώ για την υπομονή σας, τις ιδέες και την ενθάρρυνσή σας που αποτέλεσαν μεγάλη πηγή δύναμης για μένα, ιδίως στις δύσκολες στιγμές αυτού του έργου.

Θα ήθελα, επίσης, να εκφράσω τις ευχαριστίες μου στον ακαδημαϊκό μου επιβλέποντα, καθηγητή Σαχαρίδη Γεώργιο, για την υποστήριξη αυτής της ιδέας και για την καθοδήγηση. Χάρη σε εσάς είμαι σε θέση να ασχοληθώ με ένα οικονομοτεχνικό θέμα που είναι αλληλένδετο με τη μηχανολογία και εξίσου σημαντικό ως γνώση για την λήψη λειτουργικών και στρατηγικών αποφάσεων και σας είμαι ευγνώμων γι' αυτό. Με παρακινήσατε επίσης να γίνω πιο ανοιχτόμυαλος και να μάθω για τη χρηματοοικονομική αποτίμηση στον τομέα της ναυτιλίας ξηρού χύδην φορτίου, γεγονός που έχει εμπλουτίσει την ακαδημαϊκή και αναπτυξιακή μου πορεία. Αυτό είναι κάτι για το οποίο είμαι πολύ ευγνώμων που μπόρεσα να εμβαθύνω και να μάθω πιο λεπτομερώς και για ένα θέμα που είναι αντίθετο με τον κανόνα και μου κεντρίζει το ενδιαφέρον.

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FINANCIAL VALUATION OF SBLK IN THE SHIPING SECTOR: METHODOLOGIES AND MARKET IMPLICATIONS

MARIOS KARADIMAS

Department of Mechanical Engineering, University of Thessaly

Supervisor: Dr Saharidis George

Associate Professor of Operational Research

Abstract

This thesis aims at understanding the financial valuation of dry bulk shipping companies and the processes involved and their effects on the positioning of firms in the market. Using Star Bulk Carriers Corp. (SBLK) as the case study, the research applies both intrinsic and comparative approach to value the company. In order to determine the intrinsic value of the company, Discounted Cash Flow (DCF) model is applied with the help of free cash flow projections and the Weighted Average Cost of Capital (WACC) that depicts the risk profile of the industry. It also incorporates sensitivity analysis and scenario analyses to deal with the risks and uncertainties of the market.

The main conclusions show that it is crucial to employ a number of approaches to the valuation of companies operating in the dry bulk shipping industry, which is highly volatile, depends on the overall economic conditions and is subject to certain regulations. The thesis also stresses the fact that SBLK and other similar companies need to focus on upgrading their fleet, improving efficiencies and embracing environmental standards to improve their standings in the market. The conclusions give practical recommendations for investors and industry executives, stressing the importance of the connection between theoretical models and real-life practice in the valuation process, company appraisal and decision making.

Key Words: Dry Bulk Shipping, Star Bulk Carriers (SBLK), Valuation, Discounted Cash Flow (DCF), Weighted Average Cost of Capital (WACC), Comparative Analysis, Sensitivity Analysis, ESG Compliance.

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ΧΡΗΜΑΤΟΟΙΚΟΝΟΜΙΚΗ ΑΠΟΤΙΜΗΣΗ ΝΑΥΤΙΛΙΑΚΩΝ ΕΤΑΙΡΙΩΝ ΞΗΡΟΥ ΦΟΡΤΙΟΥ: ΜΕΘΟΔΟΛΟΓΙΕΣ ΚΑΙ ΕΠΙΠΤΩΣΕΙΣ ΣΤΗΝ ΑΓΟΡΑ

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Αναπληρωτής Καθηγητής Επιχειρησιακής Έρευνας

Περίληψη

Η παρούσα διατριβή αποσκοπεί στην κατανόηση της χρηματοοικονομικής αποτίμησης των ναυτιλιακών εταιρειών ξηρού χύδην φορτίου και των σχετικών διαδικασιών και των επιπτώσεών τους στην τοποθέτηση των εταιρειών στην αγορά. Χρησιμοποιώντας την Star Bulk Carriers Corp. (SBLK) ως μελέτη περίπτωσης, η έρευνα εφαρμόζει τόσο την εσωτερική όσο και τη συγκριτική προσέγγιση για την αποτίμηση της εταιρείας. Προκειμένου να προσδιοριστεί η εσωτερική αξία της εταιρείας, εφαρμόζεται το μοντέλο προεξόφλησης ταμειακών ροών (DCF) με τη βοήθεια προβλέψεων ελεύθερων ταμειακών ροών και του μέσου σταθμικού κόστους κεφαλαίου (WACC) που απεικονίζει το προφίλ κινδύνου του κλάδου. Ενσωματώνει επίσης ανάλυση ευαισθησίας και αναλύσεις σεναρίων για την αντιμετώπιση των κινδύνων και των αβεβαιοτήτων της αγοράς.

Τα κύρια συμπεράσματα δείχνουν ότι είναι ζωτικής σημασίας να χρησιμοποιούνται διάφορες προσεγγίσεις για την αποτίμηση των εταιρειών που δραστηριοποιούνται στον κλάδο της ναυτιλίας χύδην ξηρού φορτίου, ο οποίος είναι ιδιαίτερα ευμετάβλητος, εξαρτάται από τις γενικές οικονομικές συνθήκες και υπόκειται σε ορισμένους κανονισμούς. Η διατριβή τονίζει επίσης το γεγονός ότι η SBLK και άλλες παρόμοιες εταιρείες πρέπει να επικεντρωθούν στην αναβάθμιση του στόλου τους, στη βελτίωση της αποδοτικότητας και στην υιοθέτηση περιβαλλοντικών προτύπων για να βελτιώσουν τη θέση τους στην αγορά. Στα συμπεράσματα διατυπώνονται πρακτικές συστάσεις για τους επενδυτές και τα στελέχη του κλάδου, τονίζοντας τη σημασία της σύνδεσης μεταξύ θεωρητικών μοντέλων και πραγματικής πρακτικής στη διαδικασία αποτίμησης, αξιολόγησης των εταιρειών και λήψης αποφάσεων.

Λέξεις-Κλειδιά: Ναυτιλία Ξηρού Φορτίου, Star Bulk Carriers (SBLK), Αποτίμηση, Προεξόφληση Ταμειακών Ροών (DCF), Μέσο Σταθμισμένο Κόστος Κεφαλαίου (WACC), Συγκριτική Ανάλυση, Ανάλυση Ευαισθησίας, Συμμόρφωση ESG.

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Chapter 1. INTRODUCTION

The development of the global economy and the shift of societies to the higher levels of consumption, which require more goods and services, have become the main drivers of trade, including international and domestic trade, which has led to the constant need for transportation [1]. Development in the shipping technology for instance from wooden sailing ships to steam powered steel ships and the development of larger ships in the 1950s helped to reduce freight costs by as much as 65% by the 1980s while promoting global trade and economic growth [2]. These technological revolutions together with the development of better communication systems and the growth of logistics techniques including the use of computers, containers, supertankers have also helped to improve trade efficiency and facilitate globalization [3]. The key function of maritime transport in the movement of products between the countries reinforces its relevance to the modern [4]. [5],[6]

1.1 Overview of the Dry Bulk Shipping Industry

The dry bulk shipping sector serves as a fundamental pillar of international trade, enabling the movement of vital raw materials like iron ore, coal, grains (major bulks) and sand, gravel, scrap metal and bauxite (minor bulks). These commodities constitute the bedrock of essential industries, including construction, energy production and agriculture. By 2024, the global dry bulk shipping market is estimated to be valued at around $162.6 billion, with a projected compound annual growth rate (CAGR) exceeding 4% from 2024 to 2032 [7]. The industry is highly cyclical and being influenced by variables like global trade volumes, commodity prices, freight rates and fleet availability. However, the way in which they affect each other can lead to significant fluctuations, which complicates forecasting efforts. Although the market remains strong, it is necessary to navigate these challenges effectively because they can influence both short-term and long-term outcomes. As a result, this complex environment demands ongoing adjustments and strategic planning to stay competitive.

1.2 Importance of Valuation in the Sector

Valuation is crucial in the dry bulk shipping industry, as it influences key financial and strategic decisions:

- Investment Decisions: Accurate valuation of shipping companies and their fleets allows investors to make well-informed decisions regarding acquisitions, mergers, and divestitures.
- Financing and Credit Access: Financial institutions and banks require reliable vessel valuations to issue loans, as vessels frequently serve as collateral. The skill to

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estimate the fair market value of assets is critical to negotiating favorable financing terms.

- Strategic Planning: For shipping companies, understanding asset values is crucial for fleet management strategies, involving expansion by acquisitions of existing vessels or newbuilds, scrapping older vessels, or delaying new orders during market downturns.

The unique dynamics of the involved market factors, such as fluctuating freight rates, operating costs, and vessel age depreciation, in conjunction with the environmental regulations, laws and technological advancements further influence asset values; all which make the valuation process in the shipping sector complex.[8]

1.3 Objectives of the Thesis

The objective of this thesis is to provide a detailed examination of valuation practices for dry bulk shipping companies, which aims to bridge the gap between academic valuation theories and their real-world application in the shipping industry by addressing the following goals:

- Analyze Valuation Techniques: This thesis will focus on exploring widely accepted valuation methods, such as the discounted cash flow (DCF) approach, which evaluates the present value of future cash flows generated by the company. Another market-driven approach, the company comparable analysis (Copms), which compares metrics, like price to earnings (PE ratio) and enterprise value divided by EBITDA (EV / EBITDA) to a specific group of similar shipping companies.
- Interpretation of Valuation Results: Beyond applying the methodologies, the thesis will focus on providing a structured approach to interpreting the results. This includes:
    a. Relative Performance: Assessing how the company's valuation compares to industry peers and historical benchmarks. This will help identify whether the company is undervalued or overvalued relative to market conditions.
    b. Sensitivity Analysis: Evaluating how changes in key variables, such as freight rates, operating costs, and vessel utilization, impact valuation outcomes, as well as the growth rate of the company. This will allow stakeholders to understand the resilience of the valuation under varying scenarios.
    c. Risk Assessment: Highlighting risks embedded in the valuation, such as exposure to market cycles, regulatory changes, or geopolitical tensions will provide a clearer picture of the sustainability and applicability of the valuation.

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Chapter 2. INDUSTRY ANALYSIS

The bulk carriers are used in the transportation of goods that are not packed such as raw which materials include iron ore, coal and grain, which altogether form 29.2% of the total seaborne trade as reported by UNCTAD [9]. Despite its importance, the sector is still very much exposed to boom and bust cycles and speculative investments which can be characterized as rational and irrational at different market times [10]. With the increasing integration of the global supply chain due to changes in the manufacturing industry, the role of the maritime industry especially the bulk cargo shipping has not lost its relevance in the transportation of raw materials [11].

2.1 Macroeconomic Factors Influencing Dry Bulk Shipping

The dry bulk shipping market which was valued at USD 162.6 billion in the year 2023, is anticipated to grow at a compounded annual growth rate of more than 4% in the period between 2024 and 2032, this can be attributed to the increasing rate of urbanization as well as the increasing demand for construction materials such as steel and cement. According to World Bank, in April 2023, the urban population has already reached more than half of the global total and is forecast to keep on growing to reach 6 billion by 2045; this has ensured that the development of infrastructure remains a key driver of the demand for bulk commodities and specialized ships, thus strengthening the relevance of the sector to the global economy.

Figure 1. Statistics for the Dry Bulk Shipping Market

Source: Global Market Insights (Jan 2024), Dry Bulk Shipping Market Report, 2032

As it is understood, this industry is, in a complex way, linked to global economic health. Therefore, tracking and understanding of key macroeconomic and geopolitical factors plays

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significant role in evaluating todays shipping market. Such factors include: Global GDP Growth, Global Trade Volumes, etc.

The development of the global economy, measured by GDP growth, remains the primary driver of shipping markets, as it influences the demand for transport work based on regional interactions and economic activity [12]. Economic trends, such as population growth concentrated in developing countries, urbanization, and the rise of coastal megacities with direct access to international trade, further shape this demand [13]. The International Monetary Fund (IMF) projects global economic growth of 3.2% in 2025 and 3.3% in 2026, with regional variations influencing the dry bulk shipping market. While China's GDP is expected to grow at 4.5% in 2025 and 4.1% in 2026, India's economy is forecast to lead with 6.5% growth in both years, highlighting its expanding demand for raw materials like iron ore, coal, and grains essential for construction and manufacturing. Despite a slowdown in demand compared to 2024, due to the exhaustion of pandemic-accumulated demand, low commodity prices in 2024 have supported inventory build-up, while weaker domestic demand in China is anticipated to lower iron ore prices over the next two years. These dynamics underscore the intricate relationship between economic trends and the dry bulk shipping market's performance, reflecting varying growth prospects across regions.

Figure 2. Global GDP growth, Real estate growth in China, Dry bulk commodity prices

Sources : IMF, National Bureau of Statistics

2.2 Key Drivers: Supply/Demand, Freight Rates

The dry bulk shipping market operates within a complex framework of economic trends, supply-demand balances, and industry-specific variables, with the Baltic Dry Index (BDI) serving as a critical barometer of market activity and pricing. The BDI, which replaced the Baltic Freight Index (BFI) in 1999, provides a comprehensive measure of freight rates by incorporating data from various vessel categories, including Capesize, Panamax, Supramax, and Handysize ships. This index captures the fluctuations in demand for the transport of

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bulk commodities such as iron ore, coal, and grain, and it remains one of the most reliable indicators of the health of the maritime freight industry. The evolution of the BDI reflects efforts to adapt to changing market conditions, ensuring it remains a relevant tool for analyzing trends and forecasting shipping market dynamics [15].

Figure 3. The Baltic Dry Index month-to-month

Source: Trading Economics: The Baltic Dry Index month-to-month data (2024)

Economic growth is one of the most influential factors driving fluctuations in the BDI. The demand for maritime transport is closely tied to the expansion of global GDP, as higher economic activity typically results in increased trade volumes and, consequently, a greater need for shipping services. Studies have established a strong correlation between GDP and the BDI, with research indicating that a 1% rise in global GDP leads to a 3.35% increase in the BDI. However, this relationship also highlights the market's volatility, as even slight economic downturns can significantly impact freight rates. The 2008 global financial crisis exemplifies this volatility, with the BDI experiencing an average annual decline of 45% during the crisis period due to a severe imbalance between fleet supply and transport demand [16],[17].

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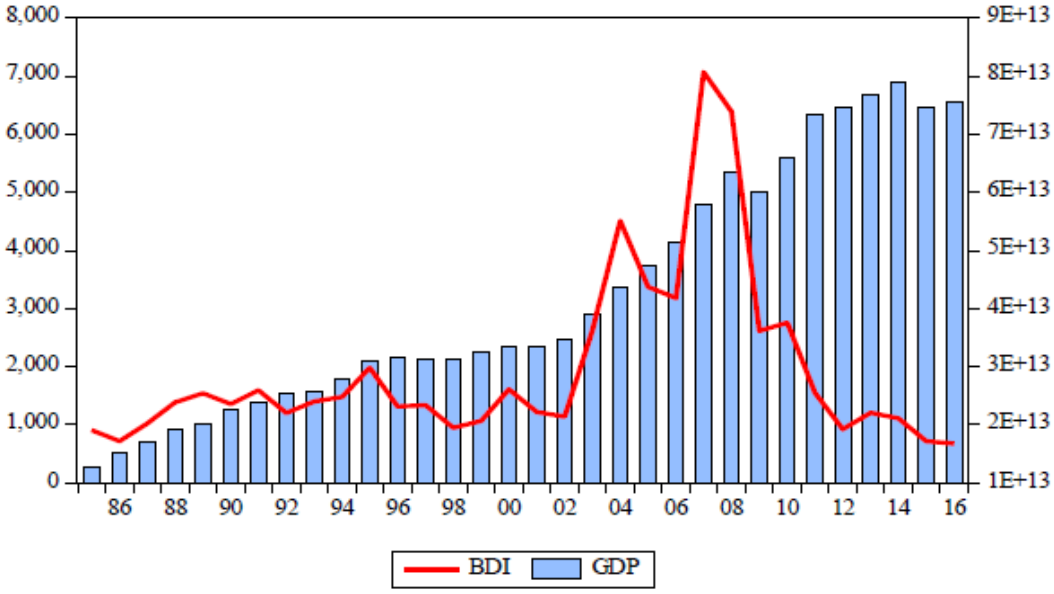
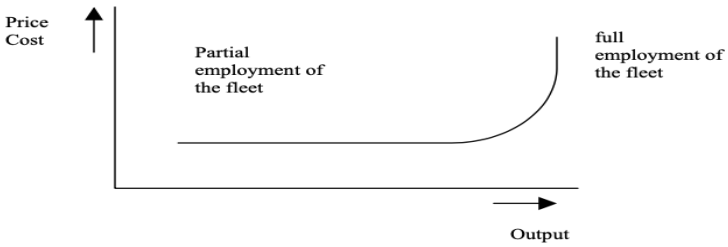
Figure 4. Graphical Display of Baltic Dry Index and World Gross Domestic Product ($)



Source: Akyar, Demir. (2018), [6]

On the supply side, the shipping market's elasticity is influenced by factors such as fleet size, shipbuilding rates, and scrapping activity. The shipping industry often faces challenges in aligning fleet capacity with demand due to the long lead times required for shipbuilding and the difficulty in swiftly adjusting fleet utilization. This short-term inelasticity can exacerbate the effects of economic shocks, as was evident during the pre-2008 period when excessive investments in fleet expansion created an oversupply that destabilized the market. Conversely, supply constraints, such as limited shipbuilding activity or increased scrapping, can tighten the market, leading to rapid escalations in freight rates during periods of high demand.

