Lisbon School of Economics & Management
Universidade de Lisboa

MASTER OF SCIENCE IN
FINANCE

MASTERS FINAL WORK
PROJECT

EQUITY RESEARCH:
HAPAG-LLOYD, AG

DJOICE NINA MATINE NGUENHA

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SUPERVISOR:
PEDRO RINO VIEIRA

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Abstract

This document was written in accordance with the report format recommended by the CFA Institute, based on public information and is divided into the following sections: Business Description, Environmental, Social and Governance Analysis, Industry Overview and Competitive Positioning, Investment Summary, Valuation, Financial Analysis, Investment Risks including an Appendix.

Hapag-Lloyd belongs to the container liner shipping industry which is the life blood of the global economy. Without liner shipping, international trade would not be possible. The company is considered the 5th largest container liner shipping company in terms of capacity, with 1.8m TEU (millions twenty-foot equivalent) and a market value of €35,398m, and operates worldwide in more than 600 ports and with offices in 131 countries.

Within the supply chain, the company provides shipping services of carriage of containers from the origin to the destination using ocean vessels.

Hapag-Lloyd has a "HOLD" investment recommendation, with a PT (Price Target) of €222.69/share at the end of 2022 estimated using the DCF method, corresponding a potential 9.5% change from the closing price of €203.40 on August 5, 2021, but with medium risk.

The reason for this recommendation is mainly due to the challenging market environment, with the COVID-19 pandemic and several economic disruptions in the supply chain.

Regarding current trends in the industry, technology is gaining more and more space, especially with the outbreak of the pandemic, and container shipping companies are more focused in modernizing their fleet and reducing their carbon footprint.

Hapag-Lloyd is expected to continue to perform solidly and will continue to grow, albeit slowly, meaning it will continue to be able to distribute at least 30% of its profits to its shareholders.

JEL classification: G10; G32; G34

Keywords: Hapag-Lloyd; Equity Research; Valuation; Mergers & Acquisitions; Freight Rates; Transport Volumes; Trade; Vessels; Containers…

Resumo

Este documento foi escrito de acordo com o formato de relatório recomendado pelo Instituto CFA, contendo informação pública e está dividido nas seguintes secções: Descrição do Negócio, Análise Ambiental, Social e Governança, Visão Geral da Indústria e Posicionamento Competitivo, Resumo do Investimento, Avaliação, Análise Financeira, Riscos de Investimento incluindo um Apêndice.

A Hapag-Lloyd pertence à indústria de transporte marítimo de contentores que é o sangue vital da economia global. Sem o transporte marítimo, o comércio internacional não seria possível. A companhia é considerada a 5ª maior empresa de transporte marítimo de contentores em termos de capacidade, com 1.8m TEU (milhões de vinte-pés equivalentes) e um valor de mercado de € 35,398m, operando em todo o mundo em mais de 600 portos e com escritórios em 131 países.

Dentro da cadeia de suprimentos, a empresa presta serviços de transporte de contentores desde a origem até o destino utilizando navios marítimos.

A Hapag-Lloyd tem uma recomendação de investimento "NEUTRA", com um PA (Preço Alvo) de €222.69/ação no final de 2022 estimada usando o método DCF, correspondendo uma variação potencial de 9.5% em relação ao preço de fechamento de €203.4 em 5 de agosto de 2021, mas com risco médio.

A razão dessa recomendação deve-se principalmente ao ambiente de mercado desafiador, com a pandemia COVID-19 e diversas interrupções econômicas na cadeia de suprimentos.

Em relação às tendências atuais do setor, a tecnologia está ganhando cada vez mais espaço, especialmente com o surto da pandemia, e as empresas de transporte de contentores estão mais focadas em modernizar sua frota e reduzir sua pegada de carbono.

Espera-se que a Hapag-Lloyd continue a ter um desempenho sólido e continue a crescer, ainda que lentamente, o que significa que continuará a ser capaz de distribuir pelo menos 30% de seus lucros aos seus acionistas.

Classificação JEL: G10; G32; G34

Palavras-Chave: Hapag-Lloyd; Equity Research; Avaliação de Empresas; Fusões e Aquisições; Taxa de Frete; Volume de Transporte; Comércio; Navios; Contentores …

Acknowledgements

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Special thanks to my mother Helena Chivai, my father Salomão Nguenha and my brother Edilson Nguenha, for the love and unconditional support in every journey of my life.

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Abbreviations

A

AI – Artificial Intelligence

APV – Adjusted Present Value

B

b – Barrel

BICS – Bloomberg Industry Classification System

bn Billions

C

CAD – Canadian Dollar

CAGR – Compound Annual Growth Rate

CAPEX – Capital Expenditure

CAPM – Capital Asset Pricing Model

CEO – Chief Executive Officer

CFO – Chief Financial Officer

CNY – Chinese Yuan

COO – Chief Operating Officer

COSCO – COSCO SHIPPING Lines

CO_2 – Carbon dioxide

CP ships – Canadian shipping company

CPO – Chief Procurement Officer

CSSC – China State Shipbuilding Corporation

CSVA – Chilean Compañía Sud Americana de Vapores

D

DCF – Discounted Cash Flow

DDM – Dividend Discount Model

DPS – Dividends per Share

E

EBIT – Earnings Before Interest and Taxes

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortisation

ECA – Emission Control Areas

EEDI – Energy Efficiency Design Index

EMA – Europe Mediterranean Africa

ERP – Equity Risk Premium

ESG – Environmental, Social and Governance

EUR – Euros

EV – Enterprise Value

F

F – Forecast (as in 2021F)

FY – Fiscal Year

FEU – Forty-foot Equivalent Unit

FCFF – Free Cash Flow to Firm

FCFE – Free Cash Flow to Equity

G

GCGC – German Corporate Governance Code

GDP – Gross Domestic Product

GHG – Greenhouse Gas

G7 – Group of Seven

GDAX – German DAX Index

H

HAPAG – Hamburg Amerikanische Packetfahrt-Actien-Gesellschaft

HKD – Hong Kong Dollar

HMM – Hyundai Merchant Marine

HSFO – High Sulphur Fuel Oil

HQ – Headquarters

H1 – First Half

I

IEX – South East India Europe Express Service

IMO – International Maritime Organization

INR – Indian Rupee

ISO – International Organization for Standardization

IT – Information Technology

L

LLC – Limited Liability Company

LNG – Liquified Natural Gas

M

m – Million

MARPOL – Marine Pollution

M&A – Mergers and Acquisitions

MDO – Marine Diesel Oil

MFO – Marine Fuel Oil

MSC – Mediterranean Shipping Company

mt – Metric Tons

N

NDL – Norddeutscher Lloyd

NYK – Nippon Yusen Kabushiki Kaisha

n/d – Not disclosed

O

ONE – Ocean Network Express

OOCL – Orient Overseas Container Line

P

PESTEL – Political, Economic, Social, Technological, Environmental, Legal

PIF – Public Investment Fund

PMI – Purchasing Managers' Index

PSP – Performance Safeguarding Program

PT – Price Target

P/E – Price to Earnings

Q

Q1 – First Quarter

R

Rd – Cost of Debt

Re – Cost of Equity

Rf – Risk-free Rate

ROE – Return on Equity

ROIC – Return on Invested Capital

Ru – Unlevered Cost of Capital

S

SDG´s – United Nations Sustainable Development Goals

SEEMP – Ship Energy Efficiency Management Plan

SGD – Singapore Dollar

STEO – Short-Term Energy Outlook

SWOT – Strengths, Weaknesses, Opportunities, and Threats

T

t – Tons

TEU – Twenty-foot Equivalent Unit

TTEU – Thousands Twenty-foot Equivalent Unit

TUI – Touristik Union International

U

UAE – United Arab Emirates

UASC – United Arab Shipping Company

U.S – United States

USD – United States Dollar

V

VLSFO – Very Low Sulphur Fuel Oil

W

WACC – Weighted Average Cost of Capital

WCI – World Container Index

X

x – Times

Y

YE – Year End

YoY – Year over Year

Z

ZIM – ZIM Integrated Shipping Services

Hapag-Lloyd AG

Hold

Medium risk

05 August 2021

Germany

Hapag-Lloyd: "Your Cargo - Our Passion"

Price Target	**€222.69**
Close Price (August,05th)	€203.40
Upside Potential	9.5%
Annualized Return	5.5%

(YE2022 PT **€ 222.69** (9.5%); recommendation is to **HOLD** with **Medium Risk**)

1. Research Snapshot

We initiate a **HOLD** recommendation for Hapag-Lloyd AG (Hapag-Lloyd) with a **2022YE** PT of **€222.69/share** using the DCF model, implying a **9.5% upside potential** (corresponding to **5.5%** annualized) from the August 5th 2021 **closing price of €203.40** (Figure 1), although with **medium risk**. In the challenging market environment, the COVID-19 pandemic, the expansion to new locations and the decrease in leverage constitute the main drivers for this recommendation.

Bloomberg/Reuters Code: Equity / HLAG.DE	HLAG GY
Market Capitalization	€35,398m
Nº of Shares Outstanding	175,800m
Free Float	3.6%
Institutional Ownership	96.8%
YTD Performance / %	109.50 / 119.15%
Volume	32,249
52-Week Range	€40.9 - €206.80

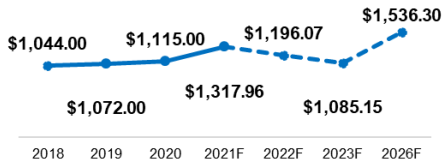
Figure 1. Relative Price Performance

Source: Bloomberg; Author Estimates

The effect of COVID-19 pandemic

Hapag-Lloyd´s profitability is extremely impacted by the market environment as it belongs to a cyclical industry. The container shipping industry tends to be reflective of world events, as an illustration when the COVID-19 pandemic hit, it caused demand-supply imbalances and disruptions in the supply chain which led freight rates to drop dramatically in 2019, but it has rebounded well since the first half of 2020, and are expected to continuously increase above the pre-pandemic levels in long term. Hapag-Lloyd average freight rates are projected to growth from **$1,115.00/TEU** in **2020** to **$1,636.30/TEU** in **2026F** (Figure 2), and this will affect the company´s earnings positively.

Figure 2. Hapag-Lloyd Average Freight Rates (USD/TEU)



Source: Company Data; Author Estimates

Expanding its international presence

Neither the COVID-19 pandemic nor the economic disruptions in the supply chain hinder Hapag-Lloyd to open new offices in several locations, being the most recent in Ukraine, and to acquire all shares of Nile Dutch, an African company. This has contributed to the company strengthen its position in the **EMA (European Mediterranean Africa) market**, in which **Revenues** are expected at **19.3% CAGR 2020-2026F**. This also means that the company is not relying only on just major trades routes for its income.

Table 1. Financial Highlights

Key Figures	2020	2021F	2026F
Revenues	€ 12.772	€ 17.101	€ 23.582
Net Income	€ 0.936	€ 1.317	€ 3.226
EBITDA Margin (%)	7%	20%	26%
EBIT Margin (%)	10%	13%	21%
ROIC (%)	8%	10%	27%
Cash and Equivalents	€ 0.681	€ 1.055	€ 8.001
Debt	€ 5.136	€ 5.366	€ 3.233
Financial Leverage (x)	2.3	3.1	1.8

Source: Company Data; Author Estimates

Reducing leverage

Acquiring ships is costly, particularly the mega ships. Because of that, liner shipping companies borrow heavily to fund vessel acquisitions. Despite this, Hapag-Lloyd is expected to reduce the level of debt by around **€1.903m** from **2020** to **2026F**. Consequently, this will positively impact the **financial leverage** which is expected to **fall from 2.3x** to **1.8x** from **2020 to 2026F** (Table 1).