Figure 5. Bulk market supply curve



Source: Veenstra (1999), [18]

Demand-side dynamics in the dry bulk shipping market are driven by global trade patterns, the consumption of bulk commodities, and transportation distances. Seasonal variations

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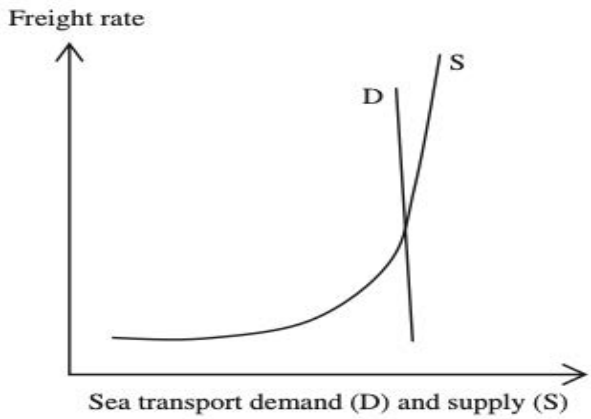
and specific trade routes also play significant roles in shaping freight rates. For example, increased demand during winter months or heightened activity in specific geographic regions can create localized rate spikes. Furthermore, the type of cargo, its tonnage, and the class of vessels employed all contribute to variations in pricing. These microeconomic factors, coupled with the broader macroeconomic environment, add layers of complexity to the market, making accurate forecasting a critical aspect of strategic decision-making.

Figure 6. Sea transport demand and supply relative to freight rate



Source: Stopford (2009), [17]

Geopolitical and external factors further complicate the market's behavior. Changes in trade policies, environmental regulations, and global events, such as conflicts or pandemics, can have pronounced effects on demand and supply dynamics. For instance, the dry bulk market in 2024 saw low commodity prices encouraging inventory build-up, while weakening demand in China, a key player in the global trade ecosystem, is expected to drive down iron ore prices over the coming years. These regional economic trends highlight the interconnected nature of the global shipping industry and its susceptibility to localized economic shifts [16].

Forecasting freight rate trends and understanding the underlying factors influencing the BDI have become areas of intense study, with researchers employing advanced methods such as artificial neural networks, Bayesian models, and econometric techniques like ARIMA and VAR. These tools aim to enhance the accuracy of market predictions, providing stakeholders with the insights needed to navigate the dry bulk market's inherent volatility. Strategic fleet management, investment timing, and route optimization are just a few areas where such predictive models can create value.

Ultimately, the dry bulk shipping market's performance hinges on the delicate balance between economic growth and fleet management. While economic expansion drives

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increased demand for maritime transport, unchecked fleet supply can destabilize the market, leading to dramatic price fluctuations. The volatility of the sector presents risks but also opportunities for investors and operators who can adapt to its cyclical nature. Future research and technological advancements are essential to deepen our understanding of the intricate relationships between global economic activity, maritime transport, and freight rate dynamics, ensuring that industry stakeholders can effectively capitalize on the opportunities presented by this vital sector.

2.3 Regulatory Environment

As it has been thoroughly described from the above, the shipping industry is one of the most important pillars of international commerce and plays a key role in the global economy as it handles about 80 % of the world's trade by volume. It works within the framework of the legal requirements that have been put in place to promote safety, environmental protection and efficiency of operations. This framework is the 1982 United Nations Convention on the Law of the Sea (UNCLOS). This framework defined the laws governing flag states and provided the basis for contemporary governance of the oceans, ensuring that ships meet convergent safety and environmental standards while placing the onus on flag states.

Port State Control measures (PSC), for instance the Paris Memorandum of Understanding (Paris MOU) of 1982, also enhanced the legal requirements of the country to check and seize ships that do not meet the set guidelines. PSC has been very effective in dealing with substandard ships and has had positive impacts on safety and environmental regulations worldwide [19]. However, the problem remains that the level of enforcement is rather uneven, especially in the countries which have open registration, or "flags of convenience", where money saving tactics often prevail over the regulations. These registries allow ship owners to enlist their ships in countries which have poor monitoring and detection systems thus compromising the efficacy of the legal requirements [20].

Safety regulations have been some of the most important aspects of the management of the industry with numerous changes having been made in the past decades. The most important change which was made was the adoption of International Safety Management (ISM) Code in 1998 and it was incorporated in the International Convention for the Safety of Life at Sea (SOLAS). The ISM Code entails the safety management system that stipulates, that ship-owners should develop safety management plans that ensure safety of lives, properties and the environment. This change from conventional safety management approach, which is reactive to one that is proactive, signified a change of culture in the industry with regards to risk management [21]. The ISM Code has also being supplemented by PSC inspections, which enforce strict measures on non-adhering ships in a bid to enhance

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safety records. However, the problem of enforcement remains an issue especially in countries with scarce resources or where there is little emphasis on compliance [17].

Environmental protection has emerged as a major concern in the regulations governing the industry owing to its massive ecological footprint. The Convention on the Prevention of Pollution from Ships commonly known as MARPOL was adopted in 1973 and has to date provided the cornerstone of environmental regulation in shipping with regards to oil pollution from ships, sewage and garbage disposal and air emissions. An important version of MARPOL was the 2020 sulfur cap under Annex VI which lowered the limit of sulfur content in fuels used in marine vessels to 0.5%. This regulation was meant to cut down the emissions of sulfur oxide (SOx) that is linked with respiratory diseases and acid rain. Implementing the sulfur cap has led to either the use of the Low-Sulfur fuels, which is expensive, or the adoption of scrubbers to allow the use of high-sulfur fuel oils. These measures have posed severe pressures on the system, especially on the dry bulk operators, especially the Capesize vessels which are heavy consumers of fuel [22].

The Ballast Water Management Convention (BWMC) that came into force in 2017 also shows the industry's willingness to tackle the ecological threats posed by invasive species transported in the ballast water. However, implementing BWMC has been a challenge to the small players since they cannot afford to fit in ballast water treatment systems, thus highlighting inequalities in the regulations [23].

The sulfur cap under the IMO 2020 set a precedent for other regulations including the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII) both effective from 2023. The EEXI aims at enhancing technical performance by compelling ships to conform to certain level of CO2 emissions which may require ship conversion such as engine and hull upgrades, energy conserving devices. It is estimated that the costs for larger vessels may reach up to $3 million, which is a huge barrier for smaller operators (Baltic Exchange, 2021). On the other hand the CII deals with the actual performance of the ship by calculating the carbon footprint of the ship every year and compelling the ship owner to make changes such as steaming slow and route planning. The vessels with poor CII ratings are required to submit a corrective action plan thus increasing the operational risks for ship-owners [24].

With the new laws as a necessity in order to meet the IMO's goal of reducing the GHG emissions by 40% by 2030, competition in the industry has been rising. The upgrades of the current generation of ships make them to be compliant with the EEXI and CII while the old and less efficient ships are devalued and may be retired [25]. This shift has led to market consolidation where big players with deep pockets outshine the small players thus making it hard for them to meet the set standards [26].

These regulations receive criticism that states that such measures are biased and have a negative impact on certain parties, particularly the dry bulk sector. Whereas in the container

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market, the expenses can be passed to the clients, in the dry bulk market, there are no fuel surcharges; hence the costs are borne directly by the operators. Dry bulk operators however, have to bear the costs due to the fact that there are no fuel surcharge mechanisms in place. This has led to concerns on the market ability in of the long small run players due to survive the in above the mentioned compliance costs [27]. Lack of assistance or transitional incentives only adds to these issues, which serve to stress the importance of proper policy development in order to facilitate proper adaptation.

However, there has been a strong improvement of the regulatory environment that has helped to enhance safety and sustainability. It has been seen that measures such as UNCLOS, ISM, MARPOL, and the IMO 2020 sulfur cap have been instrumental in the industry's efforts to address the challenges it faces. However, the issue of weak enforcement especially in countries with open registries, remains a sore point even today. Improvement of the IMO oversight for example through a ship database or licensing of ship registries could have helped in enhancing compliance [20]. Also, Formal Safety Assessments could be applied for the purpose of developing the regulations that take into account the risks to the environment while not placing an excessive burden on the affected parties [19].

Therefore, the maritime transport industry can be said to be in between safety, sustainability and economic feasibility. Although the current regulations for example IMO 2020, EEXI, and CII have boosted the sustainability efforts, their enforcement has exposed the need for a more integrated and flexible approach to regulation. Further policies should hence endeavor to address issues of equity such as providing transitional measures and industry wide agreements to relieve pressure and promote competition. Thus, the maritime industry will be able to sustain through the challenges while gradually moving towards the sustainable and stronger development. [28],[29]

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Chapter 3. COMPANIES OVERVIEW

3.1 Star Bulk Carriers Corp.

Company Overview

Star Bulk Carriers Corp., trading under the ticker **SBLK** on NASDAQ, is the largest publicly listed dry bulk shipping company in the United States. Incorporated in the Marshall Islands in 2006, it operates a modern and diversified fleet of 156 vessels, ranging from Supramax to Newcastlemax ships, with a combined carrying capacity of approximately 15 million deadweight tons (DWT). Headquartered in Athens, Greece, Star Bulk maintains regional offices in Limassol, Cyprus; Singapore; Stamford, USA; and Copenhagen, Denmark, reflecting its robust global presence. [30]

Fleet and Operational Strength

The company has in place a fully integrated ship management system, covering both technical and commercial operations. This integrated approach ensures cost efficiency and operational excellence, evidenced by being among the best in its industry with its top-tier performance in the **Rightship risk rating**, a global standard for evaluating vessel safety and environmental performance. Star Bulk's fleet is 98% scrubber-fitted, allowing significant leverage to fuel price spreads, and the company was one of the first to also embraced the adoption of energy-efficient technologies, including ballast water treatment systems and energy-saving devices. Key fleet statistics include:

- **Fleet size**: 156 vessels (fully delivered basis).
- **Fleet composition**: A mix of Newcastlemax, Capesize, Kamsarmax, Panamax, Supramax, and Ultramax vessels.
- **Average fleet age**: Approximately 11.9 years, reflecting its focus on operational modernization. [31]

Financial Performance

For Q3 2024, Star Bulk reported:

- **Net Income**: $81 million, with adjusted net income of $83 million.
- **Adjusted EBITDA**: $143.4 million.
- **TCE Rate**: $18,843 per vessel per day.
- **Dividend**: $0.60 per share, reflecting its shareholder-friendly capital allocation policy.

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- **Total liquidity**: $433 million, supported by prudent cash management and a strong balance sheet.
- **Debt**: Total debt of $1.3 billion, with net debt per vessel reduced by over 50% since 2020. [32]

Strategic Initiatives and Growth

Since 2018 Star Bulk has engaged in industry consolidation and has acquired or merged with nine different companies. The Eagle Bulk Shipping acquisition in 2024 has been very significant in this regard as it has brought in a large amount of value through operational synergies which are expected to generate cost savings of $9 million by Q3 2024. The integration plans consisted of centralized procurement and streamlined technical and commercial operations, contributing to ongoing efficiency gains. Star Bulk's capital allocation strategy has been solid, with more than $1.33 billion distributed in dividends since 2021 and $443 million being spent in share buybacks. The company capitalized on historically high vessel valuations to sell older assets, reinvesting proceeds in fleet modernization and shareholder returns. [31]

Market and Industry Position

Star Bulk leads the U.S.-listed dry bulk sector in market capitalization, liquidity, and fleet size. As of Q3 2024, its market capitalization stood at $2.4 billion. The company benefits from strong relationships with major financial institutions, brokers, and charterers, bolstering its competitive edge. [32]

Environmental, Social, and Governance (ESG) Initiatives

As an ESG pioneer in the shipping industry, Star Bulk has committed to decarbonization and sustainability. Key ESG achievements include:

- **Reduction in greenhouse gas emissions**: A 4% decrease in Scope 1 emissions and a 9.5% reduction in Scope 3 emissions in 2024.
- **Regulatory readiness**: Prepared for the FuelEU Maritime Regulation (effective 2025) with biofuel adoption and compliance strategies.
- **Transparency and reporting**: Consistent publication of ESG reports since 2019 and active engagement with industry regulators to shape sustainable shipping policies. [33]

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Market Dynamics

The dry bulk shipping market is heavily influenced by global economic trends, trade volumes, and commodity flows. In 2024, total dry bulk trade volumes increased by 5.4%, driven by record exports of iron ore, coal, and minor bulks. Star Bulk's strategy capitalizes on these trends through operational efficiency and fleet adaptability.

Outlook

Despite short-term volatility, Star Bulk remains well-positioned for long-term growth due to its disciplined capital management, fleet modernization, and strategic investments. The company continues to enhance its operational and environmental performance, ensuring resilience in the face of global economic and regulatory challenges.

3.2 Company's Peers Profiles

3.2.1 Golden Ocean Group Limited

Company Overview

Golden Ocean Group Limited (GOGL) is a Bermuda-based international dry bulk shipping company and the largest listed owner/operator of large-sized dry bulk vessels globally. Since 1996, the company specializes in the transportation of dry bulk commodities, including iron ore, coal, grains, and fertilizers, across worldwide shipping routes. Its diversified fleet, primarily focused on Newcastlemax, Capesize, Panamax, and Ultramax vessels, operates on both the time and spot charter markets. The company has a fleet of 83 vessels, with three newbuildings under construction and eight vessels chartered-in from SFL Corporation Ltd. Of these, seven are finance leases, while one is an operating lease. About 12 vessels are chartered-out at fixed rates, while 36 are on index-linked charters, and 43 trade in the spot market.[34]

Fleet and Operational Strength

Golden Ocean's fleet composition is a strategic advantage, offering exposure to Capesize and Newcastlemax vessels, which comprise over 80% of its total deadweight tonnage. This focus positions the company to benefit significantly from ton-mile growth driven by iron ore and bauxite exports, especially from Brazil and Guinea to Asia. Key fleet metrics:

- **Fleet size**: 83 vessels owned, with 8 chartered-in and 3 newbuildings on order.

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- **Average vessel age**: Competitive compared to industry standards, ensuring operational efficiency.
- **Fleet utilization**: 82% of Capesize and 83% of Panamax days secured at attractive TCE rates for Q4 2024.

The low cash-break-even levels and fuel-efficient fleet of Golden Ocean are central to its industry-leading profitability and competitiveness. The company actively engages in fleet renewal, divesting older tonnage at favorable valuations to maintain a modern, cost-efficient operation.

Financial Performance

Golden Ocean delivered strong financial results for the third quarter of 2024, despite volatile market conditions. The results underscore its operational resilience and strategic positioning.

- **Net Income**: $56.3 million, or $0.28 per share (basic).
- **Adjusted Net Income**: $66.7 million, or $0.33 per share.
- **Adjusted EBITDA**: $124.4 million, up from $120.3 million in Q2 2024.
- **TCE Rates**: $28,295 per day for Capesize vessels, $16,361 per day for Panamax vessels, and $23,726 per day fleet-wide.
- **Dividends**: Declared $0.30 per share for Q3 2024, continuing its commitment to shareholder returns.

Golden Ocean also secured a $150 million refinancing facility for six Newcastlemax vessels, enhancing its liquidity and financial flexibility.

Strategic Initiatives and Growth

Golden Ocean has executed a disciplined strategy of fleet optimization and capital allocation:

1. **Fleet Renewal**: Recently sold one Newcastlemax and one Panamax vessel for $56.8 million, reflecting its focus on maintaining a competitive and modern fleet.
2. **Refinancing**: Secured favorable terms to refinance existing debt, reducing financial risks.
3. **Shareholder Returns**: Renewed its share buy-back program and consistently paid dividends, with cumulative payouts exceeding $1.1 billion since 2021.

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Market Dynamics

Golden Ocean remains optimistic about the long-term prospects of the dry bulk shipping market, supported by favorable supply-demand dynamics and increased ton-mile growth. Key drivers include:

- **Iron Ore and Bauxite**: Rising exports from Brazil and Guinea to Asia are bolstering Capesize demand, with Guinea's Simandou project expected to triple sailing distances to Asia by 2025.
- **Chinese Demand**: China's stimulus measures targeting infrastructure and real estate sectors are stabilizing steel demand and supporting high-grade iron ore imports.
- **Fleet Supply Constraints**: Limited shipyard capacity, high newbuilding costs, and aging vessels ensure a constrained supply pipeline, benefiting freight rates.
- **Environmental Regulations**: Stricter emissions standards are increasing demand for modern, fuel-efficient vessels, further advantaging Golden Ocean’s fleet.

Environmental, Social, and Governance (ESG) Initiatives

Golden Ocean is actively reducing its environmental footprint through investments in decarbonization and digitalization. In Q3 2024, the company allocated $2.4 million to sustainability-focused projects. Its fleet modernization efforts align with tightening environmental regulations, ensuring compliance and enhancing commercial attractiveness.

Market and Industry Position

Golden Ocean’s robust cash flow generation, efficient cost structure, and strong balance sheet underpin its ability to navigate market volatility. The company reported $117.6 million in cash and $150 million in undrawn credit facilities as of Q3 2024, with a debt-to-equity ratio of 56%.

Outlook

Golden Ocean Group Limited is one of the biggest players in the dry bulk shipping industry, offering unmatched exposure to large-sized vessels and ton-mile growth opportunities. Its disciplined approach to fleet management, robust financial performance, and consistent dividents position it as a resilient and attractive investment in the volatile dry bulk market.

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3.2.2 Danaos Corporations

Company Overview

Danaos Corporation (NYSE: DAC) is a global shipping company which concentrates on the ownership and operation of container vessels. Based in Athens, Greece, the company has a diverse fleet focused on facilitating global trade and meeting the growing demands of the container shipping market. Besides its extensive container fleet, Danaos has diversified into dry bulk shipping, with a fleet of 10 Capesize vessels as part of its long-term strategy to capitalize on opportunities in this segment. Its contracted charter backlog is robust at $3.3 billion, providing excellent earnings visibility with fleet coverage secured at 100% for 2024, 94% for 2025, and 73% for 2026.

Fleet Composition

Danaos's fleet is well-diversified, catering to multiple trade routes and customer requirements:

- **Container Fleet**: 73 vessels with a focus on efficient, modern designs to meet stringent operational and environmental standards.
- **Dry Bulk Fleet**: 10 Capesize vessels for transporting raw materials such as iron ore and coal.
- **Newbuilds**: 14 container vessels under construction, further strengthening the fleet's capacity and operational efficiency. [37]

Financial Performance

Danaos demonstrated strong operational performance in Q3 2024, with key financial metrics reflecting its robust market position and strategic initiatives. However, increased operating and financial expenses resulted in a decline in net income compared to the previous year.

- **Adjusted EPS**: $6.5 per share, down from $7.26 in Q3 2023.
- **Adjusted Net Income**: $126.8 million, compared to $143 million in Q3 2023.
- **Net Operating Revenues**: Increased by $17 million year-over-year.
- **Operating Expenses**: Increased by $31.1 million, primarily driven by higher voyage costs and a larger fleet.
- **Vessel Operating Expenses**: Rose to $49.9 million, up from $39.5 million in Q3 2023.
- **G&A Expenses**: Increased to $11 million, compared to $7.1 million in the prior year.
- **Interest Expenses**: Increased by $3.6 million due to higher average indebtedness.

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- **Adjusted EBITDA**: Marginally increased to $178.9 million from $178 million in Q3 2023.

Danaos maintains a strong balance sheet, providing significant financial flexibility:

- **Cash Reserves**: $384 million as of September 2024.
- **Total Liquidity**: $785 million, including revolving credit facilities and marketable securities.
- **Net Debt**: $305 million, resulting in an industry-leading net debt-to-EBITDA ratio of 0.4x.
- **Credit Ratings**: Moody's upgraded Danaos to B1 and S&P to B+, the highest ratings for a pure-play shipping company. [38]

Operational and Strategic Insights

Danaos continues to prioritize operational efficiency and long-term strategic planning:

- **Cost Management**: Daily vessel operating expenses rose slightly to $6,860 in Q3 2024, up from $6,500 in Q3 2023, reflecting higher voyage and operational costs.
- **Capital Allocation**: The company increased its quarterly dividend to $0.85 per share which shows that the company is still committed to enhancing shareholders' value while maintaining the sound financial policies.
- **Fleet Expansion**: Danaos has refrained from aggressive newbuilding orders, citing market uncertainties and high construction costs. Instead, it focuses on securing contracts for its under-construction vessels to ensure earnings visibility.

During the Q3 2024 earnings call, Danaos's leadership emphasized:

- **Fleet Strategy**: The company is pursuing operational improvements and right-sized fleet instead of growing the fleet at a faster rate.
- **Dry Bulk Investments**: Danaos views its dry bulk fleet as a learning phase, with potential for strategic acquisitions depending on market conditions.
- **Capital Deployment**: With significant liquidity, Danaos remains flexible in pursuing share buybacks, dividend increases, and strategic investments.
- **US Policy Impact**: Environmental policies under the new US administration are being closely monitored to guide future investments and strategic shifts.

Market Conditions

The container shipping market remained robust in Q3 2024, supported by steady demand and favorable trade volumes. However, Danaos acknowledged challenges in the dry bulk

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market due to seasonal disruptions and reduced Chinese steel production, impacting the broader industry. The company has a positive outlook on the long term prospects of the market especially the container market. [39]

Environmental and Policy Considerations

Danaos is closely monitoring environmental regulations and potential policy changes, including carbon taxes and decarbonization initiatives, which could influence strategic decisions:

- **Environmental Compliance**: The company is cautious about newbuilding investments due to uncertainties surrounding future environmental standards.
- **Sustainability Initiatives**: Danaos continues to evaluate opportunities for fleet modernization and compliance with emerging global environmental regulations.

Outlook

Danaos is still able to benefit from the favourable market conditions in the container shipping market while at the same time managing the risks that are associated with the dry bulk market. The company has a strong financial structure, long-term contracted revenue backlog and a conservative management of the fleet which positions the company for sustainable growth. The company's approach towards newbuilding acquisitions, distribution of cash flows to shareholders and overall strategic direction are aligned with the medium to long-term objectives of the company despite the prevailing volatility.

3.2.3 Costamare Inc.

Company Overview

Costamare Inc. is one of the largest international providers of marine transportation services that focus on containerships and dry bulk vessels. The company has more than 50 years of experience in the shipping industry and has been focusing on container shipping for over thirty years. Costamare is based in Monaco and it has developed into a strong partner for the global liner companies as it provides top of the line vessels in a short or medium or long term charter basis. Some of its customers include the big names in the industry such as Maersk, MSC, Evergreen, Yang Ming, Cosco, Hapag-Lloyd, and ZIM. [40]

Fleet and Operations

Costamare's operations span two primary segments:

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1. **Containerships**:
    a. Fleet Size: 68 containerships with a total capacity of approximately 513,000 TEU.
    b. Fleet Composition: A mix of feeder, Panamax, and Post-Panamax vessels catering to diverse geographic and operational requirements.
    c. Charter Strategy: Focuses on time charters with geographically diverse, financially stable liner companies, ensuring near 100% utilization rates excluding maintenance periods.
2. **Dry Bulk Vessels**:
    a. Fleet Size: 39 owned vessels (including three acquisitions and one pending sale), with a total capacity of approximately 3,054,000 DWT.
    b. Vessel Range: Sizes from 32,000 to 180,000 DWT.
    c. Cargo: Transports major bulks (iron ore, coal, grains) and minor bulks (bauxite, fertilizers, steel products).

In addition, Costamare operates **Costamare Bulkers Inc. (CBI)**, a dry bulk trading platform with a fleet of 50 chartered-in vessels, aggregating approximately 7,845,000 DWT. CBI enters into affreightment contracts, forward freight agreements (FFAs), and derivative instruments with the view of hedging and positioning in the market. [41]

Financial Performance

Costamare reported robust financial results for Q3 2024, showcasing strong profitability and liquidity:

- **Net Income**: $75.5 million, with an adjusted figure of $80.7 million.
- **Liquidity**: Exceeds $1 billion, supported by cash, treasury investments, and available financing.
- **Contracted Revenues**: $2.3 billion from the containership fleet, with a TEU-weighted duration of 3.3 years.
- **Incremental Revenue**: $165 million from new charter agreements.
- **Operating Highlights**: Significant charter-in activity through CBI, asset acquisitions, and strategic fleet renewals.

Strategic Initiatives

Costamare emphasizes fleet modernization, focusing on high-quality acquisitions and disposals of aging vessels. Key initiatives include:

- **Asset Management**: Acquiring newer, fuel-efficient dry bulk vessels while selling older tonnage.

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- **Charter Flexibility**: Leveraging index-linked charter agreements for Newcastlemax/Capesize and Kamsarmax/Panamax vessels.
- **Diversified Revenue Streams**: Expanding its leasing business, Neptune Maritime Leasing (NML), with committed funding for 32 assets totaling $410 million. [42]

Challenges and Market Outlook

Costamare has demonstrated the financial and operational stability despite the fact that it works in a rather unstable environment. Challenges include:

- High costs of newbuildings for new vessels which constrain the company's ability to make new acquisitions.
- Personnel turnover in the dry bulk division.
- Uncertainty in the dry bulk market and dividend policies.

Despite these challenges, the company still has positive outlook on the future prospects, this is because a of diversified fleet, good customer base and good financial management.

Sustainability and Corporate Responsibility

Costamare pays attention to safety, protection of the environment and the reliability of the operations. It adheres to the set of international standards on emissions and fuel consumption thus being a custodian of sustainable maritime transport.

Outlook

Costamare Inc. stands out as a versatile and financially sound player in the shipping industry. With a balanced approach towards growth, and risk management and strong focus on customers, the company is in a good place to manage the market conditions and create value for its stakeholders. The company's decisions in fleet renewal, leasing business and innovative charter agreements demonstrate its flexibility and future-oriented strategy.

3.2.4 Navios Maritime Partners LP

Company Profile

Navios Maritime Partners LP (NYSE: NMM) is a leading international owner and operator of dry cargo and tanker vessels. The company owns and operates one of the largest and most diverse fleet of ships in the listed shipping companies across three sectors; dry bulk, containerships and tankers. With a modern fleet of 179 vessels valued at $5.9 billion, NMM

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has established a significant market presence across 16 asset classes, emphasizing stability and resilience in varying market conditions. The average age of its fleet is 9.6 years, younger than industry averages.

Financial Performance

- **Quarterly Revenue**: $340.8 million, up from $323.2 million YoY.
- **Net Income**: $97.8 million.
- **EBITDA**: $196.6 million.
- **Earnings per Common Unit**: $3.20.
- **Contracted Revenue**: $3.9 billion.
- **Net Leverage Ratio**: 32.9%, showing progress in deleveraging.

For the first nine months of 2024:

- **Revenue**: $1.0 billion.
- **Net Income**: $272.6 million.
- **Adjusted EBITDA**: $549 million. [43]

Fleet Composition and Chartering

NMM's fleet consists of:

- **Dry Bulk Vessels**: 73 ships, 9.2 million dwt, average age 11 years.
- **Containerships**: 50 ships, 263,564 TEU, average age 10.4 years.
- **Tankers**: 56 ships, 6.6 million dwt, average age 7.2 years.

In order to ensure that NMM is able to sustain its revenue stream, the company has put in place a chartering strategy which involves signing long term contracts. This is coupled with the ability to operate within the market conditions to seize trends that arise from time to time.

In Q4 2024, 81% of the fleet's available days were fixed at a daily average net rate of $26,052. [44]

Recent Developments

- **Acquisitions**: Two methanol-ready containerships for $212 million, with expected delivery in 2027. They are fixed for five years at $43,247 net per day.
- **Sales**: Two dry bulk vessels (19 years old) sold for $25.9 million.

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- **Newbuildings**: NMM is investing $1.9 billion in fleet modernization with 27 vessels under construction, including tankers and containerships.
- **Deliveries**: Three new vessels delivered in Q3-Q4 2024, including containerships and an aframax/LR2 tanker. [45]

Financial Strategy and Strategic Advantages

NMM has focused on deleveraging, reducing its net loan-to-value (LTV) ratio from 45% at the end of 2022 to 32.9% by Q3 2024. The company has also implemented a $100 million unit repurchase program and returned $22.9 million to unitholders in 2024 through dividends and buybacks.

1. **Diversification**: With its multi-segment platform, NMM mitigates risks associated with market volatility in any single sector.
2. **Modern Fleet**: Continuous fleet modernization enhances efficiency and complies with environmental regulations.
3. **Revenue Visibility**: $3.9 billion in contracted revenue through 2037 ensures stable cash flows.
4. **Financial Strength**: A disciplined approach to leverage and capital allocation supports growth and unitholder returns.

Challenges and Risks

- **Geopolitical Risks**: Ongoing conflicts in Ukraine and the Middle East could disrupt global shipping routes.
- **Macroeconomic Headwinds**: Slow growth in China and Europe poses demand challenges.
- **Market Pressures**: Declining charter rates in the container and tanker sectors, with YoY drops of 11% and 7%, respectively.
- **Environmental Compliance**: The transition to alternative fuel and low-carbon technologies demands significant investment.

ESG and Sustainability

NMM has target to be net zero carbon by the year 2050. The company implements energy conservation measures, upgrade apparatus, and comply with the set environmental standards. It is a sustainable organisation that embraces social responsibility and good governance system throughout its activities.

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Outlook

The CEO of Angeliki Frangou stated that the company has a long-term approach towards the goals which include fleet renewal, seizing the cyclical opportunities, and improving the balance sheet health. Due to a very strong order book of $3. 9bn and continuous fleet renewal, NMM is in a good place to manage the risks that are likely to be present in the market while at the same time capturing the opportunities for growth. [46]

3.2.5 ZIM Integrated Shipping Services Ltd. (ZIM)

Company Overview

ZIM Integrated Shipping Services Ltd. (ZIM) is a global container liner shipping company that was founded in the year 1945 and is based in Haifa, Israel. By operating in over 90 countries, ZIM offers transportation and logistics services to approximately 33,000 customers across more than 300 ports worldwide. The company employs state-of-the-art digital strategies, sound operational frameworks and adherence to Environmental, Social, and Governance (ESG) reporting to ensure competitiveness in the shipping industry.

Financial Performance

ZIM reported a strong financial performance in the third quarter of 2024, reflecting significant year-over-year (YoY) growth:

- **Revenue:** $2.77 billion, up 117% from Q3 2023.
- **Net Income:** $1.13 billion, a sharp reversal from a loss of $2.27 billion in Q3 2023.
- **Adjusted EBITDA:** $1.53 billion, an increase of 626% YoY, with a margin of 55%.
- **Adjusted EBIT:** $1.24 billion, achieving a 45% margin.
- **Carried Volume:** 970,000 TEUs, up 12% YoY.
- **Freight Rate per TEU:** $2,480, a 118% increase YoY.

For the first nine months of 2024:

- **Total Revenue:** $6.26 billion, up 58% YoY.
- **Net Income:** $1.59 billion, compared to a loss of $2.54 billion in the same period in 2023.
- **Adjusted EBITDA:** $2.72 billion, a YoY increase of 217%.
- **Adjusted EBIT:** $1.90 billion.
- **Net Cash from Operating Activities:** $2.60 billion, up from $858 million in 2023.