Furthermore, the company has been adopting sustainable investing practices. The proportion of investments financed through **green bonds and loans**, which are more environmentally friendly, has further increased.

2. Business Description

The Company

Hapag-Lloyd AG (Hapag-Lloyd) is a Germany liner company that operates in the shipping of containers by sea including transportation services from door-to-door. The company is the **5th leader** in the global container shipping industry **by TEU capacity**, with a fleet of **241 modern vessels** with **capacity** of around **1.8m TEU** and a **container capacity** of approximately **2.8m TEU** (Appendix 5, Figure 3 & Figure 4)**.**

The company offers its customers several types of containers (Appendix 1), owning the world´s **largest and most modern reefer container fleets**. On top of that, transports a variety of products, being **food** the most served product with a **share of 17%** (Figure 5).

Hapag-Lloyd employs **around 13,200 personnel** and operates **nearly 400 sales offices** in **131 countries**. Also provides **about 121 liner services** that ensure fast and reliable connections between **more than 600 ports**. The company is active in **six regions**: Asia, Middle East, North Europe, South Europe, North America, and Latin America (Appendix 1).

The History

Hapag-Lloyd was **formed in 1970** as a result of the **merge** between **Hamburg Amerikanische Packetfahrt-Actien-Gesellschaft (HAPAG)** founded in **1847** as a faster service for travel between Germany and North America, and **Norddeutscher Lloyd (NDL)** founded in **1856** as a service for cargo shipping and passenger travel from Germany to New York.

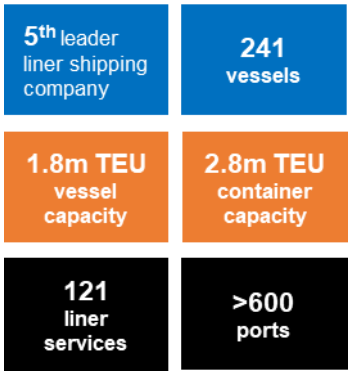
Since its formation, Hapag-Lloyd has been **sold** and has also experienced some **M&A activities**. The company was acquired in 1998 by **Touristik Union International (TUI)** and became its subsidiary. In 2005, TUI acquired **89.5%** of the **Canadian shipping company (CP ships)**, and after the integration, Hapag-Lloyd became the 5th largest container shipping company in the world. In 2008, TUI makes the decision to sale Hapag-Lloyd´s shares.

The possibility of merge with **Hambürg Sud** was explored in 2013, however the negotiations ended without a result. In 2014, Hapag-Lloyd takes over the **Chilean Compañía Sud Americana de Vapores (CSVA)** container shipping business and this merger made Hapag-Lloyd the 4th largest container shipping company in the world, with CSVA becoming Hapag-Lloyd´s major shareholder with a stake of **30%**.

On November 6, 2015, the shares of Hapag-Lloyd started trading on stock exchanges in Frankfurt and Hamburg at an **issue price** of **€20/share**.

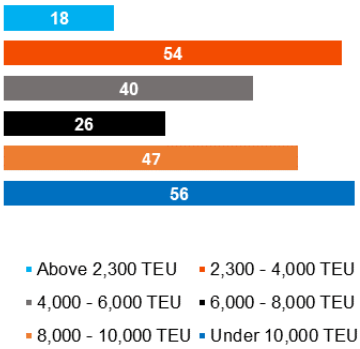
Additionally, the company merged with **United Arab Shipping Company (UASC)** in 2017, and this made the company strengthen its position as the 5th largest liner shipping company in the world. The two majority shareholders of UASC became the key shareholders of Hapag-Lloyd in the time, Qatar Holding LLC with a stake of **14.4%** and Public Investment Fund (PIF) with a stake of **10.1%**. In early 2021, Hapag-Lloyd acquired all shares of the Dutch container shipping company **Nile Dutch Investments B.V. (Nile Dutch)** (Table 2), and the completion of the transaction is subject to the approval of the responsible antitrust authorities.

Figure 3. Hapag-Lloyd 2020FY Main Numbers



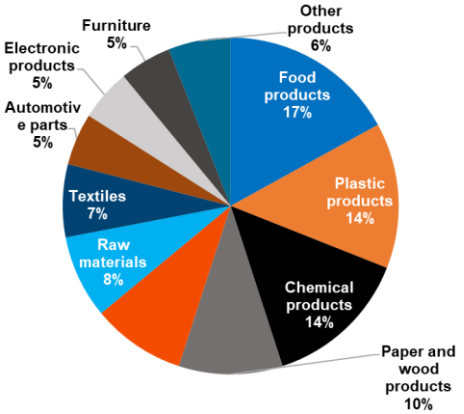
Source: Company Data

Figure 4. Hapag-Lloyd Vessel Fleet



Source: Company Data

Figure 5. Hapag-Lloyd Transport Volume per Product Category



Source: Company Data

Table 2. Hapag-Lloyd M&A Activity

Type of M&A	Year	Company	Value	Payment	Status
Merger	2005	CP Ships	$2.0bn	Cash	Completed
Merger	2014	CSAV	$6.6m	n/d	Completed
Merger	2017	UASC	$4.4bn	Stock	Completed
Acquisition	2021	NileDutch	n/d	n/d	Pending

Source: Bloomberg

Financial Highlights

In **2020FY**, Hapag-Lloyd achieved a **Revenue of €12.772m**, **EBITDA** and **EBIT** values of **€2.571m** and **€1.284m** respectively, and **Profits** of **€0.936m**. The company´s **financial position** was **€15.184m** (Appendix 7 & Appendix 8).

Hapag-Lloyd Business Segment

Hapag-Lloyd´s business is divided into **7 geographical trades** namely Atlantic, Transpacific, Far East, Middle East, Intra Asia, Latin America and EMA. The **Latin America trade** is the company´s largest source of revenue (Figure 6 & Appendix 2). Another segment is the **revenues not assigned per trade** corresponding to **10%**.

Atlantic Trade

It is a **unique market** in the shipping industry and a stronghold for Hapag-Lloyd combining **7 strong THE Alliance loops** with **7 individual service**.

The service connects all coasts in the U.S, Canada and Mexico with North Europe and the Mediterranean Region with very **fast transit times**, direct **port coverage** and **multiple weekly sailing** options. Also provides a reliable and extensive **intermodal connection** to support door-to-door chain (Appendix 2).

This segment is significant for Hapag-Lloyd generating **€2.202m of revenues in 2020FY** which corresponds to **17% of the revenues** and has a **CAGR 2018-2020 of 2.4%** (Figure 7).

Transpacific Trade

Hapag-Lloyd is the **leading carrier in the Transpacific and Indian Subcontinent – North America trades**. The trade offers an extensive feeder network that provides access to new markets, extensive intermodal network.

Additionally, provides a **wide variety of weekly services** in the markets to and via the West Coast of the U.S and Canada, linking Asia and India Subcontinent/Middle east with Vancouver, Prince Rupert, Seattle, Tacoma, Oakland, Los Angeles, and Long Beach at best possible transit times.

The segment generated **€2.380m** of revenues in 2020FY which represents **19% of the revenues** and has a **CAGR 2018-2020 of 6.2%** (Figure 8).

Far East Trade

This service focus on **lean products** to achieve product differentiation by **transit times, connectivity, and reliability** between main markets in Asia and Europe.

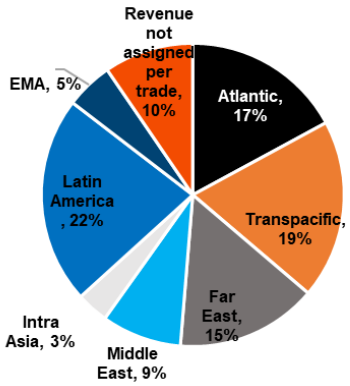
Hapag-Lloyd offers in this trade **modern reefer containers** and **environmentally friendly vessel** fleets that provide less emissions along the supply chain.

This segment contributed to the company´s **2020FY** results with **€1.962m in revenues** corresponding to **15% of the revenues** and a **CAGR 2018-2020 of 10.6%** (Figure 9).

Middle East Trade

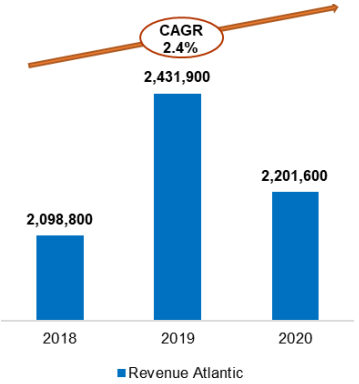
This route connects Indian Subcontinent, Persian Gulf and Red Sea outports via major **transhipment hubs**, offering improved port coverage with over **10 mainline services** calling **16 ports** within the Middle East and Indian Subcontinent (Appendix 2).

Figure 6. Hapag-Lloyd Revenues per Segment 2020FY (in percentage)



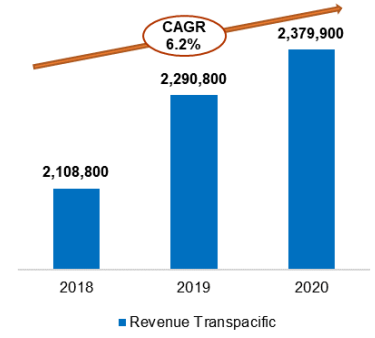
Source: Reuters; Company Data

Figure 7. Hapag-Lloyd Revenue Atlantic Trade (in thousand EUR)



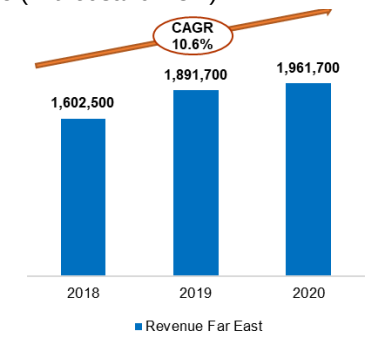
Source: Reuters; Company Data

Figure 8. Hapag-Lloyd Revenue Transpacific Trade (in thousand EUR)



Source: Reuters; Company Data

Figure 9. Hapag-Lloyd Revenue Far East Trade (in thousand EUR)

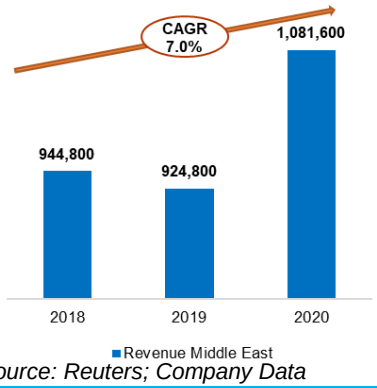


Source: Reuters; Company Data

The trade provides **premium services** (e.g. IEX service the only direct link between South East India and Europe) supported by the strong local organization.

This segment contributed to the company´s **2020FY** results with **€1.082m in revenues** which accounts for **9% of the revenues** and a **CAGR 2018-2020 of 7.0%** (Figure 10).

Figure 10. Hapag-Lloyd Revenue Middle East Trade (in thousand EUR)



Source: Reuters; Company Data

Intra Asia Trade

Hapag-Lloyd has a **leading expertise** in the safe transportations of **temperaturesensitive cargo** in this trade.

The trade offers **regular and reliable weekly services** with competitive transit times connecting the Far East, Indian Subcontinent and Middle East. It also has a comprehensive **inland** and **feeder network**.

This trade provided to the company´s **2020FY** results with **€0.440m in revenues**, corresponding **to only 3% of the revenues per trade** and a **CAGR 2018-2020 of -1.4%** (Figure 11).