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ZIM declared a total dividend of $440 million for Q3 2024:

- **Regular Dividend:** $340 million, reflecting 30% of quarterly net income.
- **Special Dividend:** $100 million.
- **Dividend Per Share:** $3.65, comprising $2.81 for the regular dividend and $0.84 for the special dividend. [47],[48]

Fleet and Operational Developments

- **Fleet Size:** ZIM operates 145 vessels, including 129 container ships and 16 car carriers.
- **LNG-Powered Fleet:** Delivered 42 out of 46 planned newbuilds, including 28 LNG-powered ships, which are more fuel-efficient and environmentally friendly.
- **Geographical Focus:** ZIM maintains a strong presence in high-growth markets, including Latin America, Intra-Asia, and Transpacific trade lanes.

Strategic Initiatives

- **Fleet Modernization:** The company has also made significant improvements in the fleet by purchasing larger, more efficient and environmentally friendly vessels in order to meet the emission reduction goals and increase efficiency of costs.
- **Market Agility:** ZIM has strategically enhanced its engagement with spot market to match the increasing spot volumes especially in the Transpacific region in a bid to seize the current market opportunities.
- **Digital Innovation:** Leveraging digital tools to enhance customer experience and operational efficiency, ZIM is well-positioned to meet evolving industry demands.

Strengths and Challenges

- Robust financial recovery and profitability in 2024.
- Strong operational agility and cost-effectiveness.
- Effective execution of fleet modernization initiatives.
- Potential risk of oversupply in the shipping industry, with supply growth expected to outpace demand in 2025 and 2026.
- Increased exposure to spot market pricing, which could lead to earnings volatility.
- Elevated debt levels, attributed to fleet expansion investments.

Market Outlook

ZIM is quite confident of the company's ability to maintain good results up to 2025 with the help of the refreshed fleet, strong market conditions and concentration on the top opportunities for growth. The company has the tools to deal with threats that may appear in the industry, like oversupply of the market and rate movements, through effective fleet control and proper cost management.

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Chapter 4: VALUATION FRAMEWORK

4.1 Understanding Business Valuation

Business valuation can be defined as the estimation of the value of a business or its parts. It is a critical tool in financial management that is used in mergers and acquisitions, strategic management, raising capital and assessment of investments. Valuation helps in determining whether a company or an asset is fairly priced in the market or not, thus helping the stakeholders to take appropriate decision. Although the methods and the level of difficulty of the valuation may differ according to the industry and type of the assets, such a common aspect is evident and that is the principle of valuation which involves the analysis of cash flows, growth and risks.

So, the valuation can be defined as an approach used to identify the value of an asset and the difference between the valuation and the market price of the asset is the main concept. Intrinsic value estimation is based on such factors as the future cash flow of the asset, its growth potential and the level of risk while market value may be influenced by emotional factors and market conditions. Analysts, therefore, come in to bridge this gap by using valuation models that relate cash flow and growth to the value of a company. This way management is able to make financial decisions that are realistic rather than being influenced by the market prices or trends.

4.1.1 Approaches to Valuation

The two primary approaches to valuation are discounted cash flow (DCF) and relative valuation:

The **Discounted Cash Flow** (DCF) analysis is one of the most commonly used valuation techniques which estimates the value of an asset by discounting the future expected cash flows to the present time. In this method, the analyst works on estimating the financial report of a company or an investment for a particular period and then evaluates these flows at present time by using a discount rate which is the return expectation of the cash flows. This rate is normally WACC for companies since it includes both debt and equity capital. DCF valuation is most useful in assets which have stable and certain cash flows for instance established businesses or infrastructure projects. It makes analysts reason out on key value drivers such as revenue, margins, reinvestment and risk thus providing a holistic approach to assessing a company's value.

Thus, DCF valuation is rather comprehensive, but it is also very much dependent on the data used for the analysis, which makes it a powerful as well as a complex tool. Defining future cash flows requires estimations on growth rates, operating margins and investments requirements; choosing the right discount rate requires an assessment of the risk of the

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asset. Such dependence on numerous variables increases the risk of uncertainty especially where businesses are involved in dynamic or growing markets. Nevertheless, DCF remains one of the most important valuation techniques because it is based on the fundamental economic concepts of a company rather than the market ones.

Relative Valuation is a more basic and expedient approach to determining an asset's value compared to similar assets in the market. This method focuses on well-defined financial multiples including P/E multiple, EV/EBITDA multiple or P/S multiple to compare the valuation of an asset with other companies or investments. It is especially useful in industries where there are clear precedents of pricing and for investors who want to make comparisons quickly. For instance, if the P/E ratio of a given company is lower than the average P/E ratio of the company's industry peers, then this company may be cheap given that other fundamentals are comparable as well. This method is also relatively current, and therefore very useful for identifying quick investment opportunities in the short run.

Still, the coherence of relative valuation is determined by the choice of comparables and the ability to distinguish between two companies. Companies in the same sector can be dissimilar in their growth potentials, hazards, and management effectiveness, and thus comparisons are not straightforward. Also, relative valuation presupposes that the market has efficiently determined the values of the benchmark firms; if the market is overvaluing or undervaluing the whole industry, the analysis will not be relevant. Nonetheless, relative valuation is a beneficial counterpart to intrinsic valuation approaches like DCF analysis as it delivers crucial information about an asset's market multiple and highlights deviations from the market norms at the same time.

4.1.2 The Role of Bias in Valuation

Despite the theoretical claim of objectivity, valuation is influenced by biases from analysts and institutional pressures. Pre-existing perceptions, media narratives, and external recommendations can skew valuation inputs and conclusions. The analysts can also revise the assumptions or come up with qualitative reasons such as synergies to account for the difference between market price and estimated value. Structural factors including the influence of investment banking groups or portfolio managers can also enhance this bias.

To reduce bias, the following measures should be taken: ensure that there are no outside pressures on institutions, ensure that valuation outcomes are not tied to rewards or punishments and encourage institutions to be more transparent when reporting assumptions. It is therefore important that analysts remain conscious of their biases, challenge them and make sure that the valuations being done are as neutral as can be.

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4.1.3 Addressing Uncertainty and Complexity in Valuation Models

Uncertainty is inherent in valuation due to the challenges of forecasting future performance and external economic conditions. Estimation errors, firm-specific risks, and macroeconomic volatility all contribute to this uncertainty. Mature, stable companies may face minimal macroeconomic risks, while young technology firms often encounter high levels of firm-specific and estimation uncertainty.

Healthy responses to uncertainty include using valuation ranges, sensitivity analyses, and probabilistic models. For instance, analysts can present best-case, worst-case, and base-case scenarios to illustrate potential outcomes. Unhealthy responses, such as oversimplification or reliance on outdated models, can lead to flawed valuations that fail to reflect reality.

The capabilities of technology have also allowed analysts to develop more elaborate valuation models. This, however, provides for more detailed work but comes with its hurdles such as overwhelming the system with information and depending on elusive “black box” systems. Analysts must strike a balance between detail and simplicity, focusing on essential inputs and avoiding unnecessary complexity. Following the principle of parsimony—using the simplest model that meets the valuation's needs—ensures transparency and reduces the risk of error.

4.1.4 The Payoff of Valuation

Although it is not without its problems, valuation is an essential component of the decision-making process. It is especially useful in conditions of risk for example when appraising a high growth startup or an emerging market company and many analysts avoid this area. Thus, by persisting and applying strong analyses, models, and sensitivity probabilistic methods, analysts can find solutions to unique challenges. In the end, the task of valuation is as much about accuracy as it is about reasonability of the estimate and the application of the best possible reasoning to the task at hand, which can help all those involved in the field of finance, investments, and corporate strategy. [50],[51],[52]

4.2 Understanding the Four Main Financial Statements

The four main financial statements which are the **balance sheet**, **income statement**, **cash flow statement** and the **statement of shareholders’ equity** are the basic tools of financial reporting. All together, these statements paint a comprehensive picture of the financial status and the results of company’s operations, which can be useful for internal users such as management and external users including investors, creditors and regulatory authorities. Each statement has its unique role: The balance sheet presents a snapshot of a company’s financial standing at a particular time showing what the company owns, what it owes and the stakeholders’ interest in the company; the income statement shows the company’s

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performance in terms of profitability over an accounting period; the cash flow statement shows the flow of cash; while the statement of shareholders' equity details the changes in the owners' equity. These statements are interrelated and are very useful in assessing the financial reports, investment decisions and financial modeling.

4.2.1 The Balance Sheet

The **balance sheet** provides a snapshot of a company's financial position by detailing its **assets**, **liabilities**, and **shareholders' equity** at a specific moment in time. The fundamental formula underlying the balance sheet is:

Assets = Liabilities + Shareholders' Equity

Assets are resources owned by the company, classified into **current assets** (expected to be converted to cash within one year) and **noncurrent assets** (long-term resources such as property, plant, and equipment). Examples include cash, inventory, and intangible assets like patents. Liabilities represent obligations, divided into **current liabilities** (due within a year) and **long-term liabilities** (due after one year), such as loans and accounts payable. Shareholders' equity, or net worth, is the residual interest after liabilities are subtracted from assets, comprising invested capital and retained earnings.

The balance sheet is organized in a way that would maintain the equality of the equation where the assets are listed on one side of the equation and the liabilities and shareholders' equity is on other side. This analysis structure of the company's liquidity and financial stability is useful but it fails to depict the dynamics of the resources movement.

4.2.2 The Income Statement

The income statement is a precise and comprehensive account of the financial activities of a company, which presents the financial performance of the company over a certain time period ending usually a quarter or a fiscal year. It shows the amount of revenue that the company has made as well as the costs that have been incurred in the process of generating the revenue and ends with the net income (or the net loss) for the period. This report is also known as the 'profit and loss statement' since it shows the profit or loss of the company for the particular period.

At the top of the income statement is the **gross revenue** which is the total amount of money that the organization has made from its sales. From this, some of the deductions that are made include; returns, allowances and discounts to give the **net revenue**. The next step is to subtract the **cost of goods sold (COGS**) that comprises of the actual costs that are directly related to the acquisition of the products or provision of services. This gives the **gross profit** that is the difference between the net revenue and the COGS and is a very valuable ratio, as it measures the effectiveness of the company's production processes.

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Going further down, **operating expenses**, like administrative salaries, marketing, research and development (R&D), and depreciation are subtracted from gross profit to compute the **operating income** (also known as the "income from operations"). This metric shows the company's ability in running its fundamental managerial tasks without considering other forces like taxes or interest. The last steps are to take in to account the interest income, interest expense, and taxes, and the end result is **net income**, which is the total profitability a company can have in a certain period.

Net Income = Revenues - Expenses

The income statement also includes **earnings per share (EPS)**, which is a multiple of core operations that are of interest to investors. EPS is obtained by dividing the net income by the number of outstanding shares to determine the portion of earnings per share. This ratio is very valuable for determining the shareholders' return and for analyzing the performance between companies. This statement also focuses on the activities of the management on the value-adding process, with net income being the measure of the company's ability to generate profits from the revenues made during the period.

4.2.3 The Cash Flow Statement

The **cash flow statement (CFS)** focuses exclusively on a company's cash inflows and outflows, offering a clear view of liquidity and cash management. Unlike the income statement, which uses accrual accounting principles, the CFS tracks the actual movement of cash. This statement is particularly valuable for understanding how a company generates and uses cash to sustain operations, fund growth, and manage its financial obligations.

The CFS is divided into three main sections:

1. **Operating Activities**: This part indicates the performance of the primary activities of the company, which forms the basis of the cash flow statement. It starts with the net income that is reported in the income statement and adjusts for non-cash costs like depreciation and amortization as well as changes in work capital such as account receivables (AR), account payables (AP) and inventory. For instance, if a company is able to get payments from customers more quickly than it pays its suppliers then it will report positive cash flow from operations.
2. **Investing Activities**: This section presents the details of the cash flow related to the investment decisions of the company. Some examples include buying new machinery, purchasing another company or selling securities. This means that a negative cash flow from investing activities is not a negative aspect as it depicts that the company is investing in its future through asset acquisition.
3. **Financing Activities**: This part shows the flows of funds in relation to acquiring money to finance the company's operations through either equity or debt. Some

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examples are offering of new shares, buying back of shares, payment of dividends or borrowing of money and repayment of the same. If the company has positive cash flows in this part, then it could be issuing funds for expansion for instance. Also, if the flows are negative this could be due to issues such as repayment of debts or paying dividends.

The **bottom-line** of the CFS shows the **net change in cash** for the period, which reconciles with the cash account on the balance sheet. This final figure provides a snapshot of whether the company's cash position improved or worsened during the reporting period.

The CFS is very useful in determining if a company is able to produce adequate cash that can be used for running the business, investing in new projects and meeting liabilities. For example, even if a company shows a profit on its income statement, poor cash flow can indicate liquidity issues, potentially jeopardizing its financial stability. This means that the relationship between the income statement, balance sheet and CFS gives a comprehensive view of the company's financial state.

4.2.4 The Statement of Shareholders' Equity

The **shareholders' equity statement** is the financial statement which connects the balance sheet and income statement since it shows the changes in equity in equity over time. It includes key components like **retained earnings**, which represent cumulative profits not distributed as dividends, and net income from the income statement. Other factors, such as stock issuances, repurchases, and dividend payments, also affect equity.

Shareholders' Equity = Total Assets - Total Liabilities

This statement provides insights into how a company balances reinvesting profits for growth versus distributing returns to shareholders. It is especially useful for assessing long-term value creation and the company's financial policies regarding equity management.

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Figure 7. Summary Comparison of the Three Financial Statements

	Income Statement	Balance Sheet	Cash Flow
Time	Period of time	A point in time	Period of time
Purpose	Profitability	Financial position	Cash movements
Measures	Revenue, expenses, profitability	Assets, liabilities, shareholders' equity	Increases and decreases in cash
Starting Point	Revenue	Cash balance	Net income
Ending Point	Net income	Retained earnings	Cash balance

Source: Corporate Finance Institute

4.2.5 Key Financial Ratios

Investors and analysts often derive financial ratios from these statements to evaluate a company's performance. Examples include:

- **P/E Ratio**: Price per share ÷ Earnings per share (evaluates market valuation relative to earnings).
- **Operating Margin**: Income from operations ÷ Net revenues (measures profitability from core operations).
- **Debt-to-Equity Ratio**: Total liabilities ÷ Shareholders' equity (assesses financial leverage).
- **Inventory Turnover Ratio**: Cost of sales ÷ Average inventory (indicates inventory efficiency).
- **Working Capital**: Current assets - Current liabilities (measures liquidity).

These ratios provide actionable insights into profitability, efficiency, and financial stability, helping stakeholders compare performance across industries and time periods.

4.2.6 Conclusion

All the financial statements have their specific goal and when combined they paint the whole picture about the company's financial health. The balance sheet presents the financial health while the income statement measures the profits and the cash flow statement demonstrates the liquidity of the business and the shareholders' equity statement connects all these statements with an emphasis on changes that have occurred in

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ownership. In conjunction, they allow investors, creditors and management to have the information necessary to make appropriate choices. It is possible to recognize trends, evaluate threats and spot possibilities for development when looking at these related statements, which is why it is important to perform an overall analysis of a company's financial state. [53],[54],[55]

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Chapter 5: VALUATION METHODS AND THEIR IMPLEMENTATION

5.1 Intrinsic Valuation – Concepts, Methodology, and Application in the Dry Bulk Shipping Sector

Intrinsic valuation is one of the most important methods used in the financial analysis of a company since it is based on determining the real value of an asset using its basic properties. This method is especially important in those sectors that are characterized by significant fluctuations in market conditions and values due to the cyclicality of the industry and external factors, including the dry bulk shipping industry. By looking at the fundamentals that define worth, such as cash flows, growth and risk, intrinsic valuation offers a more comprehensive assessment of a company's future value, even if it is not reflected in the current market price.

5.1.1 Principles and Foundations of Intrinsic Valuation

Intrinsic valuation refers to the process of determining the value of an asset by calculating the value of its future cash flows at the present time by using the appropriate discount rate. This has its roots from the principle that the value of an asset should be the present value of the future income that the asset will realize in the future, adjusted for risk and time value of money. While relative valuation compares a company with other companies in the market to determine its value, intrinsic valuation focuses on the company's fundamentals to offer a more precise analysis. Key principles underlying intrinsic valuation include:

- **Cash Flow as the Basis of Value**: For cash flow-generating assets, the intrinsic value is the ability of the assets to generate expected cash flows and the uncertainty associated with receiving them. In the context of dry bulk shipping this entails working through complex revenue structures based on trade flows, freight rates and the number of vessels in operation. Analysts also need to take into consideration other factors that are unique to the industry including the effects of vessel age and profitability of specific routes.
- **Risk-Adjusted Discounting**: Cash flows are discounted at a rate which depicts their level of risk. This rate which in most cases is the cost of equity or the weighted average cost of capital (WACC) includes both systematic and unsystematic risks. Some of the risks that are associated with shipping companies include cyclicality of the market, political and geopolitical factors and operational risks. Also, risks of emerging markets, currency fluctuations and high level of leverage of the industry have to be taken into consideration, in order to compute the right discount rate.
- **Focus on Long-Term Value**: Intrinsic valuation focuses on the creation of sustainable value as opposed to the current market conditions. To the dry bulk operators, this may include factors such as fleet renewal, efficiency enhancements as well as long-

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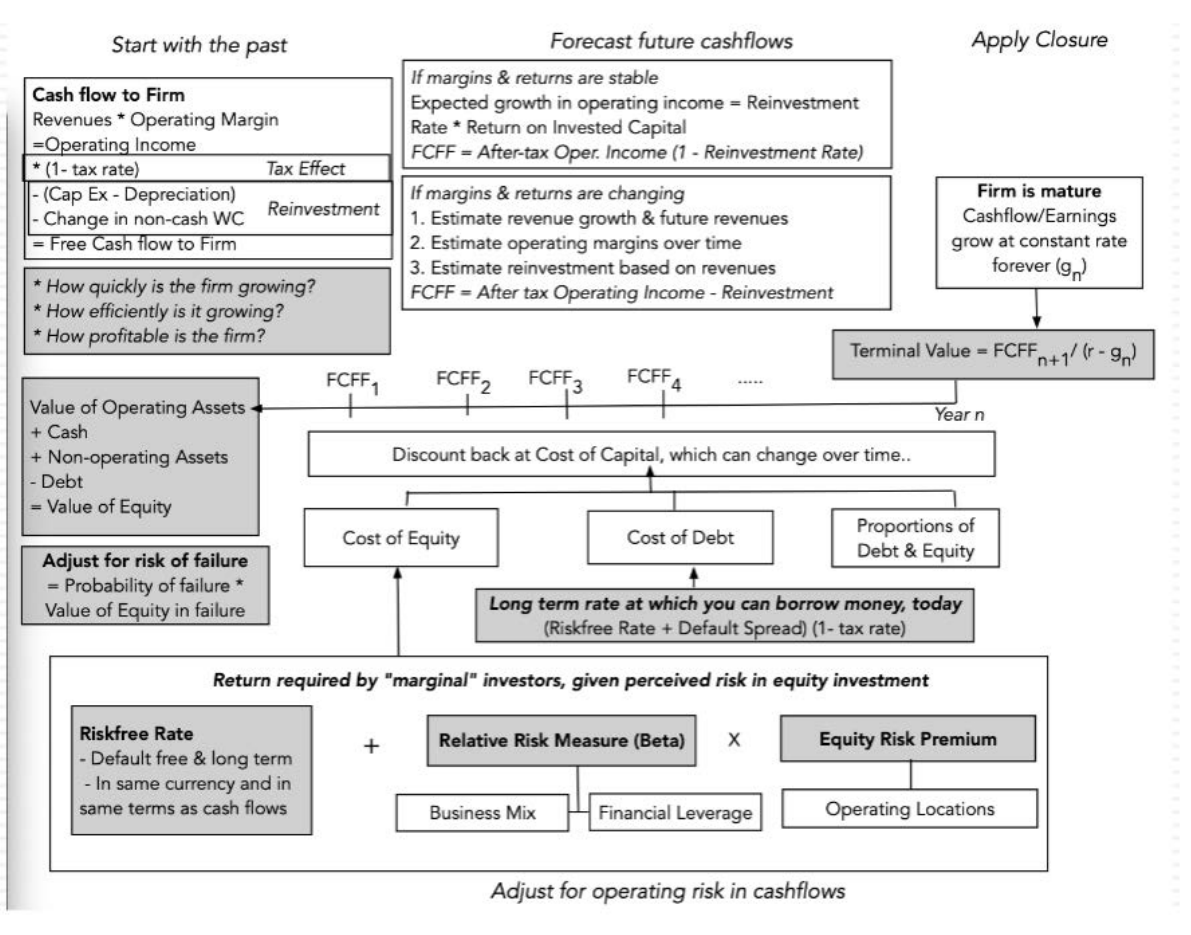
term chartering contracts. It also includes looking at the future macroeconomics, for instance the future trends of commodity demand, shipping capacity, and international trade relations.

5.2 Discounted Cash Flow (DCF) and Comparables Methodology

5.2.1 Estimate Revenue Projections

Figure 8. DCF Outline



Source: Aswath Damodaran

It is quite imperative when making revenue projections in the dry bulk shipping industry to take into account the conditions of the market, the operations of the fleet, and the trends in international trade. It is therefore possible for companies to look at historical data and include factors like the fleet composition as well as the ratio of spot and time chartering to better predict the revenue flows under different market conditions. In addition, the fleet utilization rates are also crucial in revenue forecasting since they depict the usability of the vessels. This is because high utilization rates are usually associated with high earnings which are an indication of efficient operation. There are other factors that cannot be overlooked such as trade growth which is influenced by macroeconomic fundamentals and expectations of higher movements in the global trade numbers. Industry reports help the company to

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understand the demand for major dry bulk commodities including iron ore, coal and grains to develop the projections in line with the anticipated market trends. Thus, all these factors can be incorporated to formulate sound revenue estimates that are useful in formulation of strategies and management of operations.

Figure 9. Revenue Projection

Revenue	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Total Revenues	**949,269**	**1,098,813**	**1,260,927**	**1,434,350**	**1,617,282**	**1,807,370**	**2,001,728**
% growth	***(34%)***	***16%***	***15%***	***14%***	***13%***	***12%***	***11%***

Source: SBLK DCF Analysis Excel Model

- ####A = Actual fiscal year revenue figure, ####E = Estimated fiscal year revenue

5.2.2 Estimate Operating Income Projections

One of the key elements of financial projections is the inclusion of operating costs because they are the factors that have a direct effect on the profitability of the company and help in making accurate estimates of EBIT or operating income of the company. These costs are very dependent on the market conditions and are therefore very important in financial modeling. On the other hand, there are costs which are unvarying such as crew salaries, insurance premiums and administrative overheads which offer stability allowing for accurate forecasting of the cost baseline.

Another crucial factor that cannot be overlooked is the regulatory compliance costs which have risen in the shipping industry because of the changing environmental and operational norms. Some examples include complying with the IMO 2020 sulfur cap which may require using low sulfur fuels, installing scrubbers or undertaking energy efficiency enhancements to meet carbon emission targets. This enables the business to come up with reasonable estimates of EBIT as outlined above, thus giving a proper view of the core profitability. It is important that the estimations of EBIT are well made as not only does it present the financial state of operations but also sets the base for other managerial strategies such as investment and cost management.

Figure 10. Operating Income Projection

EBIT	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Operating income / (loss) - EBIT	**238,458**	**343,492**	**368,951**	**391,008**	**408,530**	**420,399**	**425,573**
% growth of total revenues	***25%***	***31%***	***29%***	***27%***	***25%***	***23%***	***21%***

Source: SBLK DCF Analysis Excel Model

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5.2.3 Incorporating Capital Expenditures

Capital expenditures (CapEx) involve investments in long-term assets such as property, equipment, or intangible resources like patents. These expenditures differ from operating expenses (OpEx), which are the costs of daily operations like salaries, rent, and utilities. Operating costs are the day-to-day activities while capital investments are the future gains. They can be grouped into two main categories namely, maintenance spending which is necessary for sustaining the current operations and growth spending, which is used for development or enhancement. Maintenance capital investments are used to sustain the operations of the business while the growth strategies enhance the profitability and market position of the company. High costs without noticeable improvements may suggest that there are flaws in the system while inadequate maintenance is a risk to operational reliability.

In the dry bulk shipping industry, major considerations include fleet modernization, which involves acquiring newer, more efficient vessels or upgrading existing ones to meet current standards. Financial projections should also account for delivery schedules, including shipyard delays and pre-delivery payments, as these can influence cash flow timing. The same consideration should also be given to scrapping plans for older ships where the funds realized from asset sales are also captured in the financial models. In the case of discounted cash models, flow such (DCF) large capital investments negatively affect the free cash flow (FCF) in the long run and thus have an impact on net present value (NPV). By managing the long-term investments alongside the day-to-day operations, it becomes possible to enhance the overall profitability of a business and at the same time maintain a healthy growth rate in the long run.

Figure 11. CapEx Projection

CapEx	2023A	2024E	2025E	2026E	2027E	2028E	2029E
CapEx	**(203,379)**	**897,668**	**315,232**	**358,588**	**388,148**	**415,695**	**420,363**
% of total revenues	***(21%)***	***82%***	***25%***	***25%***	***24%***	***23%***	***21%***

Source: SBLK DCF Analysis Excel Model

5.2.4 Account for Tax rates, Depreciation and Amortization, as well as Changes in Working Capital

Changes in working capital reflect short-term adjustments in a company's operational liquidity and are a critical component of financial modeling. Working capital is calculated as:

Working Capital = Current Assets - Current Liabilities

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The changes in working capital are attributed to movements in accounts receivable, accounts payable, and inventory. In order to determine these changes with a fair degree of accuracy, historical data is examined to make out trends that are usual like the seasonality of inventory or variation in the payment and collection periods. For example, an increase in receivables can indicate that there is a lot of cash being held up in sales that have not been collected, while an increase in payables indicates that cash flows are being delayed. In the same way, shifts in inventory levels provide an insight into the effectiveness of the supply chain and inventory control systems.

Besides the changes in the working capital, there are other factors that cannot be ignored, and these include tax rates and depreciation and amortization. This is because taxes affect the amount of cash that is left for use after paying to the government, thus making it crucial in cash flow analysis. Depreciation and amortization are non-cash expenses, but they do reduce the taxable income of a firm and hence the tax liability. They also reflect the gradual allocation of the cost of long-term assets, in a manner that is consistent with their economic usefulness. The incorporation of these elements makes sure that the financial projections are as realistic as possible and in line with operational and financial considerations, which is why businesses are able to effectively handle liquidity and make proper decisions.

Figure 12. Taxe Rate, D&A, NWC projections

Tax Rate	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Total Taxes	4,482	2,164					
% tax rate	*2%*	*1%*	*2%*	*2%*	*2%*	*2%*	*2%*
D&A	**2023A**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**
D&A	151,883	72,065	169,381	169,586	193,436	216,072	223,114
% of total revenues	*16%*	*7%*	*13%*	*12%*	*12%*	*12%*	*11%*
% of CapEx	*--*	*8%*					
Net Working Capital	**2023A**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**
Change in NWC	13,812	19,427	(7,726)	8,435	12,931	11,490	7,059
% of total revenues	*1%*	*2%*	*(1%)*	*1%*	*1%*	*1%*	*0%*
% of change in sales	*(3%)*	*13%*					

Source: SBLK DCF Analysis Excel Model

5.2.5 Identify Appropriate Discount Rates

Discount rates are an essential element of financial modeling, and they play a very significant role in discounted cash flow (DCF) analysis since they are used to compute the

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value of future cash flows as of a given date. The discount rate is the rate which reflects the returns that are anticipated from an investment as well as the risks that are involved. The discount rate is a very important factor in valuation since it is through this that an investor can influence the valuation of an asset: the higher the discount rate, the lower the present value and thus the intrinsic value of an asset. In order to ensure the accuracy of the calculations, it is necessary to discount different assets at different rates depending on their risk factors. For example, safe and conservative investments like government bonds should be discounted at lower rates while risky investments like equity securities should be discounted at higher rates with higher risk premiums.

There are two major discount rates used in DCF analysis and they are Cost of Equity and Weighted Average Cost of Capital (WACC). These metrics capture different aspects of a company's financing and risk profile. The WACC is often favored by sophisticated investors, as it accounts for both debt and equity in a company's capital structure, providing a comprehensive view of the cost of capital. It is typically calculated using methodologies such as the capital asset pricing model (CAPM).

While advanced approaches like WACC add rigor, simplicity can also be effective, especially for less complex analyses. It is quite sufficient to select a discount rate which reflects the investor's required rate of return and comfort level. And as the old saying goes, 'simplicity is the ultimate sophistication', a great lesson that shows that even in financial modeling there is a need to find a balance between the two.

Understanding Weighted Average Cost of Capital (WACC)

The Weighted Average Cost of Capital (WACC) is the estimated return that a company requires in order to sustain its operations by using equity and debt financing. It is used as a cut-off rate when calculating the net present value of future cash flows in relation to the risk profile of the firm and its financing mix. To fully understand WACC, it's essential to break down its components and underlying concepts.

WACC Formula

$$\mathbf{WACC = (E/V) \times Re + (D/V) \times Rd \times (1 - Tc)}$$

Where:

- Re: Cost of equity
- Rd: Cost of debt
- E/V: Proportion of equity in the total capital structure
- D/V: Proportion of debt in the total capital structure
- Tc: Corporate tax rate

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Cost of Equity (Re) and CAPM

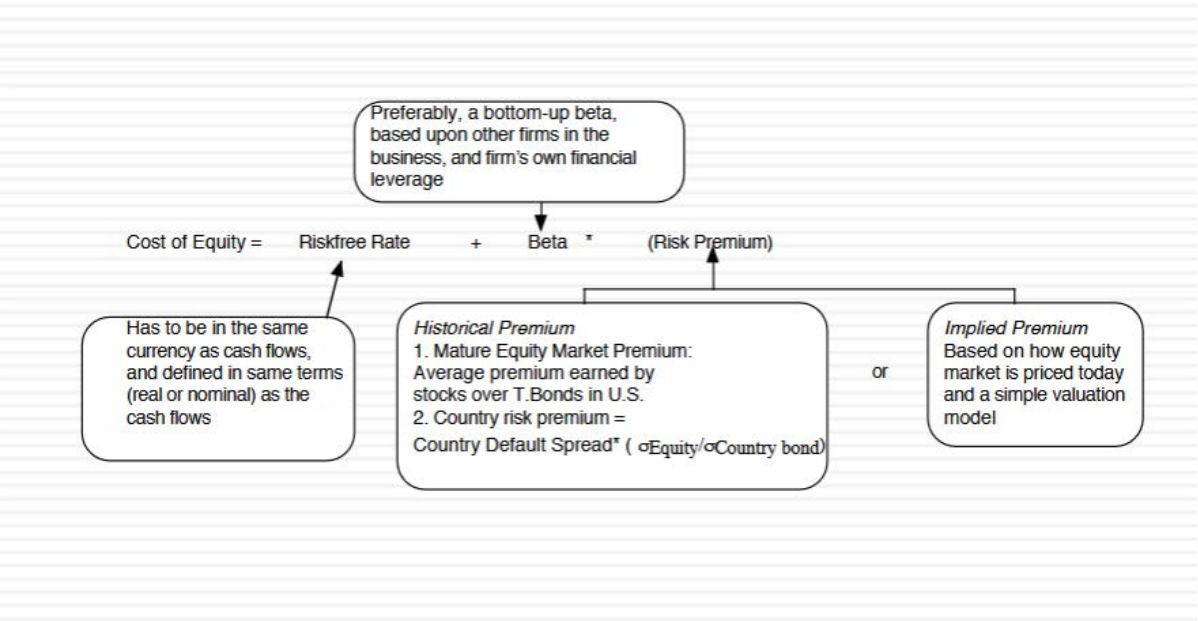
The cost of equity (Re) is the return that shareholders and owners of the company require in return for investing their money in the company's stock. This is the return that the investors demand in order to give up the other investment opportunities and to bear the risk of investing in the company.

The most common method for calculating the cost of equity is the Capital Asset Pricing Model (CAPM), which establishes a relationship between risk and expected return. The CAPM formula is:

Cost of Equity (Re) = Risk-Free Rate + Beta × Equity Market Risk Premium (EMRP)

- Risk-Free Rate: This is the return on a theoretically risk-free investment, usually represented by government bonds. It serves as the baseline for calculating returns.
- Beta: A measure of the company's stock volatility compared to the overall market. A beta greater than 1 indicates higher risk (and potentially higher returns), while a beta less than 1 indicates lower risk.
- Equity Market Risk Premium (EMRP): The additional return investors expect from investing in equities over a risk-free investment.

Figure 13. Cost of equity formula



Source: Aswath Damodaran

CAPM is widely used because it ties expected returns to systematic risk, making it a fundamental tool in finance.