Figure 11. Hapag-Lloyd Revenue Intra Asia Trade (in thousand EUR)

Source: Reuters; Company Data

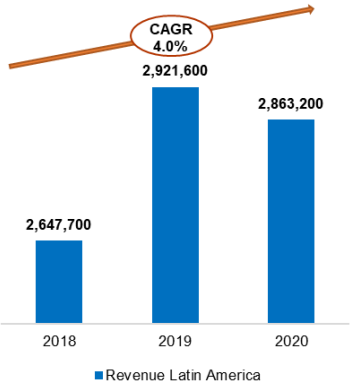
Latin America Trade

This is the trade where Hapag-Lloyd is the **major active player** and have **strong presence** (America, Europe, and Asia) with excellent and **highly competitive transit times** and **high degree of schedule reliability**.

The company offers modern and efficient vessels, **quality reefer** service, transport of **dangerous goods** and an extensive **availability of special equipment** (out-of gauge and break-bulk).

This segment generates the **largest amount of revenues** to the company **€2.863m 2020FY** corresponding to a **share of 22%.** It has a **CAGR 2018-2020 of 4.0%** (Figure 12).

Figure 12. Hapag-Lloyd Revenue Latin America Trade (in thousand EUR)



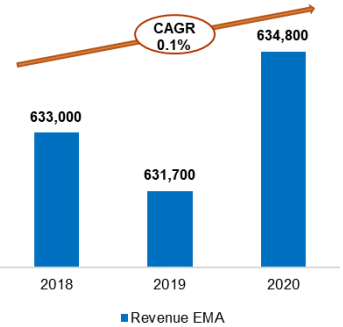
Source: Reuters; Company Data

EMA Trade

The trade offers a **global connectivity** and weekly **direct coverage of major ports** in North Europe, Mediterranean and Africa. It also provides **advanced inland haulage** product within South, West, and East Africa (Appendix 2).

This segment contributed to the company´s **2020FY** results with **€0.635m in revenues** corresponding to a share of **5.0%** and a **CAGR 2018-2020** of **0.1%** (Figure 13).

Figure 13. Hapag-Lloyd Revenue EMA Trade (in thousand EUR)



Source: Reuters; Company Data

Key Drivers of Hapag-Lloyd Profitability

The **three major drivers** of Hapag-Lloyd´s profitability are freight rates, transport volumes and bunker consumption price.

Freight rates are heavily dependent on market **capacity** and market **demand.** In **2020FY**, the highest rate was at **$1,467/TEU** in the Transpacific trade and the lowest was at **$605/TEU** in the Intra Asia trade (Figure 14).

Transport volumes are highly dependent on **the economic developments around the world** and therefore in the various **levels of demand for shipping services.** In **2020FY**, the highest transport volumes were at **2,889 TTEU** in the Latin America

trade and the lowest was at **831 TTEU** in the Intra Asia (Figure 14).

Bunker price is **correlated with** the development of **crude oil prices.** The company´s bunker price decreased 9% to **$379/t in 2020FY**. Additionally, the bunker consumption **decreased** by **3.4% CAGR 2018-2020** to **4,108,666 tons** where the **HSFO (High Sulphur Fuel Oil) consumption** drastically reduced because of the company´s compliance with the **IMO 2020** sulphur regulation (Figure 15).

Hapag-Lloyd Vision

Hapag-Lloyd´s vision is to be the **benchmark of the container shipping industry**, setting the quality standard, thereby offering supreme levels of reliability and service quality to our customers.

Hapag-Lloyd Strategy

The prime strategic objective of Hapag-Lloyd is to achieve **long-term profitable growth** measured based on the developments in transport volume, the key performance indicators EBITDA and EBIT as well as ROIC. Hapag-Lloyd´s **Strategy 2023** comprises three main strategic goals:

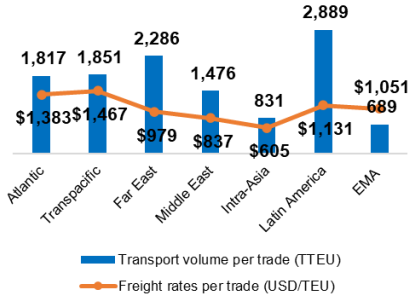
- Become **number one for quality**, for that Hapag-Lloyd has defined **10 Quality Promises** that enables customers to transparently monitor how the company delivers value to them. Since 2020, the company have launched the first four Quality Promises covering: Fast Booking Response, Timely and Accurate Draft/Final Bill of Lading, Accurate Invoicing, and Loaded as Booked. The remaining six quality promises will follow in 2021 (Appendix 1).
- Remain a **global player** with a **global market share (excl. Intra-Asia) of around 10%**. Hapag-Lloyd plans to grow with the market and thereby retain its market share. In addition, Hapag-Lloyd wants to **increase its presence in attractive growth markets,** mainly in **special cargo**. The company also wants to increase its market share in special transports to around 10%. In 2020, the company had more than **10% of market share** and strengthened its presence in the Africa market with the acquisition of Nile Dutch.
- **Profitability throughout the entire economic cycle**. This is reflected in a suitable ROIC, one that at least matches the company's WACC.

Shareholder´s Structure

The shareholder structure of Hapag-Lloyd AG is dominated by **5 major institutional shareholders**, which hold about **96.8% of the company's shares** between them, meanwhile, the remaining percentage comprises the **free float** which includes institutional shareholders holding **less than 5% of shares** on 31 December 2020 (Figure 16 & Figure 17).

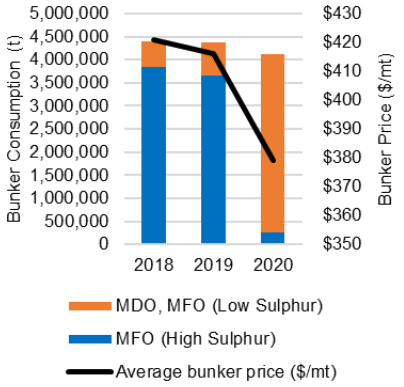
Hapag Lloyd shares are divided into **175,760,293 ordinary shares** without exception. Different share classes are not issued. Shareholders can either exercise their voting right at the Annual General Meeting themselves or have it exercised by a proxy of their choice or by a voting representative of the Company that is required to follow their instructions. Each share grants one vote.

Figure 14. Hapag-Lloyd Freight Rates & Transport Volumes per Trade 2020FY



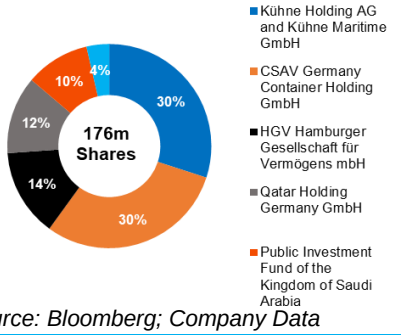
Source: Company Data

Figure 15. Hapag-Lloyd Bunker Fuel



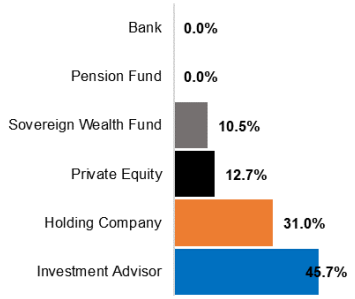
Source: Company Data

Figure 16. Hapag-Lloyd´s Top 5 Major Shareholders 2020FY



Source: Bloomberg; Company Data

Figure 17. Ownership Type



Source: Bloomberg

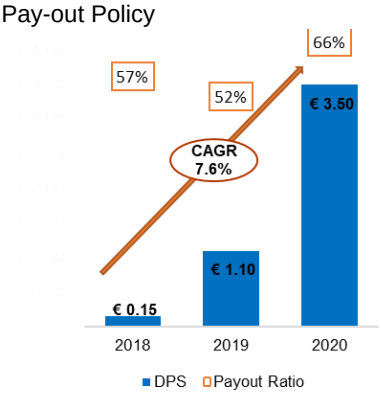
CSAV, Kühne Maritime GmbH and HGV have agreed under a **shareholder´s agreement** to exercise their voting rights from the shares in Hapag-Lloyd AG by issuing a common voting proxy, therefore making important decisions together.

Dividend Policy

A **dividend of EUR 3.50 per share** was proposed by the Executive Board of HapagLloyd AG to be paid for the **2020 FY,** which represents **7.6% CAGR 2018-2020**. The **pay-out ratio** in relation to the company´s profits were **66% in 2020FY** (Figure 18). The Executive Board has decided to distribute a large portion of earnings based on the strong result in 2020 and even better prospects for 2021 as well as the very low leverage ratio.

Hapag-Lloyd aims to **pay** a dividend of **at least 30%** of the respective group net profit. The company makes **annual payments of regular cash.**

Figure 18. Hapag-Lloyd´s DPS and Pay-out Policy



Source: Bloomberg; Company Data

3. Management and Corporate Governance

Hapag-Lloyd board comprises **qualified** and **experienced** members, with **females on board** and no shareholder holding more than half of **voting shares**. However, it **lacks independent members** which is a key attribute of an effective board.

Corporate Governance Model

Hapag-Lloyd AG is a listed corporation in accordance with German law, with commitment to the GCGC (German Corporate Governance Code). It follows the **Two-tier board system** (Appendix 3) which consists of two boards namely the **Supervisory Board** and the **Executive Board**.

Executive Board

The Executive board **manages the business** of Hapag-Lloyd AG taking into consideration the interests of shareholders, employees and all other groups associated with the company stakeholders and pursues the goal of **sustainable value creation**.

The company´s executive board is composed by **4 members in 2020FY** (Figure 19 & Appendix 3). The **CEO** particularly, coordinates the work of the Executive Board members and the provision of information to the Supervisory Board, and keeps in regular contact with the Chairman of the Supervisory Board.

The **remuneration of the executive board members** comprises the **fixed component**, which includes fixed annual remuneration, fringe benefits and the company pension plan, and the **variable component** that is tied to executive members performance and consist of the **short-term** variable remuneration (annual bonus) and the **long-term** variable remuneration (multi-year bonus). The share of the variable remuneration is **59%** for the **CEO, 57%** for the **CFO** and **62%** for the **other Executive Board members,** with the share of **long-term** variable remuneration **exceeding** the share of the **short-term** (Figure 20 & Appendix 3).

Supervisory Board

The Supervisory Board monitors the Executive Board as it manages the company and diligently advises it on a regular basis. Its **main priority** always is to protect the interests of Hapag-Lloyd AG. **Michael Behrendt assumes** the **Chairman of Supervisory Board position** since 2014**.**

The **Supervisory Board members remuneration** is based on fixed component (Appendix 3) but can also grant additional remuneration in special circumstances, such as for extraordinary activities and workloads during the financial year.