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Cost of Debt (Rd)

The cost of debt (Rd) is the actual cost that a company has sustained to pay its debt. to It is the rate of return which the creditors anticipate gaining from lending money to the company. Cost of debt is the weighted average cost of capital which includes the interest on loans and bonds, after taking into account the tax benefit of interest expense.

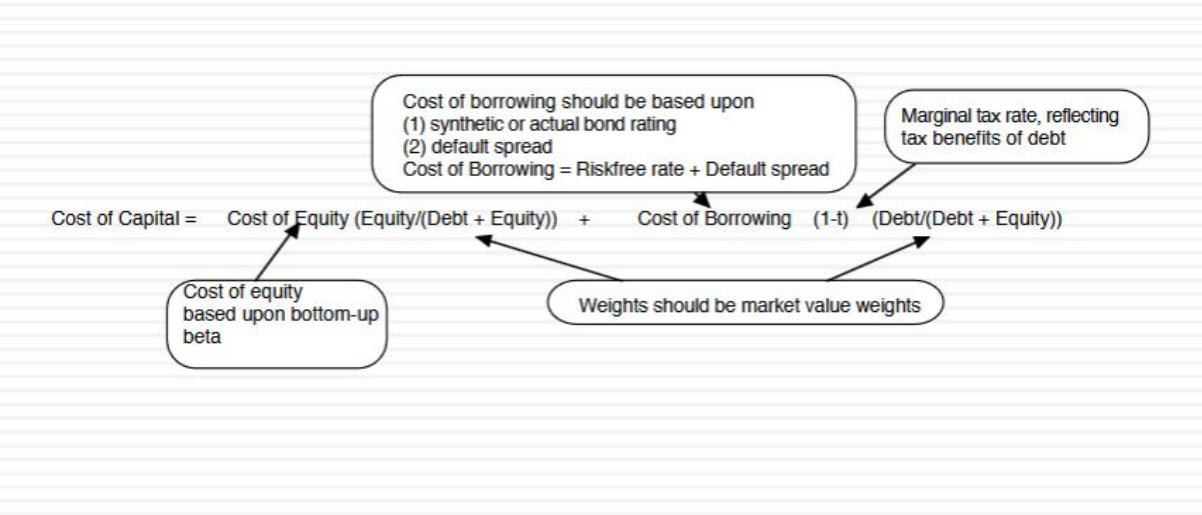
Since interest on debt is tax-deductible, the formula for after-tax cost of debt is:

After-Tax Cost of Debt = Rd × (1 - Tc)

Where:

- Tc is the corporate tax rate.

Figure 14. Cost of Debt formula



Source: Aswath Damodaran

Corporate Tax Rate (Tc)

The corporate tax rate (Tc) is the percentage of the company's profits that it has to give to the government as taxes. This rate is important because interest on debt pays down the taxes, thereby reducing the net income, which serves as a tax shield. The formula includes this effect in order to determine the true burden of debt capitalization.

Proportions of Equity and Debt (E/V and D/V)

- E/V: The proportion of equity in the company's total capital structure. It is calculated as the market value of equity (E) divided by the total value of capital (E + D).
- D/V: The proportion of debt in the total capital structure. It is calculated as the market value of debt (D) divided by the total value of capital (E + D).

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Together, E/V and D/V represent the weights assigned to equity and debt, respectively, reflecting the company's financing strategy. The total (E/V + D/V) must equal 1.

All these components can be integrated into WACC which makes it a measure of the cost of capital that includes the risks and returns of both equity and debt. This metric is very useful in assessing investment projects, project appraisal and even valuation of the firm as a whole.

Figure 15. WACC Calculation

WACC

WACC = % of equity x cost of equity + % of debt x cost of debt x (1 - Tax Rate)
Cost of equity = Risk free rate + Beta x Market Risk Premium

WACC	
Market Cap	2,539,296
% of Equity	68.2%
Cost of Equity	8.39%
Risk Free Rate	4.31%
Beta	1.01
Market Risk Premium	4.04%
Debt	1,182,929
% of Debt	31.8%
Cost of Debt	7.80%
Tax Rate	0.63%
Total	3,722,225
WACC	8.18%

Source: SBLK DCF Analysis Excel Model, Yahoo Finance, Aswath Damodaran-Equity Risk Premiums

5.2.6 Calculating Terminal Value

The terminal value is one of the key inputs of a DCF analysis, which is the value of the company after the explicit forecast period. It represents the value of the company, which is expected to be worth at the end of the forecasting horizon if the business continues operating or if it is sold. Since terminal value typically accounts for a large part of the overall valuation, it is crucial to compute it properly and using reasonable estimates. There are two main ways of estimating the terminal value: the Perpetuity Growth Model and the Exit Multiple Approach.

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1. **Perpetuity Growth Model**

The Perpetuity Growth Model, also known as the Gordon Growth Model, assumes the company's free cash flows will grow at a constant rate indefinitely after the explicit forecast period. This approach is based on the following formula:

$$\textbf{Terminal Value} = (FCF \times (1 + g)) / (r - g)$$

Where:

- **FCF**: Free cash flow in the final forecasted year
- **g**: Perpetual or Terminal growth rate (typically reflecting long-term GDP growth or inflation rates, often in the range of 2–3% for mature economies)
- **r**: Discount rate (typically the Weighted Average Cost of Capital or WACC)

This method is most effective for established firms with stable income and predictable flows of revenue. This is because the right g has to be chosen to ensure that the growth rate does not lead to overvaluation. For example, the growth rates for the perpetually growing company should be consistent with the economic growth rates in the future. It is highly unlikely that any company can sustain a growth rate which is higher than the GDP or the inflation rates in the long run. The analysts also check this assumption with the help of industry growth rates as well as the historical trends to ensure that it is reasonable.

Formula for Unlevered Free Cash Flow (FCF)

Before calculating terminal value, you need the **unlevered free cash flow (FCF)** for the final forecast year:

$$\textbf{Unlevered FCF} = EBIT \times (1 - Tc) + \textbf{Depreciation \& Amortization} - CapEx - \Delta\textbf{Net Working Capital}$$

Where:

- **EBIT**: Earnings Before Interest and Taxes
- **Tc**: Corporate tax rate
- **CapEx**: Capital expenditures
- **ΔNet Working Capital**: Change in working capital from the previous year

The unlevered FCF reflects cash available to both debt and equity holders, making it suitable for use in calculating enterprise value in the DCF.

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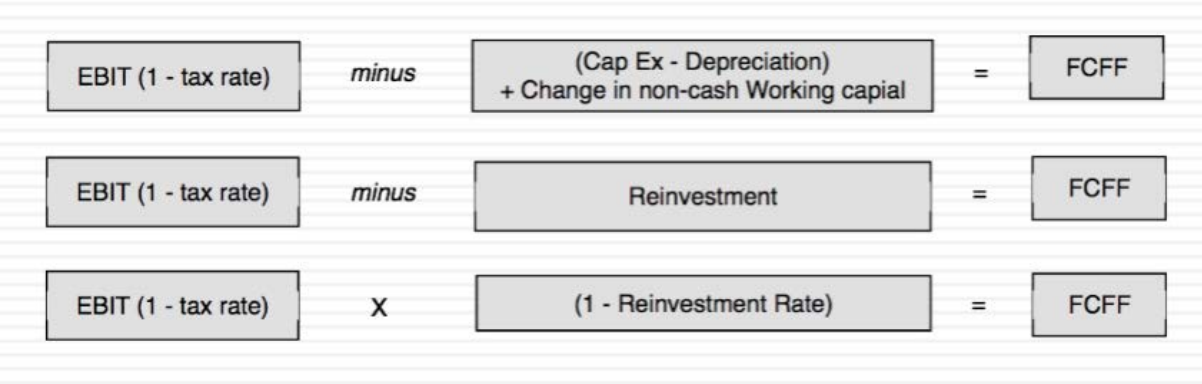
Figure 16. Free Cash Flow formulas



Source: Aswath Damodaran

Figure 17. DCF Model, UFCF and TV calculations

DCF

12/31 FYE	2024E	2025E	2026E	2027E	2028E	2029E
Revenue	1,089,320	1,252,822	1,411,148	1,579,600	1,756,489	1,939,605
% growth	*15%*	*14%*	*12%*	*10%*	*9%*	*7%*
Conservative	*15%*	*14%*	*12%*	*10%*	*9%*	*7%*
Base	*16%*	*15%*	*14%*	*13%*	*12%*	*11%*
Optimistic	*18%*	*19%*	*17%*	*15%*	*14%*	*12%*
EBIT	329,631	353,399	369,102	380,748	387,342	387,921
% of total revenues	*30%*	*28%*	*26%*	*24%*	*22%*	*20%*
Conservative	*30%*	*28%*	*26%*	*24%*	*22%*	*20%*
Base	*31%*	*29%*	*27%*	*25%*	*23%*	*21%*
Optimistic	*33%*	*31%*	*29%*	*27%*	*24%*	*22%*
Taxes	2,077	7,068	7,382	7,615	7,747	7,758
% tax rate	*1%*	*2%*	*2%*	*2%*	*2%*	*2%*
EBIAT	**327,555**	**346,331**	**361,720**	**373,134**	**379,595**	**380.163**
D&A	72,065	169,381	169,586	193,436	216,072	223.114
% of total revenues	*7%*	*13%*	*12%*	*12%*	*12%*	*11%*
CapEx	897,668	315,232	358,588	388,148	415,695	420.363
% of total revenues	*82%*	*25%*	*25%*	*24%*	*23%*	*21%*
Change in NWC	19,427	(7,726)	8,435	12,931	11,490	7.059
% of total revenues	*2%*	*(1%)*	*1%*	*1%*	*1%*	*0%*
Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	=Q79+Q81-Q84-Q87
PV of UFCF	**(169,851)**	**192,748**	**138,638**	**127,308**	**118,149**	**112,414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83

Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	**175.855**
PV of UFCF	**(169,851)**	**192,748**	**138,638**	**127,308**	**118,149**	**112,414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						=Q90*(1+tgr)/(wacc-tgr)

Source: SBLK DCF Analysis Excel Model

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2. **Exit Multiple Approach**

The Exit Multiple Approach estimates terminal value by applying an industry-specific multiple to a financial metric from the last forecasted year, such as EBITDA, EBIT, or Net Income. The formula is:

Terminal Value = Final Year Financial Metric × Exit Multiple

This method is especially useful when there is enough information collected about similar companies. Comparable companies are used as references in order to identify the multiple that should be applied, which depends on market environment, industry aspects and firm's characteristics including growth and profitability. It is important to be very selective with the exit multiple; analysts usually provide ranges as well (e.g. 7x-9x EBITDA) to allow for some variation and to perform sensitivity analysis.

The Exit Multiple Approach is particularly relevant for industries where exit multiples are standard practice, such as private equity or venture capital. However, over-reliance on market-based multiples can lead to distortions, especially in volatile or speculative markets.

Figure 18. Exit multiples and TV calculations

SBLK - Comps Tables -multiples

Date	12/19/2024
Currency	USD

in Millions of U.S. Dollars ($)

Ticker	Company Name	Market Cap	EBITDA Margin 2024	EBITDA Margin 2025	Profit Margin 2024	Profit Margin 2025	Trading Multiples EV/Revenue 2024	EV/Revenue 2025	EV/EBITDA 2024	EV/EBITDA 2025
MARINE SHIPPING										
ZIM	Zim Integrated Shipping Services Ltd	2,191.00	36%	44%	(41%)	(37%)	0.8x	1.0x	2.2x	2.2x
GOGL	Golden Ocean Group Limited	1,754.00	52%	45%	13%	13%	3.2x	3.1x	6.2x	7.0x
CMRE	Costamare Inc.	1,500.00	35%	63%	18%	18%	1.7x	2.0x	4.8x	3.2x
DAC	Danaos Corporation	1,487.00	67%	81%	43%	43%	1.7x	1.8x	2.6x	2.2x
NMM	Navios Maritime Partners L.P.	1,262.00	58%	54%	24%	24%	2.4x	2.1x	4.2x	3.9x
Mean			49.57%	57.23%	11.40%	12.20%	2.0x	2.0x	4.0x	3.7x
Median			52.09%	53.87%	18.00%	18.00%	1.7x	2.0x	4.2x	3.2x

Exit Multiple	
Terminal Year EBITDA	648.687
EBITDA multiple	4.2x
Terminal Value	=T122*T123

Exit Multiple	
Terminal Year EBITDA	648,687
EBITDA multiple	4.2x
Terminal Value	2,724,485

Source: SBLK DCF Analysis Excel Model

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Choosing Between the Two Methods

- **Perpetuity Growth Model**: Suitable for businesses with stable cash flows and guaranteed growth, for instance, utility or consumer goods firms that are not rapidly growing. This is because, this model is based on assumed growth rates over the long run and is thus more appropriate for companies that are already in the mature stage of the product life cycle.
- **Exit Multiple Approach**: Applicable to industries with well-defined comparable companies and well understood exit multiples including shipping, technology and manufacturing industries. This is especially useful when determining the worth of a company at some point in the future when it will be liquidated via an M&A deal or IPO.

Both methods have their advantages and disadvantages and analysts use both approaches to calculate terminal value and then compute the results using both methods to check the outcomes. For example, if the perpetuity growth method gives a much higher or lower value than the exit multiple approach this could suggest that either the growth rates assumed, or the exit multiples used are unrealistic. It is also important to conduct sensitivity analysis to determine the effect of changes in major factors to make sure that the analysis is reliable and credible. Therefore, by applying a consistent and reasonable approach while estimating the terminal value, analysts can be confident that the DCF models produced will be useful in appraising the value of a company. [56],[57],[58]

5.2.7 Compute Present Value

In a Discounted Cash Flow (DCF) analysis, computing the Present Value (PV) of projected cash flows is essential to determine the intrinsic value of a company or investment. This process involves discounting future cash flows to reflect their value in today's terms, acknowledging the time value of money.

1) Discount Each Cash Flow Using the Mid-Year Convention

Traditionally, future cash flows are discounted as if they occur at the end of each year. Each projected cash flow from the forecast period is discounted to its present value using the discount rate (commonly the Weighted Average Cost of Capital or WACC). The present value of an individual cash flow is calculated using the following formula:

$$\mathbf{PV\ (Cash\ Flow) = FCF / (1 + r)^n}$$

Where:

- **FCF**: Free cash flow in the given year

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- **r**: Discount rate (e.g., WACC)
- **n**: Year in which the cash flow is received

However, businesses are generally viewed as throwing off cash flows on an ongoing basis. The Mid-Year Convention builds upon the discounted cash flow (DCF) analysis by assuming that the cash flows are made in the middle of each period thus providing more accurate valuations. This involves changing the exponent in the discounting formula when calculating the NPV and it entails subtracting 0.5 from each period number. This is done to accommodate the assumption that cash flows are equally distributed throughout the year as opposed to at the end of the year. However, it is crucial to note that this adjustment might not always give an accurate valuation result as it depends on the cash flow profile of the particular business under examination. For instance, companies with highly seasonal cash flows, such as retailers with significant holiday sales, may not be well-represented by the Mid-Year Convention. In such cases, alternative adjustments or more detailed cash flow modeling may be necessary to ensure an accurate valuation.

The formula for discounting each cash flow under this convention is:

PV (Cash Flow) = FCF / (1 + r)^(n - 0.5)

Where:

- **FCF**: Free Cash Flow in the given year
- **r**: Discount rate (e.g., Weighted Average Cost of Capital or WACC)
- **n**: Year number

In the discounted cash flow valuation models a stub period is a part of fiscal year that is included in the analysis to cover a period that is not a full fiscal year. This is used when the date of valuation does not coincide with the year end of the company to include cash flows for this partial year and to ensure proper timing of valuation. This is especially important in sectors with fluctuating cash flows or other time-dependent factors. A stub period can be employed together with or without the mid-year convention. In the absence of this convention, the cash flows in the stub period are discounted according to part to of the year in which they occur.

For example, if the valuation date is August 31, 2021, and the fiscal year ends on December 31, 2021, the stub period fraction is determined by dividing the number of days between these dates by the total number of days in the fiscal year. Using Excel, this is done via the DAYS or YEARFRAC function, which calculates the days between the valuation date and the year-end divided by the days in the entire year. In this example, the stub period fraction would be approximately 0.334, indicating that one-third of the year remains.

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The formula for calculating the discount periods builds on the stub period fraction to align the present value calculations with the timing of cash flows. For the first year, the normal discount period equals the stub period fraction (e.g., 0.334 for August 31, 2021), and subsequent years are calculated by adding whole numbers to this fraction (e.g., 1.334, 2.334, etc.). The mid-year convention further refines this calculation by assuming that cash flows are generated evenly throughout the year. For the first year, the mid-year discount period is simply half the stub period fraction. For subsequent years, 0.5 is subtracted from the normal discount period to reflect that cash flows are assumed to arrive midway through each fiscal year. This adjustment improves accuracy by accounting for the average timing of cash flows within the year.

The combination of the stub period and mid-year convention creates a solid framework that helps in proper calculation of discounted cash flows. Thus, these adjustments are included in the analysis to improve the estimates of the present value of future cash flows, especially when the discount rate is dynamic. The following calculations are involved; cumulative discount factor, terminal value and present value of terminal value which makes it necessary to deal with partial year effects. These adjustments may seem as if they are not necessary, but they are actually used by professionals when calculating valuations since they help to provide a higher level of accuracy especially when appraising companies with fluctuating cash flows or at times when the economy is fluctuating. [59]

2) Calculate the Present Value of the Terminal Value

The Terminal Value (TV) represents the value of all future cash flows beyond the forecast period. When applying the Mid-Year Convention, it's important to adjust the discounting of the Terminal Value accordingly. If the Terminal Value is calculated using the Perpetuity Growth Model, the present value is determined as follows:

PV (Terminal Value) = TV / (1 + r)^(dp)

Where:

- **TV**: Terminal Value
- **r**: Discount rate (WACC)
- **dp**: Discounted period taking into account stub period

Figure 19. PV of TV using stub periods

Unlevered FCF	**(517,475)**	**208,207**	**164.284**	**165,491**	**168,482**	**175,855**
PV of UFCF	**(169,851)**	**192,748**	=N90/(1+wacc)^N95	**127,308**	**118,149**	**112,414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83

Source: SBLK DCF Analysis Excel Model

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5.2.8 Determining Enterprise Value and Implied Share Price

After calculating the present values of projected cash flows and the terminal value, the next step in a Discounted Cash Flow (DCF) analysis is to determine the **Enterprise Value (EV)**. This is achieved by summing the present value of the forecasted cash flows and the discounted terminal value:

EV = Σ PV (Projected Cash Flows) + PV (Terminal Value)

For example, in this model the sum of the discounted projected cash flows over a five-year period is $519,406 million, and the present value of the terminal value is $1,489.125 million, the enterprise value is: **EV = $519,406 million + $1,489.125 million = $2,008.531 million**

Figure 20. Calculating Enterprise Value

Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	**175,855**
PV of UFCF	**(169.851)**	**192.748**	**138.638**	**127.308**	**118.149**	**112.414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						2,329,503
PV of Terminal Value						1,489.125
Enterprise Value						=SUM(L91:Q91,Q98)
Terminal Value						2,329,503
PV of Terminal Value						1,489,125
Enterprise Value						**2,008,531**

Source: SBLK DCF Analysis Excel Model

The Enterprise Value reflects the total intrinsic value of a company, accounting for all future cash flows and the terminal value. However, EV represents the value of the entire business, including both debt and equity financing. To assess the value attributable to equity holders, we need to derive the **Equity Value** and, ultimately, the **Implied Share Price**.

Calculating Equity Value

To determine Equity Value, adjust the Enterprise Value by subtracting **Debt** and adding **Cash and Cash Equivalence**:

Equity Value = Enterprise Value - Debt + Cash and Cash Equivalence

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Figure 21. Calculating Equity Value

Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	**175,855**
PV of UFCF	**(169,851)**	**192,748**	**138,638**	**127,308**	**118,149**	**112,414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						2,329,503
PV of Terminal Value						1,489,125
Enterprise Value						2,008,531
(+) Cash						466,538
(-) Debt						1,182,929
Equity Value						=Q100+Q101-Q102
Enterprise Value						**2,008,531**
(+) Cash						466,538
(-) Debt						1,182,929
Equity Value						1,292,140

Source: SBLK DCF Analysis Excel Model

In the model Equity Value is calculated to be: **EV = $1,292.140 millions**

Equity Value represents the value of the company attributable to its shareholders after accounting for debt obligations.

Deriving the Implied Share Price

To calculate the **Implied Share Price**, divide the Equity Value by the total number of outstanding shares:

Implied Share Price = Equity Value / Number of Outstanding Shares

Figure 22. Calculating the Implied Share Price

	Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	**175,855**
	PV of UFCF	**(169,851)**	**192,748**	**138,638**	**127,308**	**118,149**	**112,414**
	Mid-Year Convention						
	Stub	0.33					
	Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
	Terminal Value						2,329,503
	PV of Terminal Value						1,489,125
x	**Enterprise Value**						**2,008,531**
	(+) Cash						466,538
	(-) Debt						1,182,929
	Equity Value						1,292,140
	FDSO						99,717
x	**Implied Share Price**						**12.96**

Source: SBLK DCF Analysis Excel Model

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So, the Implied Share Price for the SBLK Share on the 08/30/2024 (the date the DCF was done) is $12.96

5.3 Results Interpretation

5.3.1 Scenario Analysis: Conservative, Base, and Optimistic Cases

Scenario analysis is a critical part of interpreting the results of a Discounted Cash Flow (DCF) analysis. By modeling different potential outcomes—conservative, base, and optimistic scenarios—analysts can assess the range of intrinsic values under varying economic and operational conditions. This approach provides a nuanced understanding of potential risks and opportunities, particularly in industries with high volatility, such as shipping or technology.

5.3.1.1 Conservative Scenario: Preparing for Adversity

In a conservative scenario, assumptions reflect a cautious outlook, incorporating potential headwinds and adverse market conditions. For example, in the shipping industry, this scenario might assume:

- Slower global trade growth due to geopolitical tensions or economic downturns.
- Lower freight rates driven by oversupply in vessel capacity.
- Higher regulatory compliance costs impacting operational margins.

Other assumptions may include the moderate increase in revenue, reduction in profitability and intensified competition resulting to reduced market share. This scenario aims to give the minimum potential value of the company to help investors and other stakeholders to appreciate the risks that may be involved.

Figure 23. Conservative Scenario Assumptions

Assumptions				
Switches		Conservative		
Assumptions		Assumptions	Year	Metric
Revenue	1	Revenue	2025	95%
EBIT	1	Revenue	26 - '29	85%
WACC	1	EBIT	2029	20%
TGR	1			
WACC	9.70%	WACC		9.70%
TGR	2.00%	TGR		2.00%

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Unlevered FCF	**(517,475)**	**208,207**	**164,284**	**165,491**	**168,482**	**175,855**
PV of UFCF	**(169,851)**	**192,748**	**138,638**	**127,308**	**118,149**	**112,414**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						2,329,503
PV of Terminal Value						1,489,125
Enterprise Value						**2,008,531**
(+) Cash						466,538
(-) Debt						1,182,929
Equity Value						1,292,140
FDSO						99,717
Implied Share Price						**12.96**

Terminal Value

Enterprise Value		**Perpetuity Growth**		**Exit Multiple**	
% Perpetuity	50.0%	Terminal Growth Rate	2.00%	Terminal Year EBITDA	648,687
% Exit Multiple	50.0%	Terminal Value	2,329,503	EBITDA multiple	4.2x
		PV of Terminal Value	1,489,125	Terminal Value	2,724,485
Total Terminal Value	2,526,994	**Total Enterprise Value (TEV)**	**2,008,531**	PV of Terminal Value	1,741,616
PV of Terminal Value	1,615,371			**Total Enterprise Value (TEV)**	**2,261,022**
		Terminal Value as % of TEV	74%	Terminal Value as % of TEV	77%
		Implied TV Exit EBITDA Multiple	3.3x	Implied terminal growth rate	3.05%

Source: SBLK DCF Analysis Excel Model

5.3.1.2 Base Scenario: The Most Probable Outcome

The base scenario represents the most realistic and likely outcome based on current market conditions and reasonable assumptions. It integrates known trends, moderate growth rates, and steady operational performance. For the shipping industry, this scenario might assume:

- Moderate growth in global trade and stable freight rates.
- Achievable cost reductions through operational efficiencies.
- No major disruptions from regulatory or economic changes.

In this case, revenue growth rates might align with historical averages and costs are projected based on known operational patterns. The base scenario serves as the foundation for valuation, capturing the company's intrinsic value under normal circumstances. It is often considered the "status quo" scenario, offering a balanced perspective against which the other scenarios can be compared.

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Figure 24. Base Scenario Assumptions

Ticker	SBLK	Implide price per share	$25.83
Date	8/30/2024	Current share price(12/23/2024)	$15.30
End of Year	12/31/2024	Implide upside / (downside)	(41%)

Assumptions

Switches		Conservative			Base		
Assumptions		Assumptions	Year	Metric	Assumptions	Year	Metric
Revenue	2	Revenue	2025	95%	Revenue		
EBIT	2	Revenue	26 - '29	85%	Revenue	26 - '29	93%
WACC	2	EBIT	2029	20%	EBIT	2029	22%
TGR	2						
WACC	8.18%	WACC		9.70%	WACC		8.18%
TGR	2.50%	TGR		2.00%	TGR		2.50%

Unlevered FCF	**(503,702)**	**223,448**	**185,641**	**192,741**	**201,297**	**213,819**
PV of UFCF	**(165,715)**	**209,276**	**160,721**	**154,249**	**148,916**	**146,218**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						3,858,523
PV of Terminal Value						2,638,623
Enterprise Value						**3,292,289**
(+) Cash						466,538
(-) Debt						1,182,929
Equity Value						2,575,898
FDSO						99,717
Implied Share Price						**25.83**

Terminal Value

Enterprise Value		Perpetuity Growth		Exit Multiple	
% Perpetuity	50.0%	Terminal Growth Rate	2.50%	Terminal Year EBITDA	648,687
% Exit Multiple	50.0%	Terminal Value	3,858,523	EBITDA multiple	4.2x
		PV of Terminal Value	2,638,623	Terminal Value	2,724,485
Total Terminal Value	3,291,504	**Total Enterprise Value (TEV)**	**3,292,289**	PV of Terminal Value	1,863,120
PV of Terminal Value	2,250,871			**Total Enterprise Value (TEV)**	**2,516,785**
		Terminal Value as % of TEV	80%	Terminal Value as % of TEV	74%
		Implied TV Exit EBITDA Multiple	5.1x	Implied terminal growth rate	0.31%

Source: SBLK DCF Analysis Excel Model

5.3.1.3 Optimistic Scenario: Capturing Potential Upside

The optimistic scenario incorporates favorable conditions, reflecting the maximum growth potential and opportunities for the business. Assumptions might include:

- Accelerated global trade growth due to technological advancements or reduced trade barriers.
- Higher freight rates driven by increased demand for shipping services and limited vessel availability.

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- Improved operational margins through cost-saving innovations and favorable regulatory changes.

In this scenario, revenue growth rates are projected to surpass historical trends, while costs are assumed to remain stable or even decline due to efficiencies. For instance, if a base scenario estimates annual revenue growth at 3%, the optimistic case might forecast 6% growth, reflecting a booming industry.

The optimistic scenario is useful for understanding the full potential of an investment. However, it should be viewed with caution, as overly optimistic projections can lead to unrealistic valuations and poor decision-making.

Figure 25. Optimistic Scenario Assumptions

x Ticker	SBLK	Implide price per share	$38.47
Date	8/30/2024	Current share price(12/23/2024)	$15.30
End of Year	12/31/2024	Implide upside / (downside)	(60%)

x **Assumptions**

Switches		Conservative			Base		
Assumptions		Assumptions	Year	Metric	Assumptions	Year	Metric
Revenue	3	Revenue	2025	95%	Revenue		
EBIT	3	Revenue	26 - '29	85%	Revenue	26 - '29	93%
WACC	3	EBIT	2029	20%	EBIT	2029	22%
TGR	3						
WACC	7.50%	WACC		9.70%	WACC		8.18%
TGR	3.00%	TGR		2.00%	TGR		2.50%

$38.47
$15.30
(60%)

Base			Optimistic		
Assumptions	Year	Metric	Assumptions	Year	Metric
Revenue			Revenue	2025	105%
Revenue	26 - '29	93%	Revenue	26 - '29	90%
EBIT	2029	22%	EBIT	2029	25%
WACC		8.18%	WACC		7.50%
TGR		2.50%	TGR		3.00%

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Unlevered FCF	**(475,589)**	**258,029**	**217,523**	**221,170**	**225,502**	**233,020**
PV of UFCF	**(156,630)**	**242,937**	**190,512**	**180,192**	**170,904**	**164,280**
Mid-Year Convention						
Stub	0.33					
Discount Period	0.17	0.83	1.83	2.83	3.83	4.83
Terminal Value						5,333,563
PV of Terminal Value						3,760,191
Enterprise Value						**4,552,385**
(+) Cash						466,538
(-) Debt						1,182,929
Equity Value						3,835,994
FDSO						99,717
Implied Share Price						**38.47**

Terminal Value

Enterprise Value		**Perpetuity Growth**		**Exit Multiple**	
% Perpetuity	50.0%	Terminal Growth Rate	3.00%	Terminal Year EBITDA	648,687
% Exit Multiple	50.0%	Terminal Value	5,333,563	EBITDA multiple	4.2x
		PV of Terminal Value	3,760,191	Terminal Value	2,724,485
Total Terminal Value	4,029,024	**Total Enterprise Value (TEV)**	**4,552,385**	PV of Terminal Value	1,920,777
PV of Terminal Value	2,840,484			**Total Enterprise Value (TEV)**	**2,712,971**
		Terminal Value as % of TEV	83%	Terminal Value as % of TEV	71%
		Implied TV Exit EBITDA Multiple	6.8x	Implied terminal growth rate	-0.97%

Source: SBLK DCF Analysis Excel Model

5.3.2 Sensitivity Analysis: Key Variables

Sensitivity analysis is an important step when it comes to understanding a Discounted Cash Flow (DCF) valuation since it enables the analyst to see how different assumptions affect the value of the company. There are two critical factors that have the most significant impact on the DCF model, and these are the Weighted Average Cost of Capital (WACC) and the Terminal Growth Rate (TGR). Through evaluating these variables, the stakeholders will be able to determine the reliability of the calculation as well as the possible variation of the results with different sets of assumptions.

5.3.2.1Testing the Impact of WACC

The WACC is the rate which reflects the discount rate of future cash flows. It indicates the return on investment which is required to meet the requirements of the company's capital structure, including equity and debt, and the risks associated with the business. This shows that even slight adjustments to WACC can have a large effect on the DCF valuation particularly on the long-term cash flows and terminal value.

- **Lower WACC**: A lower discount rate typically results in a higher intrinsic value, as future cash flows are discounted less. This scenario might reflect a more stable market environment, lower risk premium, or improved capital structure with lower debt costs.

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- **Higher WACC**: Conversely, a higher WACC reduces the intrinsic value by increasing the discount rate applied to future cash flows. This scenario could indicate greater market uncertainty, higher interest rates, or elevated risk perceptions.

5.3.2.2 Testing the Impact of Terminal Growth Rate (TGR)

The Terminal Growth Rate is one of the most important variables in assessing the terminal value that more often than not comprises the majority of the DCF valuation. The TGR is the expected growth rate of the company after the forecast period and is usually congruent with the longer-term GDP growth or industry norms.

- **Lower TGR**: A conservative growth rate, such as 1-2%, results in a lower terminal value. This assumption might reflect stagnation in the industry, mature market conditions, or increased competition.
- **Higher TGR**: An optimistic growth rate, such as 3-4%, significantly increases the terminal value. This assumption might reflect strong industry prospects, innovative growth opportunities, or market expansion.

Below there are showcased the sensitivity analysis tables for the three scenarios:

Figure 26. Sensitivity Tables for the three scenarios (Consrvative, Base, Optimistic)

Sensitivity Table

		WACC				
		8.68%	8.43%	8.18%	7.93%	7.67%
TGR	2.00%	16.19	17.14	18.17	19.30	20.54
	2.25%	16.93	17.95	19.05	20.28	21.62
	2.50%	17.74	18.83	20.02	21.35	22.80
	2.75%	18.61	19.79	21.08	22.52	24.11
	3.00%	19.56	20.84	22.24	23.81	25.55

Sensitivity Table

		WACC				
		8.68%	8.43%	8.18%	7.93%	7.67%
TGR	2.00%	21.15	22.31	23.56	24.94	26.44
	2.25%	22.06	23.30	24.64	26.13	27.75
	2.50%	23.04	24.37	25.81	27.42	29.19
	2.75%	24.10	25.53	27.10	28.85	30.78
	3.00%	25.26	26.81	28.50	30.41	32.53

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Sensitivity Table						
		WACC				
		8.68%	8.43%	8.18%	7.93%	7.67%
TGR	2.00%	24.34	25.60	26.96	28.47	30.11
	2.25%	25.33	26.68	28.14	29.76	31.54
	2.50%	26.40	27.84	29.42	31.18	33.11
	2.75%	27.55	29.11	30.82	32.73	34.84
	3.00%	28.81	30.50	32.35	34.44	36.75

Source: SBLK DCF Analysis Excel Model

5.3.3 Interpreting Sensitivity Analysis

Sensitivity analysis is not all about calculating figures as it is also an effective way of determining the effects of the major assumptions used in a Discounted Cash Flow (DCF) valuation. Through varying the main inputs such as WACC and TGR and observing the changes in the valuation outcomes, the analysts are able to gain better understanding of the model's sensitivity. Understanding these results enables the stakeholders to quantify the level of uncertainty, identify potential risks and make better decisions.