At the **2020FY**, the supervisory board consisted of **16 members** (Figure 21 & Appendix 3) in which **8 shareholders representatives** and **8 employees representatives**. It is formed by **4 committees** namely:

Figure 19. Hapag-Lloyd Executive Board

Rolf Habben Jansen
Chief Executive Officer (**CEO**)
Member of the Executive Board since 2014,
Chairman of the Executive Board since 2014

Current appointment:
Until 31 March 2024

Mark Frese
Chief Financial Officer (**CFO**)
Member of the Executive Board since 2019

Current appointment:
Until 30 November 2022

Dr. Maximilian Rothkopf
Chief Operating Officer (**COO**)
Member of the Executive Board since 2019

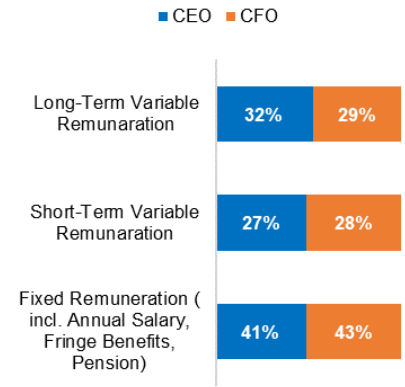
Current appointment:
Until 30 April 2022

Joachim Schlotfeldt
Chief Personnel and Procurement Officer (**CPO**)
Member of the Executive Board since 2018

Current appointment:
Until 31 March 2023

Source: Bloomberg; Company Data

Figure 20. Remuneration Executive Board



Source: Remuneration system for the Executive Board Report (2017)

- **The Presidential and Personnel Committee** coordinates the work of the Supervisory Board and its committees. It generally prepares the meetings and monitors the execution of the resolutions passed by the Supervisory Board. Also appoint and dismiss the Executive Board members and decides on their remuneration system. It is composed by **10 members** being **5 shareholder representatives and 5 employee representatives**.
- **Audit and Financial Committee** handles the financial planning and reviews the investment projects of the Hapag-Lloyd. It is responsible for issues related to the annual financial statements, including the external auditor´s report on the annual and consolidated financial statements. It also monitors the external auditors' independence. It is composed by **8 members** being **4 shareholder representatives** and **4 employee representatives.**
- **Nomination Committee** makes proposals to the Supervisory Board regarding suitable candidates to act as shareholder representatives on the Supervisory Board. It consists of **4 members** being **2 shareholder representatives** and **2 employee representatives**.
- **Mediation Committee** submits proposals to the Supervisory Board for the appointment of Executive Board members if the two-thirds majority of votes by Supervisory Board members is not reached in the first round of voting**.** It consists of **5 members shareholder representatives**.

The Supervisory Board met **4 times** in this year, with **98.6 percentage of meeting attendance** of the members. The Mediation Committee and the Nomination Committee only meet when needed. All other committees meet regularly.

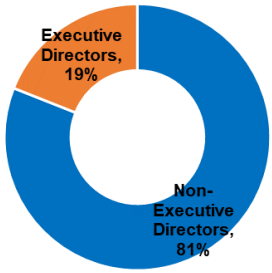
The composition goal of the Supervisory Board is to ensure that the body has a **diverse composition.** In this regard, at least 1 seat on the Supervisory Board on the shareholder side for 1 person who does not have any potential conflicts of interest and is independent. Therefore, the Supervisory Board member **Ms Gehrt** was classified **as independent** in 2020FY.

Also, there were **6 women on Supervisory Board** of the company which corresponds to **38 percentage** in **2020FY** (Figure 22). **No women** had been appointed as Executive member. Furthermore, the **Board age limit is 70 years,** and the Supervisory Board **cannot have more than 2 former** members of the Executive Board.

No conflicts of interest arose among members of the Executive Board or members of Supervisory Board of Hapag-Lloyd AG in 2020 year.

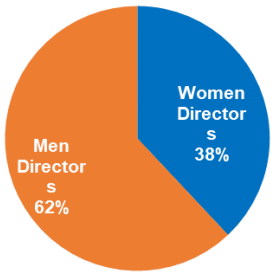
The total **volume of shares** in Hapag-Lloyd AG and related financial instruments **held by all members of the Executive Board and Supervisory Board** was **less than 1%** of issued shares in 2020FY.

Figure 21. Percentage of Executive Directors on Board



Source: Bloomberg

Figure 22. Percentage of Women on Board



Source: Bloomberg

Figure 23. SDG´S Supported by Hapag-Lloyd

Source: Sustainability Report (2020)

Sustainability

At Hapag-Lloyd, sustainability is managed by the **Sustainability committee** which reports directly to the Executive committee. It also has a **compliance team** which ensures that Hapag-Lloyd is committed with fair competition and compliance with national and international laws (Appendix 3).

The company supports the **United Nations Sustainable Development Goals** (SDG´s) (Figure 23).

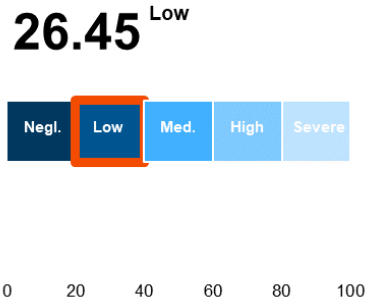
Under **SDG 13** and **SDG 14**, Hapag-Lloyd works to decrease the impact of its operations on the **environment, climate, and marine ecosystem** to as low as possible by reducing **CO_2** and **Sulphur dioxide** emissions, while increasing the energy efficiency of fleet using more environmentally friendly fuels and developing propulsion technologies. Also, it is increasing its focus on **green financing** for instance via green loans.

Safety and well-being of employees is Hapag-Lloyd´s top priority. Therefore, it contributes towards **SDG 4** and **SDG 8** ensuring **attractive working** conditions, such as fair remuneration and measures to reconcile career and family life, and **humane working conditions** for shore-based personnel. On top of that, offers its workers a range of **training**, **education**, and to **engage on social projects** that are linked to shipping.

During the pandemic, 90% of the personnel on shore was working from home, while many seafarers had to stay on board much longer as crew changes have been severely restricted owning to the travel restrictions imposed in many countries.

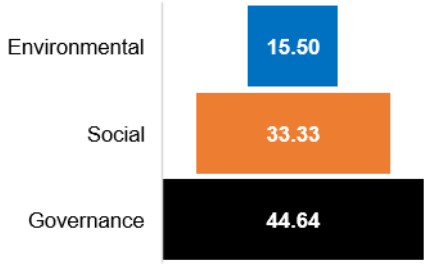
The company also established **sustainability** as an evaluation criterion and an area for joint improvements with its suppliers.

Figure 24. Hapag-Lloyd ESG Disclosure Score



Source: Bloomberg

Figure 25. Hapag-Lloyd ESG Metrics



Source: Bloomberg

ESG Metrics

To measure Hapag-Lloyd commitment with ESG, we used the **Bloomberg ESG Disclosure Score**, which focus on the company's exposure to financial relevant ESG risks. Therefore, the company has a score of **26.45** that corresponds to **low risk and** comparing to the **average industry score of 40.00** the company has lower financial risk and is managing better the ESG risk relative to industry peers (Figure 24). Hapag-Lloyd outperforms in the environmental metric with **15.50** followed by the social with **33.33** and governance with **44.64** (Figure 25).

4. Industry Overview and Competitive Positioning

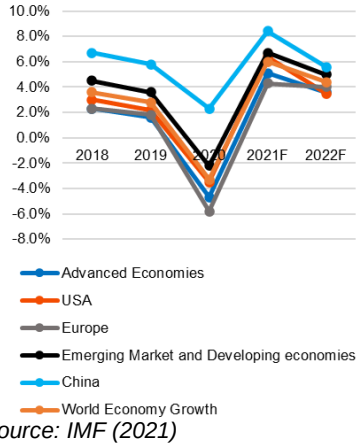
Economic Outlook

Global GDP

The world economy did well in 2020, despite the high uncertainty about the path of the pandemic. As individuals are being vaccinated and are adapting to pandemic, this will likely power recovery in many countries. Additional fiscal support provided in large countries helped improve the outlook. However, the surge of highly infectious virus variants could ruin the recovery.

Overall, it is expected a stronger recovery for the global economy with **growth** projected to be **6.0% in 2021** and **4.4% in 2022** after a contraction of 3.3% in 2020 (Figure 26).

Figure 26. World GDP Growth



Source: IMF (2021)

The future presents many challenges. The COVID-19 cases are exhilarating in many countries with renewed waves. Recoveries are also diverging severely across and within countries as economies with slow vaccine rollout, more limited policy support and more reliance in tourism are doing less well.

The **U.S** is the only large economy expected to surpass the level of GDP verified during the outbreak of COVID-19 in 2021 with a **grow projected at 6.4%.** Other advanced economies including **Europe** (with expected growth of **4.30%**) will also rebound in 2021 but with a slower pace.

Among emerging markets and developing economies, **China´s** economy had already returned to pre-pandemic levels of GDP in 2020 and is projected to **grow 8.4% in 2021**, meanwhile many other countries are not expected to do so until 2023 (Figure 26 & Appendix 4). Thus, China and U.S are the main countries that are likely to drive the global recovery in the next years.

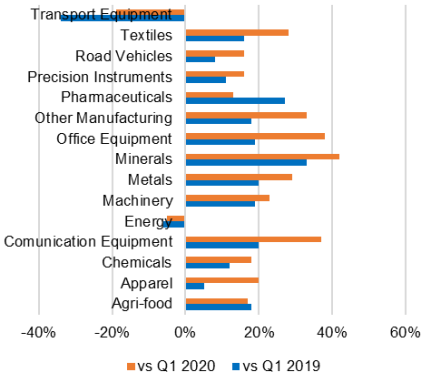
Furthermore, comparing with the Great Financial crises, losses are less severe now due to the fiscal support provided by advanced economies. However, the emergent market & developing economies are suffering more compared to the fallout from crises a decade earlier when advanced economies were harder hit, owning to pandemic developments and policy support (Appendix 4).

Table 3. Imports & Exports Q12021 Relative to Q1 2020 and Q1 2019

	vs 2020		vs 2019	
	Import	Export	Import	Export
Developed countries	12%	7%	5%	3%
Developing countries	18%	22%	16%	16%
Developing countries (excluding East Asia)	9%	1%	6%	-2%

Source: UNCTAD (2021)

Figure 27. Global Trade by Sector Q1 2021 Relative to Q1 2020 and Q1 2019



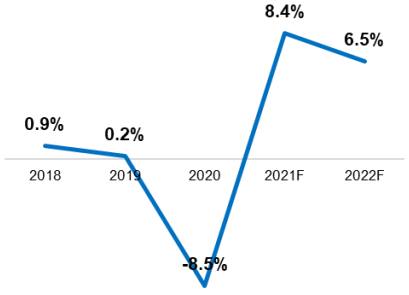
Source: UNCTAD (2021)

Global Trade

Despite the pandemic, the world trade also performed quite well in 2020 and much of this was sustained by the resilience of East Asian economies, which early succeed in mitigation and allowed several countries to avoid prolonged pandemic lockdowns that would have otherwise disrupted supply-side activities like manufacture.

That then allowed the East Asian economies to **capitalize on booming global demand to consumers** electronics, goods and other items related to remote working and remote learning.

Figure 28. Global Trade Growth



Source: IMF (2021)

In **Q1 2021**, imports grew for all the regions, while **exports from East Asian and Pacific economies drive the rebound**. The value of exports remained below averages for developing economies (excluding East Asia), the Middle East, South Asia, and Africa (Table 3 & Appendix 4). Also, the **sectors related with the COVID-**

19 (pharmaceuticals, communication, and office equipment) are among the sectors that had a large increase comparing with previous periods (Figure 27).

Trade is expected to continue grow and it is projected a **growth of 8.4% in 2021** (Figure 28). Demand for lockdown goods should be sustained as COVID-19 remains a persistent risk for many economies, despite the global vaccine rollout. By region it is expected East Asia to have the fastest trade recovery with exports and imports approaching pre-pandemic levels. That recovery is going to be lengthened by other regions including Europe and North America and among many developing countries where return to normality will depend on vaccine rollouts.

Governments are expected to use policies as part of post-pandemic recovery plans. There is a risk this polices might be trade restrictive, considering the **diplomatic frictions** between major economies, it could drive risk around supply chain resilience and commercial activity. The U.S – China relationship remains under severe strain but what has been most significant is the deterioration in China´s ties with the G7 countries which criticized China for human rights abuses in Xinjiang and forced labour in global supply chains.

In addition, efforts towards a **more socially and environmentally** sustainable recovery process could affect the established patterns of global trade. For example, policies aimed to tackle carbon leakages through price adjustments for imports are deemed to influence international trade flows.

Container Liner Shipping Industry Outlook

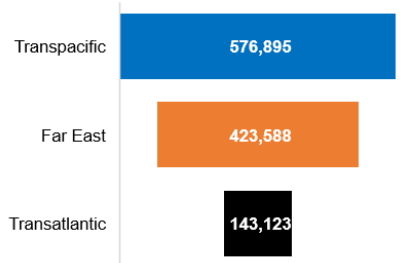
Industry Structure

Container liner shipping is the service in which containers with **twenty-foot** or **forty-foot equivalent units (TEU** or **FEU)** size, are transported by vessels on a regular route on fixed schedules. At the present, around **400 liner services** are in operation offering weekly departures from all the ports that each service calls. There are **6217 vessels actively deployed** on liner trades, representing **24,637,918 TEU of capacity**. The **major trade lanes** are Transpacific, Transatlantic and Far East, being **Transpacific** the trade with the **largest weekly capacity** in early 2021 (Figure 29).

There are many players throughout the shipping value chain. The **inbound and outbound transportation** is composed by the freight forwarders and shippers who want to move their containers from the origin to the destination. Then we have the **vessel operators** which own the ships or lease and operate the ship transport from a point to another by sea. Additionally, there are **terminal and port operators** whose main activities are the load and unload of containers from vessels, storage of containers at terminals and loading containers for inland transport. The final player are the **inland services** which are responsible for movement of container to the customer's warehouse (Appendix 5).

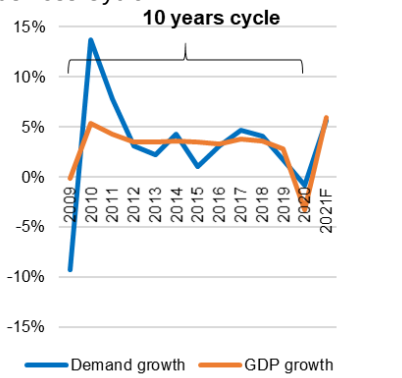
From **capacity** perspective, on major trade lanes the market structure is an **oligopoly**, and this will also become the case in many regional trades in the upcoming years. This

Figure 29. Major Trade Lanes Weekly Capacity in TEU



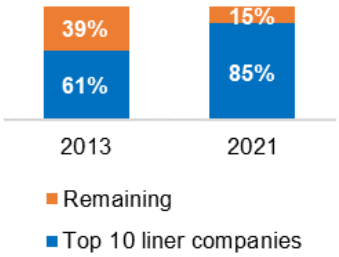
Source: Alphaliner (2021)

Figure 30. Container Liner Shipping Business Cycle



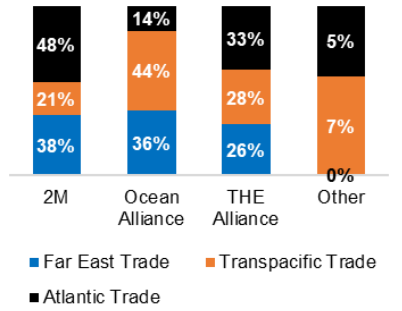
Source: Alphaliner (2021); IMF (2021)

Figure 31. Market Share of Liner Shipping Companies



Source: Alphaliner (2021)

Figure 32. Capacity of Alliances per Trade (in percentage)



Source: Alphaliner (2021)

is a market dominated by **small number of large carriers** where each carrier is better able to manage its operational and commercial resources.

Container liner shipping is a **highly cyclical industry** and is currently experiencing the **boom stage** of its business cycle, with a **cycle of around 10 years** (Figure 30).

That can be noticed by **manufacturing PMI (Purchasing Managers Index)** which in June 2021 registered at 56.6 indicating an increase in the overall economy for the 14th month in a row after a contraction in April 2020 (Appendix 4).

The industry is also a **highly capital-intensive industry** as it requires large amounts of investments in vessels and containers to operate.

Consolidation & Alliances

The container shipping industry has seen **strong consolidation** in the form of M&A and alliances throughout its history mainly in the period **between 2014 and 2018**, however, this trend then slowed down considerably due to the COVID-19 pandemic. By consolidating and joining alliances, container liners can expect to **reduce costs, better manage ship capacity, and enhance efficiency**.

The consolidation **reduced the number of players** in the liner shipping sector. It went from around 20 major container lines in the 2010s **to 10** that account for about **85% of total container capacity** of the global fleet of container ships, according to Alphaliner. This figure was just **61% in 2013** (Figure 31).

Measured in terms of transport capacity, the **largest alliance** is the **2M Alliance**, consisting of the two market leaders – Maersk (Denmark) and MSC (Switzerland), and ZIM, accounting for **35% of market share** and leading the Far East and Atlantic trade routes. It is followed by the **Ocean Alliance**, consisting of CMA CGM (France), COSCO (China) and Evergreen (Taiwan), accounting for **30% of market share** and leading the Transpacific Trade. And the last is **THE Alliance**, consisting of **Hapag-Lloyd** (Germany), ONE (Singapore), Yang Ming (Taiwan), and the newest member HMM (South Korea) accounting for **20% of market share** (Appendix 5 & Figure 32).

Mega-Ships

The size of the container ships has been getting bigger since they began operating in liner services over 50 years ago (Appendix 5), and the term Mega-ship was created in 2013, with the Triple E series of ships of Maersk capable of moving 18,340 TEU.

The **world largest container ships** operating at the present **exceed 20,000 TEU of capacity** and the **largest container** vessel belongs to **HMM (Hyundai Merchant Marine)** with a capacity of **24,000 TEU** (Table 4).

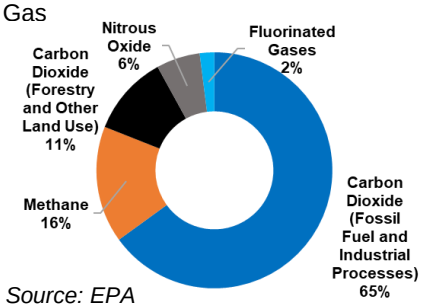
Megaships led to cost savings for liner shipping companies, reduced the cost of sea transportation, facilitated international trade, and improved environmental performance. However, the continuing increase in the size of vessels pose a risk to the supply chain. Megaships cause more congestion and significantly increase competition amongst ports and terminals. Consequently, ports need to adjust their infrastructure to accommodate megaships.

Table 4. Top 10 Largest Shipbuilding Companies in TEU

Rank	Container Ship	Capacity	Construction Company
1	HMM Algeciras	24,000 TEU	Daewoo Shipbuilding and Marine Engineering
2	HMM Oslo	23,792 TEU	Samsung Heavy Industries
3	MSC Gulsun	23,756 TEU	Samsung Heavy Industries
4	MSC Mina	23,656 TEU	Daewoo Shipbuilding and Marine Engineering
5	CMA CGM Jacques Saadé	23,000 TEU	China State Shipbuilding Corporation
6	OOCL Hong Kong	21,000 TEU	Samsung Heavy Industries
7	COSCO Shipping Universe	21,237 TEU	China State Shipbuilding Corporation
8	CMA CGM Antoine De Saint Exupery	20,954 TEU	Hanjin Heavy Industries and Construction
9	Madrid Maersk	20,568 TEU	Daewoo Shipbuilding and Marine Engineering
10	Ever Golden	20,000 TEU	Imabari Shipbuilding

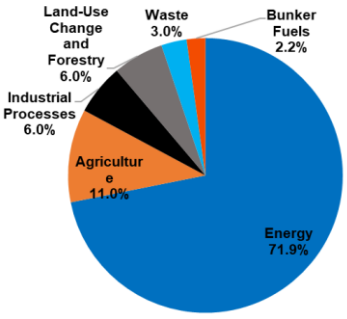
Source: Marine Insight (2021)

Figure 33. Global GHG Emission by Gas



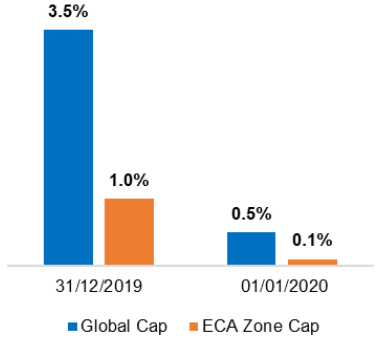
Source: EPA

Figure 34. Global GHG Emission by Sector



Source: C2ES

Figure 35. IMO 202O Regulation on Sulphur Content



Source: IMO (2020)

Regulations

At present, the reduction of GHG emission from marine shipping (Figure 33 and Appendix 5) and the ongoing energy transition away from fossil fuels, under IMO´s pollution prevention agreement (MARPOL) – the Energy Efficiency Design Index (EEDI) mandatory for new ships and the Ship Energy Efficiency Management Plan (SEEMP), continue to be a priority for liner shipping companies.

Over 2% of all CO_2 emissions worldwide are attributed to the shipping industry (Figure 34). Therefore, IMO has set a target to reduce global emissions from shipping by at least 50% from 2008 levels by 2050.

Additionally, to safeguard the marine environment, conservation, and sustainable use of marine biodiversity, it is applied the following regulatory actions: implementation of the IMO 2020 sulphur limit, ballast-water management, measures to address biofouling, the reduction of pollution from plastics and microplastics, safety considerations of new fuel blends and alternative marine fuels, and the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction.

The IMO 2020, limits the sulphur in the fuel oil (Figure 35) used on board ships operating outside designated emission control areas to 0.50%, a significant reduction from the previous limit of 3.5%. Within specific designated emission control areas, the limits were already stricter (0.10%). Liner companies could alternatively retrofit ships with exhaust gas cleaning systems (known as scrubbers).

Technology and Digitalization

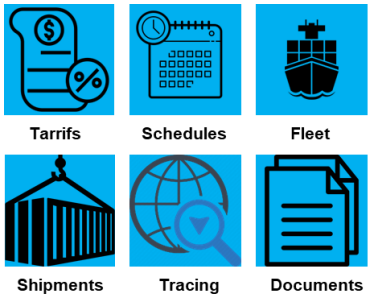
Container liner shipping is an age-old industry which a decade ago was hesitating to harness new technology. Even before the coronavirus disease, this industry had started to adapt new technologies, but the coronavirus disease clearly accelerated the pace of digital transformation and liner companies started to do more business electronically.

The use of online platforms boosted mainly driven by the social distance during the pandemic as liner companies continued to offer products such as real time location, made bookings and request pricing quotes, to their customers, and thus creating added value through digital channel and reducing the risk of contagion among employees (Figure 36). Therefore, digital tools help optimise the logistic chain through ease operation and minimise time consuming manual tasks.

At the present, the industry is exploring and implementing new technologies in all spheres. Technologies such as robotics, AI, machine learning, blockchain, drones and augmented reality are being exploited to create a safer, efficient, and more productive environment to conduct trade (Appendix 5). Ports, ships, systems, and processes are as well getting a technology facelift.

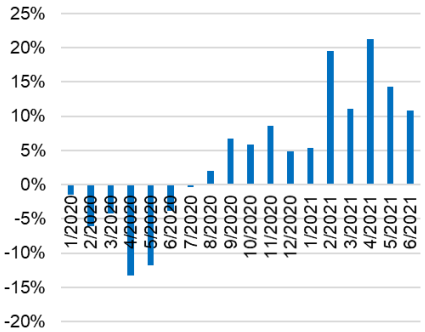
Despite the many benefits offered by these new technologies, they also entail risks to the industry. It was estimated that attempted cyberattacks on maritime vessels increased by 400% in the first few months of the pandemic. New IMO resolutions encourage administrations to ensure that cybersecurity risks are appropriately addressed in safety-management systems. In the age of big data, data protection and security are crucial.