5.3.3.1 Identifying Key Drivers of Value

Sensitivity analysis helps to understand which variables are most important in the DCF valuation. For example, WACC and TGR are often crucial because they impact the discount rate used for cash flows and the calculation of terminal value, which can be a significant part of the company's value.

- **WACC**: A change in WACC, even by 1%, can dramatically alter the present value of future cash flows, especially for companies with long-term growth trajectories or significant terminal value reliance.
- **TGR**: A shift in the terminal growth rate can similarly have outsized effects, as it determines the perpetuity of cash flows beyond the forecast period.

Understanding these sensitivities allows analysts to focus their efforts on refining the most impactful assumptions, ensuring the valuation reflects realistic scenarios. It also highlights areas where further data collection or market research may be necessary.

5.3.3.2 Assessing the Model's Robustness

Sensitivity analysis is useful in identifying which variables are most influential in the DCF valuation. For instance, WACC and TGR are often vital since they affect the discount rate that is applied to the cash flows as well as the computation of terminal value which can be a major part of the company's value.

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On the other hand, if the valuation is sensitive to small variations in the inputs, this suggests that the process might be unstable. For example, a high growth company like a tech firm could see their valuations fluctuate wildly with only slight movements in WACC since they are predicted on high growth rates. This would cause the analysts to go back and review the assumptions or adjust the inputs to be more realistic.

5.3.3.3 Quantifying Risk and Uncertainty

By interpreting the range of potential outcomes, sensitivity analysis allows stakeholders to quantify the level of risk associated with an investment. For example:

- A narrow valuation range, even under varying assumptions, suggests lower risk and greater confidence in the model.
- A wide range indicates higher uncertainty, highlighting the need for careful consideration of the investment's risk-reward profile.

For instance, if a company's intrinsic value varies between $400 million and $600 million depending on a 1% change in WACC or TGR, the implied risk is substantial. Investors might demand a higher margin of safety or reevaluate the attractiveness of the investment.

5.3.3.4 Strategic Decision-Making

Sensitivity analysis informs strategic decisions by providing a comprehensive view of possible valuation scenarios. Stakeholders can align their strategies based on the analysis, such as:

- **For Investors**: Identifying undervalued opportunities by focusing on conservative inputs to account for downside risks.
- **For Management**: Prioritizing efforts on areas that most significantly impact valuation, such as reducing cost of capital or optimizing long-term growth strategies.
- **For Lenders**: Assessing the borrower's resilience under adverse scenarios to set lending terms.

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Chapter 6: Conclusions

The financial valuation of the dry bulk shipping companies is an essential component that connects the theoretical models with the real-world consequences in the industry. This thesis has analyzed and applied valuation methods to determine the performance and market status of Star Bulk Carriers Corp. (SBLK) and has generated findings that are both detailed and practical for the participants in this field. Through the implementation of base-up approach, application of intrinsic and relative valuation models, sensitivity analysis and evaluation of the alternative scenarios, this work highlights the intricacies of assessing the value of firms in the dry bulk shipping industry.

The thesis started with the context of the world economic and trade system and the importance of dry bulk shipping sector. The complex nature of the sector, which is influenced by various macroeconomic factors including global GDP growth, urbanization and commodity demand, offers both challenges and possibilities for valuation. It was crucial to comprehend these forces in order to place the valuation analyses done of SBLK and its peers in an appropriate context.

The industry analysis gave insight into the relationship between supply and demand, freight rates, and fleet composition. It also highlighted how factors such as geopolitical events, changes in legislation and environmental regulations influence operational parameters and, consequently, a company's value. For instance, the increasing stringency of regulations including IMO 2020 and the advent of advanced technologies in the form of energy efficient ships have changed the dynamics of the industry and hence calls for advanced valuation models that are forward looking.

In the comparative analysis of SBLK against its peers—Golden Ocean Group, Danaos Corporation, Costamare Inc., Navios Maritime Partners, and ZIM Integrated Shipping Services—key differentiators emerged. SBLK's strategic initiatives such as fleet modernization, operational efficiencies and strong financial management were analyzed against industry norms to give a fair assessment. These insights highlighted the need to use comparative measures such as EV/EBITDA and PE ratios for assessing relative market standing while at the same time acknowledging their inability to distinguish company specific factors.

The valuation framework utilized—anchored by Discounted Cash Flow (DCF) analysis—provided a robust foundation for estimating SBLK's intrinsic value. By projecting cash flows and incorporating a Weighted Average Cost of Capital (WACC) that reflected the company's specific risk profile, the model achieved a nuanced representation of SBLK's economic potential. Complementary analyses, including precedent transactions and scenario-based sensitivity testing, reinforced the validity of the valuation while accounting for inherent uncertainties in market forecasts and operational dynamics.

However, the study also acknowledged the limitations of the current valuation methods. This is where assumptions play a crucial role; assumptions regarding growth rates and discount factors, for example, can be somewhat arbitrary and biased. Furthermore, the dry bulk industry is known to be a cyclical one, which means that fluctuations in economic conditions, environmental regulations, or other external factors can cause the projections

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made based on certain conditions to become invalid rather quickly. In order to overcome these challenges, it is necessary to enhance the models used on a regular basis and to take into consideration the new factors that may appear on the market aa well as advancements in technology.

The conclusions of this thesis show that SBLK is undervalued. The company's market standing is defined by both its internal strengths and the general market conditions. From the investors' perspective, this insight underlines the need to use a comprehensive approach to valuation in order to get the overall picture of a company's value. For SBLK's management, the outcomes presented in this study reveal some of the areas that need strategic attention such as improving the efficiency of the fleet, expanding the sources of revenue and ensuring that the company is in compliance with the environmental standards to enhance its competitiveness.

Based on the analysis in this paper, the current study makes a contribution to the existing literature on financial valuation in the shipping industry by presenting a systematic and compounded approach that employs several methods. The conclusions that have been made in this study are not only limited to SBLK, but they can also be applied to other companies like the ones under analysis that are active in highly volatile and intensive capital markets. There is no doubt that the shipping industry will still be in the midst of changes due to the shifts in the global economy and environmental concerns in the future and the guidelines and techniques discussed here will be beneficial to the practitioners and researchers. Through the integration of research with real world examples this thesis provides a platform that differentiates between academic theory and business practice in the dry bulk shipping market and thus enables stakeholders to make better decisions.

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Chapter 7: Glossary

The following glossary lists a number of definitions, which are used both throughout this dissertation, as well as in the Finance and Investment world in general.

Annuity – A stream of constant cash flows that occur at regular intervals for a fixed period of time.
Allocation – Process of distributing a cost that cannot be directly traced to a revenue center across different units, projects, or divisions.
Balance Sheet – A summary of the assets owned by a firm, the book value of these assets, and the mix of financing, debt and equity, used to finance these assets at a point in time.
Beta – A measure of a stock's systematic risk, indicating how its price tends to move in relation to changes in a specific market index.
Business Valuation – The process of determining the value of a business or its ownership interest.
Capital Asset Pricing Model (CAPM) – A model that calculates a stock or portfolio's cost of capital by adding a risk premium, based on the stock's systematic risk, to a risk-free rate.
Capital Expenses – Expenses that are expected to generate benefits over multiple periods. Accounting rules generally require that these expenses be depreciated or amortized over the multiple periods.
Capitalization – Converting a single period of economic benefits into value.
Capital Structure – The mix of debt and equity financing that makes up a company's total capital.
Cash Flow – The cash generated over time by a business or asset, which can be defined more specifically depending on the context (e.g., operating or discretionary cash flow).
Cash Flow to Equity Investors – Cash flows generated by the asset after all expenses and taxes, and also after payments due on the debt.
Cash Flow to the Firm – Cash flows generated by the asset for both the equity investor and the lender. This cash flow is before debt payments but after operating expenses and taxes.
Cost of Capital – Weighted average of the costs of the different sources of financing used by a firm.
Cost of Debt (After-tax) – Interest rate, including a default spread, that a borrower has to pay to borrow money, adjusted for the tax deductibility of interest.
Cost of Debt (Pre-tax) – Interest rate, including a default spread, that a borrower has to pay to borrow money.
Cost of Equity – The rate of return that equity investors in a firm expect to make on their investment, given its riskiness.
Current Assets – Short-term assets of the firm, including inventory of both raw material and finished goods, receivables (summarizing moneys owed to the firm), and cash.
Current PE – Ratio of price per share to earnings per share in most recent financial year.
Debt – Any financing vehicle that has a contractual claim on the cash flows and assets of the firm, creates tax-deductible payments, has a fixed life, and has priority claims on the cash flows in both operating periods and in bankruptcy.
Default Risk – Risk that a promised cash flow on a bond or loan will not be delivered.
Default Spread – Premium over the riskless rate that you would pay (if you were a borrower) because of default risk.
Deferred Tax Asset – Asset created when companies pay more in taxes than the taxes they

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report in the financial statements.
Depreciation – Accounting adjustments to the book value of an asset for the aging and subsequent loss of earning power on it. Applies when you have a capital expenditure.
Discount Rate – The rate used to move cash flows from the future to the present, in discounting, or from the present to the future, in compounding.
Discounting – The process of converting cash flows in the future to cash flows today.
Equity – Any financing vehicle that has a residual claim on the firm, does not create a tax advantage from its payments, has an infinite life, does not have priority in bankruptcy, and provides management control to the owner.
Equity Risk – Measure of deviation of actual cash flows from expected cash flows.
Equity Risk Premium – The additional return over a risk-free rate that compensates for the risk of investing in equity instruments.
Exit Value – Estimated value of a private firm in a year in which the owners plan to sell it to someone else or to take it public.
Fair Market Value – The price at which property would be exchanged between a willing buyer and seller in an open market, where neither is under pressure to buy or sell and both have reasonable knowledge of the facts. In Canada, this is referred to as the "highest price."
Firm – Any business large or small, privately run or publicly traded, and engaged in any kind of operation – manufacturing, retail or service.
Fixed Assets – Long-term and tangible assets of the firm, such as plant, equipment, land, and buildings.
Fixed-Rate Bond – Bond with a coupon rate that is fixed for the life of the bond.
Free Cash Flow to Equity – Cash left over after operating expenses, net debt payments, and reinvestments.
Free Cash Flow to the Firm – Cash flow left over after operating expenses, taxes, and reinvestment needs, but before any debt payments (interest or principal payments).
Free Cash Flows (Jensen) – Cash flows from operations over which managers have discretionary spending power.
Goodwill – The difference between the market value of an acquired firm and the book value of its assets; arises only when purchase accounting is used in an acquisition.
Gordon Growth Model – Stable-growth dividend discount model, where the value of a stock is the present value of expected dividends, growing at a constant rate forever.
Historical (Risk) Premium – Difference between returns on risky investments (usually stocks) and riskless investments (usually government securities) over a specified past time period.
Historical Cost – The original price paid for an asset, when acquired, adjusted upwards for improvements made to the asset since purchase and downwards for the loss in value associated with the aging of the asset.
Implied Premium – The premium estimated based upon the current level of stock prices and expected cash flows from buying stocks. The internal rate of return that would make the present value of the cash flows equal to today's stock prices is the expected return on equity. Subtracting out the riskless rate yields the implied premium.
Income Statement – A statement which provides information on the revenues and expenses of the firm, and the resulting income made by the firm, during a period.
Inflation Rate – Change in purchasing power in a currency from period to period.
Internal Rate of Return (IRR) – Discount rate that makes the net present value zero. It can be considered a time-weighted, cash flow, rate of return on an investment.

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Intangible Assets – Non-physical assets like trademarks, patents, goodwill, securities, and contracts that have value due to the rights or privileges they grant.
Invested Capital – The total of equity and debt in a business, typically including interest-bearing debt, defined by the context.
Investment Risk – The uncertainty surrounding the expected return on an investment.
Investment Value – The value of an investment to a particular investor based on their specific requirements and expectations (referred to as "Value to the Owner" in Canada).
Leveraged Buyout – An acquisition of a firm by its own managers or a private entity, financed primarily with debt.
Levered Beta – A beta that accounts for a company's capital structure, including its debt.
Liquidity – The ability to quickly convert an asset to cash or meet financial obligations.
Line of Credit – A financing arrangement, under which the firm can draw on only if it needs financing, up to the agreed limit.
Liquidation Value – Net cash flow that the firm will receive from selling an asset today.
Market Capitalization (Market Cap) – Market value of equity in a firm.
Market Risk – Risk that affects many or all investments in a market. This risk cannot be diversified away in a portfolio.
Market Value – Estimate of how much an asset would be worth if sold in the market today. If the asset is a traded asset, this is obtained by looking at the last traded price.
Mid-Year Discounting – A method used in Discounted Future Earnings to approximate the effect of cash flows being generated evenly throughout the year.
Net Operating Losses (NOLs) – Accumulated losses over time that can be used to offset income and save taxes in future periods.
Non-Operating Assets – Assets not essential to a company's core business operations, often referred to as "Redundant Assets" in Canada.
Operating Expenses – Expenses that provide benefits only for the current period.
Perpetuity – A stream of constant cash flows that occur at regular intervals forever.
Preferred Stock – Security that pays a fixed dividend, which is usually not tax deductible, and has an infinite life; usually has no or limited voting rights.
Preferred Stock (Alternative Definition) – Security which pays a fixed dollar dividend that is usually not tax deductible to the firm; if the firm does not have the cash to pay the dividend, the dividend is cumulated and paid in a period when there are sufficient earnings.
Price/Book Value – Ratio of price per share to book value of equity per share.
Price/Earnings Ratio (PE) – Ratio of price per share to earnings per share.
Price/Sales Ratio (PS) – Ratio of price per share to sales per share.
Return on Equity – The percentage of profit a company earns on its common equity over a specified period.
Return on Invested Capital – The percentage of profit a company earns on its total capital over a given period.
Return on Investment – Often used interchangeably with Return on Equity or Return on Invested Capital.
Risk-Free Rate – The return on an investment with no risk of default, typically based on government bonds.
Risk Premium – The additional return over a risk-free rate to compensate for investment risk.
Tender Offer – A solicitation where one firm offers to buy the outstanding stock of the other firm at a specific price and communicates this offer in advertisements and mailings to

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stockholders.
Terminal Price (Value) – Expected value of an asset at the end of forecast period. For instance, if you forecast cash flows for 10 years, the terminal value is the value at the end of the 10th year.
Time Line – A line depicting the magnitude and timing of cash flows on an investment.
Treasury Bills – Short-term obligations issued by the U.S. government.
Treasury Stock Approach – Approach for dealing with options in valuation, where the exercise value of the options is added to the value of the equity in the firm, and the total amount is divided by the number of shares outstanding, including those covered by the options.
Unlevered Beta – The beta of a firm, under the scenario that it is all equity-financed. It is determined by the businesses that the firm is in, and the operating leverage it maintains in these businesses. Can be computed from the regression beta (top-down) or by taking a weighted average of the betas of the different businesses (bottom-up).
Valuation – The process of determining the value of a business, ownership interest, security, or intangible asset.
Valuation Approach – A broad method used to determine the value of a business or asset, often incorporating multiple valuation techniques.
Valuation Date – The specific date to which the valuation applies, also called "Effective Date" or "Appraisal Date."
Valuation Method – A specific technique or process used to determine value within a valuation approach.
Valuation Procedure – The specific steps and techniques used to perform an appraisal.
Valuation Ratio – A ratio where value or price is compared to financial, operating, or physical data.
Weighted Average Cost of Capital (WACC) – The overall cost of capital for a business, calculated as the weighted average of the costs of debt and equity in the company's capital structure. [60], [61], [62]

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