Figure 36. Online Tools



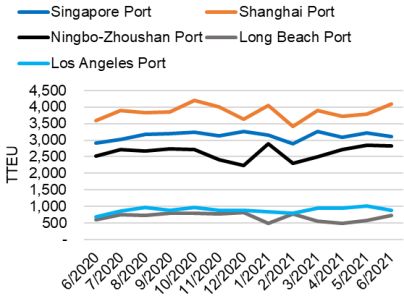
Source: Author Estimates

Figure 37. Monthly Container Transport Volumes Growth Comparing to Prior Year Period



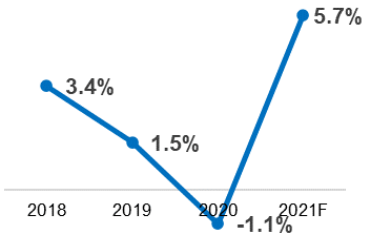
Source: CTS (2021)

Figure 38. Monthly Port Container Throughput



Source: CTS (2021)

Figure 39. Annual Container Transport Volume Growth



Source: CTS (2021); Alphaliner (2021)

Key Drivers of Profitability

Global Container Transport Volumes

Global Container Transport Volumes has a direct impact on the company´s profits as it depends on the market economic environment. The **maritime transport of goods** is by far the **most preferred** mode across the world, accounting for **80-90%** of the **total volume transported**. Currently, around **70% of global shipping uses containers** which increase the efficiency of the loading process.

Following sharp falls during the early part of the pandemic, global transport volumes have since H2 2020 rebounded. In **June 2021**, global transport volumes **rose 11% YoY** due to improvement in trade activities as economies continue to recover from the impact of the COVID-19 pandemic and lockdown restrictions, and inventory restocking (Figure 37).

Of the 3 largest trades, the **Atlantic lane** was the best performing with **36% YoY** rise in June, and volumes were stable as the notable rise in exports from Europe to North America was offset by lower transport volumes in the opposite direction. Meanwhile, **Transpacific lane** (Asia-North America) has been the second best performing with **28% YoY** rise in June following the **Asia – Europe lane** with **10% YoY** rise, while volumes in the opposite direction were significantly down (Appendix 6).

Relatively to **port container throughout**, the **Singapore Port** registered at **3,114.5 TTEU** in H1 2021, corresponding to **7.1% YoY** increase. Among the **China Ports**, growth was mostly concentrated at **Shanghai Port and Ningbo-Zhoushan Port** with **13.6%** (to **4,090 TTEU**) **and 11.9%** (to **2,830 TTEU**) gains respectively comparing with previous period. The top **North American Ports** (Port of Long Beach, Port of Los Angeles) reported **20.3% and 26.7%YoY** growth to **724.3 TTEU** and **876.4 TTEU** respectively (Figure 38).

As the global economy continues to rebound, global container transport volumes are expected to **grow 5.7% in 2021,** according with Alphaliner forecast (Figure 39).

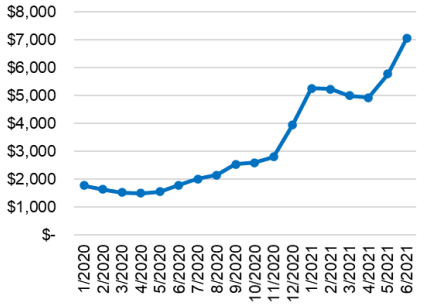
Freight Rates

Freight rates are the **most important drive** of the shipping industries as it depends on the match between demand and supply for container shipping services, impacting not only the company profits but also the global trade, as almost all manufactured goods are shipped in containers. In the past, Hapag-Lloyd average freight rates for **twenty-foot containers**, used to be above the industry, however the situation has changed for the Transpacific and the Far East lanes in 2020 (Appendix 6).

Since H2 2020, global container freight rates have been on a steady recovery path from the lows reached amid the pandemic.

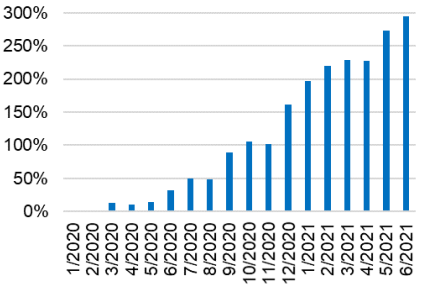
In **June 2021**, the **spot freight rate for forty-foot containers** was at **$7,052.43/FEU**, **up 294% YoY** based on World Container Index data, marking another monthly record increase (Figure 40 and Figure 41). Rates have been driven by supplydemand imbalances, exacerbated by supply-chain choke points. One of these areas has been ports, as they struggle to keep up with demand and overcome labour shortages that arose from the pandemic and shortage of containers, which are causing congestion.

Figure 40. Monthly Spot Freight Rates (USD/FEU)



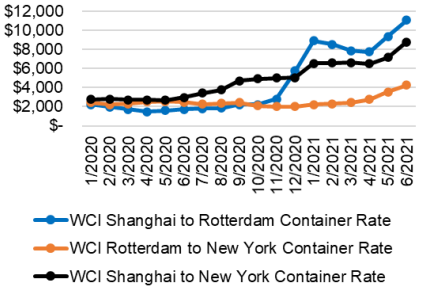
Source: Drewry WCI (2021)

Figure 41. Monthly Spot Freight Rates Changes Comparing with Prior Year Period



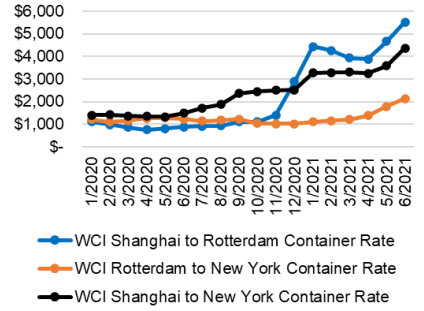
Source: Drewry WCI (2021)

Figure 42. Monthly Spot Freight Rates on Major Trades (USD/FEU)



Source: Drewry WCI (2021)

Figure 43. Monthly Spot Freight Rates on Major Trades (USD/TEU)



Source: Drewry WCI (2021)

The **Suez incident** towards the end of the quarter **worsened an already tensed situation.**

The existence of cargo imbalances affects shippers in their ability to access equipment. To secure space, shippers are paying surcharges in form of fees (up to $3,000-$5,000).

In Transpacific Trade, the **Shanghai-New York route** spot rates in June 2021 were at **$8,751.75/FEU**. This rate is almost **3.0 x higher** than in June 2020, up **196%YoY**. On the longer route from **Asia to the East Coast route** via the Panama Canal the spot rate were at **$7,891/FEU**, up **203% YoY**.

The Atlantic Trade seemed to escape huge rate inflation, however, that ended in April, after the incident in the Suez Canal. It is no longer the sleepy trade it once was. Rates have kept climbing. The **Rotterdam-New York route** spot rates were at **$4,264.75/FEU**, up **74%YoY** in June 2021 comparing to the same previous period.

The **Shanghai-Rotterdam route** rate was at **$11,038.75/FEU**, up **537%YoY or** about **6.5 x higher** in June 2021 than in the same period last year. Rates there have climbed significantly from already very high levels since the Ever-Given accident, which heavily impacted these cargo flows. Of all the mainline trades, **rates in Asia - North Europe** have **risen the most** (Figure 42)**.** In terms of TEU see (Figure 43).

According to Drewry WCI, container freight rates are expected to further **increase 23%** in **2021** as any hope for return to normal condition was quashed by the incident on Suez Canal and will **fall to 9%** over the next two years.

Bunker Consumption Price

Bunker price is the major component of the operating cost in the shipping industry. The HSFO was the predominant fuel for the world fleet prior to 2020. However, with the advent of IMO 0.5% sulphur limit, most of the vessels switched over to VLSFO. In **H1 2021**, the price of delivered **Bunker Fuel 380 cST** in Rotterdam and the **0.5%MFO** have increased about **158% to $371.24/mt** and **154% to $512.23/mt** respectively from the trough in April 2020. The 0.5% MFO seems to be dominating the HSFO, remaining above **$400/mt** since January 2021. Bunker price follows the same pace as the crude oil prices which is subject to substantial fluctuations (Figure 44).

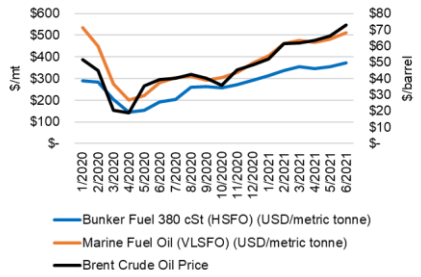
The Brent crude oil **averaged $73/b** in June 2021, being the first month since 2020 in which the brent crude oil averaged more than $70/b. The STEO forecast the average price of Brent crude oil at $72/b in 2021 and $67/b in 2022. The bunker fuel prices are expected to increase in 2021, owning to increase in demand for cargo shipping.

The shipping industry is also focused on new alternatives such as **LNG (Liquefied Natural Gas)**, which are less harmful to the marine environment. The use of natural gas in conjunction with bunker fuel, constitutes the basis for marine dual fuel engine. Unlike conventional fuels such as HSFO, LNG produces **15%-29% less CO_2**.

Demand Container Liner Shipping Industry

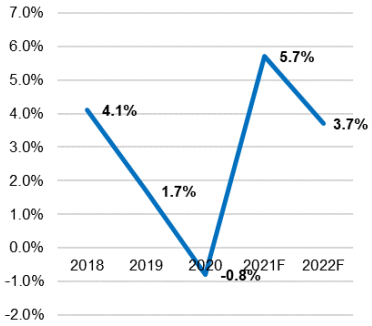
The demand for container shipping has grown during the pandemic, contrary to expectations, bouncing back quickly from the trough verified in the H1 2020, when many countries implemented the lockdowns, and ceased the production of goods

Figure 44. Bunker Fuel vs Crude Oil Prices



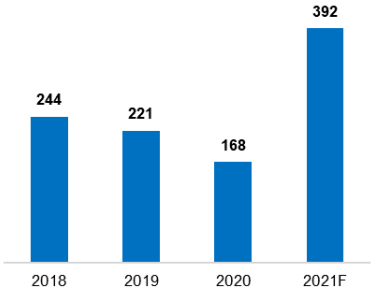
Source: ShipandBunker (2021); Bloomberg

Figure 45. Demand for Container Ship Transport



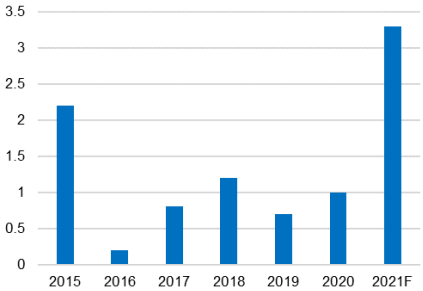
Source: Company Data

Figure 46. Number of Vessels Orders



Source: Clarksons, Research (April, 2021)

Figure 47. Hapag-Lloyd Newly Places Orders (m TEU)



Source: Clarksons, Research (April, 2021)

consequently stopping the flow of goods and causing empty containers to not being collected. The sector has managed the **surge in demand** from H1 2020 lows by **bringing capacity back**.

Changes in consumption and in shopping patterns triggered by the pandemic, including the surge in e-commerce, have led to increased demand for manufactured consumer goods, which large part is moved in shipping containers. Also, the growth in global container volumes suggests a strong demand for container transport which is mostly driven by the exports from China.

Demand growth is expected to **improve 5.7% in 2021**, supported by continued online purchasing and rebound of the manufacturing levels (Figure 45).

Supply Container Liner Shipping Industry

On the supply side, the container ship **orderbook** is at five years high as freight rates surged and lockdown measures disrupted operations. This rise in orders could shift the ranking of global carriers by fleet capacity.

There were **well over 300 vessel orders** in the H1 2021 (Figure 46), which brought **order-to-book fleet to 17.4%**, the highest percentage since 2016 (Appendix 5). In capacity, that translates to another **4m TEU** being delivered over the next two or three years to the currently **24m TEU** in service. However, if this ratio gets over 20% that could signal oversupply.

Hapag-Lloyd has placed **new orders for 3.3m TEU** till Q3 2021, the largest amount since the 2.2m TEU orders placed in all 2015 (Figure 47).

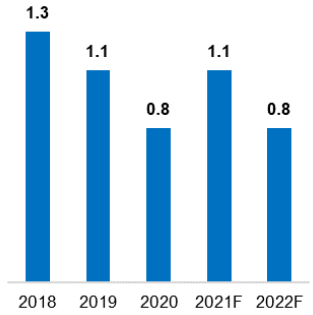
Vessel deliveries are expected in 2021 at **1.1m TEU** and will likely come back to 2020 levels in 2022F (Figure 48).

Ships running LNG represents about **22% of current orderbook capacity**, according to Alphaliner. In 2021, **about 25** LNG vessels have been delivered, **24 of those** expected by the **end of Q3 2021,** according to Clarksons. **Roughly 31** LNG vessels deliveries are expected in 2022, according to Clarksons, meaning excessive fleet expansion will likely outpace demand. **Orders have slowed**, with just **7 contracts** so far this year **after 165** in the period between **2018 and 2020** (Figure 49). LNG offers several environmental advantages over conventional oil-based fuels, in particular reducing CO_2 emissions by around 15% to 25%.

It takes approximately **4 years** to build a **container vessel**, whereas **LNG carriers** only takes **2 years and half**. In terms of **shipyards**, CSSC, Samsung Heavy Industry, Mitsubishi Heavy Industry are among the largest shipbuilding companies and companies such as Tsakos, NYK, COSCO have LNG ships under construction.

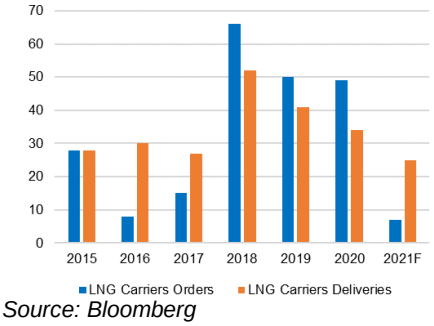
The percentage of vessels for scrapping has taken a significant dive compared to 2020, with the expected current **scrapping rate at 0.2% corresponding to 0.1m TEU** (prior year: approximately 0.8% or 0.2m TEU) (Figure 50). The **average age** of vessels is **26 years** (previous year: 24 years, Clarksons, July 2021). The current busy container market has resulted in fewer scrapped ships. Scrapping is likely to rise significantly in 2022.

Figure 48. Hapag-Lloyd Scheduling Delivery Vessels (m TEU)



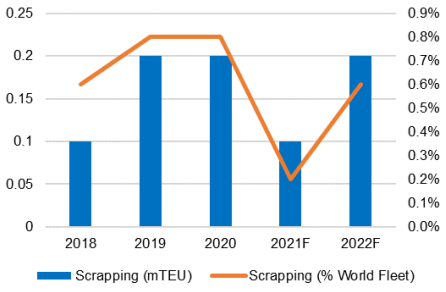
Source: Clarksons, Research (April, 2021)

Figure 49. LNG Carrier Orders, Deliveries (Number of Vessels)



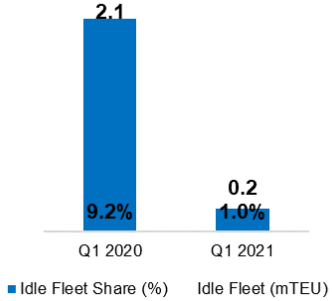
Source: Bloomberg

Figure 50. Scrapping Activity



Source: Clarksons, Research (April, 2021)

Figure 51. Idle Fleet



Source: Alphaliner (2021)

To meet market demands, carriers have been desperate to get hold of extra ships. However, the high demand has left idle fleet at very low levels. The **idle fleet** peaked in May 2020 at 11.6%, according to Alphaliner, and has **moderated to below 1%** (Figure 51).

Moreover, charter rates hit multi-year lows in 2020. At that time, many carriers opted to return chartered vessels early in the hopes of recouping some of the leasing costs, ballooning the global idle fleet.

Time charter rates for a ship with forty-foot equivalent units registered at **$1561.22/day** in June 2021, representing a rise of **14%** compared to previous month and is up **401% YoY** relatively to June 2020 (Figure 52).

For 2021, Drewry expects **supply to growth 3.7%** (Figure 53), which is slightly less than the growth in **demand** as the majority of the recently ordered ships are unlikely to be put into service before 2023.

Competitive Positioning

Sources of Competitive Advantage

The container liner shipping sector has **two sources of competitive advantages** that are **operational efficiency** and **service effectiveness**. Hapag-Lloyd has competitive cost structure owning to the active cost management under the Performance Safeguarding Program (PSP) that lead to reduction in the cost per TEU and efficient utilization of fleet. On the other hand, the company´s focus on differentiating is further increasing, as it continuously works to deliver value to its customers by offering the best products and even more extensive services. Hapag-Lloyd has solid competitive position in the refrigerated shipping market segment.

Peers Identification

There are several classification systems to identify peer companies, but we used the **Bloomberg Industry Classification System (BICS)** which places a company in an industry based on its principal business activity. Therefore, the companies within the container shipping industry are classified **based on its Revenues**.

In addition, it was considered the **ownership** and **size** to select the most similar peer group. It is composed by **5 companies**: **A.P. Moller – Maersk A/S, Orient Overseas Container Line, Evergreen Marine, Yang Ming Marine, Hyundai Merchant Marine** (Table 5 and Appendix 24).

Overall, the companies have as **strategies** deliver value to its customers, improve performance, profitable growth and reduce environmental impact.

Porter´s 5 Forces

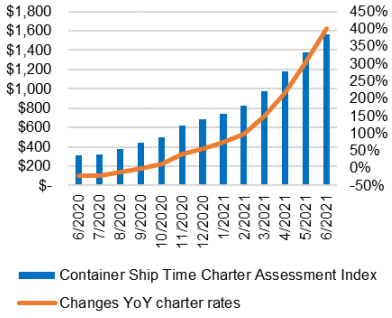
Considering the Porter´s Model, the major forces that can threat the industry are the power of buyers and rivalry among existing competitors (Figure 54).

Threat of Entry | Very Low (1)

The factors that contribute to very low threat of new entrants are the following:

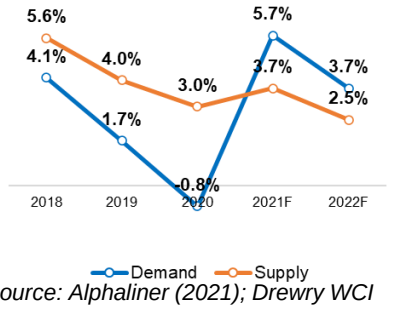
- **Srong economies of scale**, as liner shipping companies increased

Figure 52. Charter Rates (USD/FEU)



Source: Bloomberg

Figure 53. Demand and Supply in Container Liner Shipping Industry



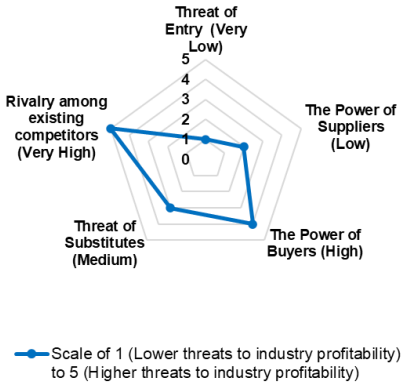
Source: Alphaliner (2021); Drewry WCI (2021)

Table 5. BICS of Container Shipping

Rank	Company	Revenues (€m)	% Revenue	Market Cap (€m)	Relevant Peer
1	AP MOLLER-B	25,553	73.4 %	44,174	YES
2	COSCO SHIP HOL-H	21,077	96.9 %	29,543	NO
3	CMA CGM	18,040	100.0 %	N.A	NO
4	HAPAG-LLOYD HOLD	9,973	100.0 %	23,587	YES
5	ORIENT OVERSEAS	7,150	100.0 %	7,215	YES
6	EVERGREEN MARINE	6,157	100.0 %	11,824	YES
7	YANG MING MARINE	4,248	94.5 %	7,778	YES
8	HMM CO LTD	4,204	88.3 %	11,605	YES
9	KAWASAKI KISEN	3,181	52.3 %	1,971	NO
10	CHINA SHIPPING G	2,573	55.9 %	N.A	NO

Source: Bloomberg; Author Estimates

Figure 54. Porter´s Five Forces Framework



Source: Michael E. Porter Framework; Author Analysis

capacity of their vessels to reduce the cost of transport per TEU. This led to megasized ships and the only way to operate them efficiently is by forming alliances.

- **Network effects**, as the connections between ports/hubs helped shipping companies to expand to new markets.
- **Large capital investments** in vessels, port facilities, intermodal equipment, procurement, and acquisitions are necessary.
- **Restrictive government policy**, as this industry is heavily regulated and requires compliance and certificates to engage the business operations.
- **Unequal access to distribution** channel, as companies vertically integrate to offer end-to-end services such as inland transportation.
- **High expected retaliation**, as existing competitors are likely to take actions (e.g. increase consolidation) to respond new entrants.

The Power of Suppliers | Low (2)

The suppliers in the container liner shipping industry are the **shipping agent, ports** (Table 6)**, inland transport operators, bunkers, logistic services providers** (terminal handling, repairs & maintenance, shipments).

Although there are **many suppliers** in the industry, they barely make any difference to companies involved in shipping line business, especially to the leading liner shipping companies. Thus, the power of suppliers is very low due to:

- **Large number of suppliers** relatively to the number of shipping liner companies.
- Suppliers depends heavily on the shipping liners revenues.
- The **switching costs** of liner shipping companies are **low**.
- High availability of substitutes for what the supplier provides.

Threat of Substitutes | Medium (3)

There are many substitutes to the water container transportation (Figure 55), and they are: **air cargo, rail transportation, trucks, and most recently flying cargos drones** (Figure 56). The threat of substitutes is medium due to:

- **The availability of substitutes is high** in this industry and may result due to changes in quality of service, increase in freight rates and increase in transit time. For instance, in U.S the use of air and rail cargo are expected to increase in 2021 as consumers are demanding their goods faster (Figure 57).

But the following factor offsets the threat of substitutes:

- **Buyers cost of switching is high** because container ships have the lowest cost per unit and is eco-friendliness comparing to the other modes of container transport.

The Power of Buyers | High (4)

Customers of liner shipping companies are from different parts of the world. They are in the form of **importer/exporter, freight forwarders** (Table 7) **and manufacturer of goods**.

Buyers is **one of the strongest factors** in shipping line business because:

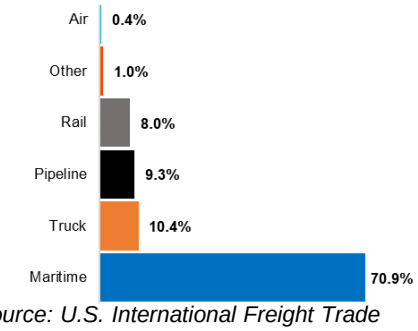
- Customers face **low switching costs** especially on the main lanes where almost all shipping lines operate.

Table 6. Major Container Ports 2021

Ranking	Ports	Country	Traffic (mTEU)
1	Shangai Port	China	43.3
2	Singapore Port	Singapore	36.6
3	Shenzhen Port	China	27.7
4	Ningbo-Zhoushan Port	China	26.4
5	Guangzhou Port	China	21.9
6	Busan Port	South Korea	21.7
7	Hong Kong Port	Hong Kong	19.6
8	Quingdao Port	China	18.3
9	Tianjin Port	China	16.0
10	Jebel Ali Port	UAE	15.0

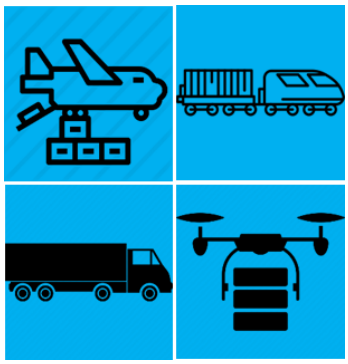
Source: Marine Insight (2021)

Figure 55. U.S. International Trade in Goods by Transport Mode



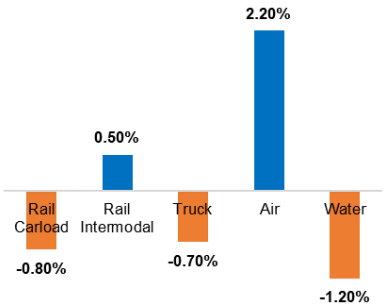
Source: U.S. International Freight Trade by Transport Mode, Bureau of Transportation Statistics

Figure 56. Alternative Modes of Transport Cargo



Source: Author Analysis

Figure 57. Forecast of U.S. Freight Tonnage by Mode 2021



Source: IHS MARKIT TRANSEARCH (November, 2020)

- **Buyers demand better quality services** otherwise the liners are in threat of losing them.
- Buyers purchase products in high volumes.
- Customers are **highly price sensitive** as they pick the liner companies that have the lowest cost.

Rivalry Among Existing Competitors | Very High (5)

As an oligopoly structure, there is **intense competition** in the market due to:

- **Small number of large liner carriers** that are roughly similar in terms of size and capacity.
- **Slow industry growth** can lead rivals competing for market share.
- **High exit barriers**, such as high fixed costs of exit, government restrictions and strategic alliances, prevent liners to exit the industry even if they are earning low or negative ROI.
- **Price competition is significant**, despite carriers are seeking differentiation.
- It is expected some **M&A activities** as companies are very sensitive to changes in price.

Analysis SWOT

Table 7. Analysis SWOT

Strengths	Weaknesses
• **Global presence**, with offices in multiple locations. • **Environmental friendliness,** making efforts to continuously reduce CO_2 and HSFO consumption. • **Most affordable** comparing with other means of transport containers. • **Focus** on the **Latin America region**, being the leader in this market. • **Modern and spacious fleet**. • **Digitalization and automation** contribute for the improvement of internal controls. • **Green financing**, by financing new buildings with sustainable.	• The **increasing size of vessels** is forcing terminals to adjust their infrastructure. • **Long time** to load and unload containers from the vessel. • Reaching the destination, the **cargo must be carried by an inland transportation** (e.g. trucks, trains).
Opportunities	**Threats**
• **Strategic Alliances and M&A**. • **Technological developments** can lead to growth and market share increase. • **Expansion to emergent markets** (e.g. Africa). • **Improve the quality of the services** by implementing quality promises. • **Development of alternative fuels** to reduce GHG emissions.	• **Political instability** (e.g. Terrorism, wars). • **New COVID-19 variants**. • **Changes in regulations**. • Risk of **stowaways and piracy attacks**. • **Major accidents**.

Source: Author Analysis

Table 8. Major Ocean Freight Forwarders 2021

Ranking	Company	Headquarters	Ocean Containers
1	**Kuehne + Nagel**	Switzerland	4,550,000
2	**Sinotrans Ltd.**	China	3,770,000
3	**DHL Supply Chain & Global Forwarding**	Germany	2,832,000
4	**DSV Panalpina**	Denmark	2,204,902
5	**DB Schenker**	Germany	2,042,000
6	**C.H. Robinson Worldwide**	USA	1,200,000
7	**Ceva Logistics**	Switzerland	1,050,000
8	**Kerry Logistics**	Hong Kong	1,019,924
9	**Expeditors International of Washington**	USA	1,012,600
10	**Hellmann Worldwide Logistics**	Germany	955,800

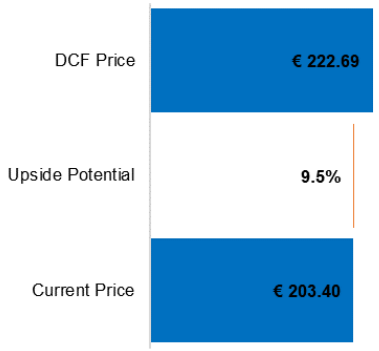
Source: Transport Topics

5. Investment Summary

Our recommendation for Hapag-Lloyd stands at **HOLD**, with a 2022YE **PT** of **€222.69/share**, representing a **9.5% upside potential** (corresponding to **5.5%** annual) relatively to the **current stock price** of **€203.40/share** on August 05th ,2021, but with medium risk (Figure 58).

The reason for the recommendation is attributed to the challenging market environment. Hapag-Lloyd belongs to a cyclical industry which was profoundly impacted by the COVID-19. The pandemic, against from what investors expected, positively impacted the container shipping industry leading to a boom in freight rates and record profits owning to the rebound in trade volumes, and thus affecting the Hapag-Lloyd´s price target.

Figure 58. Hapag-Lloyd PT 2022YE

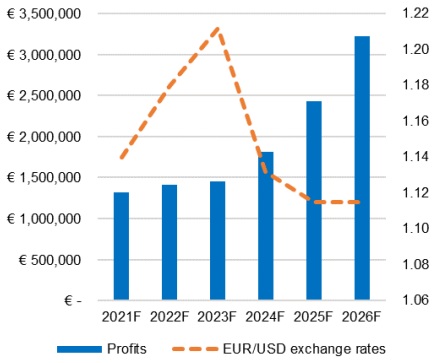


Source: Author Estimates

Hapag-Lloyd earnings are based on the revenues of the trades where it regularly operates its vessels and the costs incurred to delivery containers to its customers. The company is the market leader of the Latin American trade and one of the biggest players in the Atlantic, Transpacific and Far East trades that are expected to see a **Revenue CAGR 2021F-2026F** of **11.3%**, **4.2%**, **6.9%** and **12.9%** respectively. In the cost side, the **transport expenses** composed by bunker fuel, fees and charges is projected to growth at **5.7% CAGR 2021F-2026F**.

Also, the fluctuations in **exchange rate EUR/USD** further impacts the earnings. It is expected to slightly decrease from **1.14** in **2021F** to **1.115** in **2026F** affecting the profits, and thus the Hapag-Lloyd price target (Figure 59).

Figure 59. Exchange Rate (EUR/USD) vs Hapag-Lloyd Profits

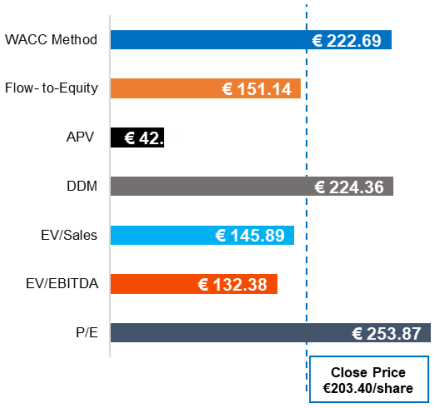


Source: Author Estimates

Valuation Methods

Hapag-Lloyd PT not only was estimated through the DCF models Weighted Average Cost of Capital (WACC) method, Flow-to-Equity, Adjusted Present Value (APV) and Dividend Discount Model (DDM) but also through Multiples based approach. The **highest** price was computed through the **P/E multiple** of **€253.87/share** whereas the **APV** estimated the **lowest price** of **€42.72/share** (Figure 60).

Figure 60. Valuation Methods Used to Estimate PT 2022YE



Source: Author Estimates

The DDM is in accordance with the WACC method as it also considers that Hapag-Lloyd´s price target will keep the pace with the market. In contrast, the P/E multiple considers the company undervalued, whereas the Flow-to-Equity and both enterprise value multiples consider that the company is overvalued. On the other hand, the APV is not an appropriate valuation method to estimate Hapag-Lloyd´s price target because it does not capture taxes or financing effects in the discount rate.

Investment Risks

The shipping business is subject to several risks arising from the company´s operations and from the market environment. The global pandemic further contributed to increasing volatility in Hapag-Lloyd stock price driven mainly by the unprecedent increase in container rates, weaker dollar euro exchange rate, increase in bunker prices and increase in transport volumes.

Other factors such as the political instability in the market, interest rate risk, environmental risks and increasing use of digital tools caused substantial fluctuations on the company´s stock price.

Hapag-Lloyd has taken variety of actions to mitigate those risks such as adopting hedging strategies and compliance with many laws and regulations.

6. Valuation

WACC Method

By using the DCF valuation method, we arrived at **Hapag-Lloyd's PT** of **€222.69/share 2022YE** (Figure 61 & Appendix 22), which means an **upside potential of 9.5%** (corresponding to **5.5%** annual) against the current stock price of **€203.40/share**. The two-stage **FCFF model** was applied to arrive to the Hapag-Lloyd **enterprise value** of **€43.832m**. Firstly, we forecasted the **FCFF** for **six years** and discounted them using the **WACC rate**, and thereafter we estimate the **terminal value** using the **long run sustainable growth rate** for the terminal period. This approach is profoundly influenced by the following assumptions:

FCFF assumptions

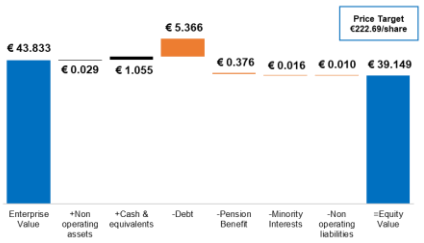
Freight Rates: Freight rates are assumed to increase **23%** in **2021** and will fall to **9%** over the **next two years**, according with Drewry WCI projections. For the major trade rates including Latin America, there is a change from the industry target in which the company´s Atlantic and Latin America freight rates are above the industry due to the company's ability to differentiate by providing multiple weeks sailing, direct port coverage and fast transit times to its customers, whereas the company´s Transpacific and Far East freight rates are below the industry owning to the strive competition. Meanwhile, in the remaining trades, the company is expected to follow the same rates as the industry (Figure 62 and Appendix 13).

Vessel capacity utilization: On **major trades** the company´s vessel capacity utilization on dominant legs is assumed to growth at **1.4% CAGR 2018-2020** until 2023F, and thereafter will decrease **1.70%**. In the remaining trades will be less **0.55%** than the average capacity utilisation of the industry of **70%** each year, as those are the regions which generates less revenues to the company due to the lower level of demand for container shipping in this trade (Appendix 13).

Bunker Fuel Cost: Bunker fuel is considered the major operating cost of Hapag-Lloyd therefore it is assumed as a percentage of revenues per trade, being expected to increase **0.6%** in **2021F** and **decrease 1%** thereafter, as the fuel prices are correlated with oil prices (Appendix 13).

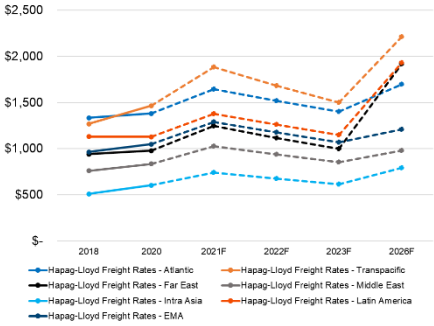
CAPEX: The CAPEX is projected at **27% CAGR from 2018-2020** of purchase of fixed assets, as it is assumed that the company will replace its older fleet to more modern and environmentally friendly fleet to enhance its efficiency asset utilization. From **2023F**, it is expected to decrease **5%** each year to avoid overcapacity. Around **55%** of the investments are dedicated to renewing the **vessels** fleets, while **container** fleet is about **45%** (Figure 63).

Figure 61. WACC Method Breakdown



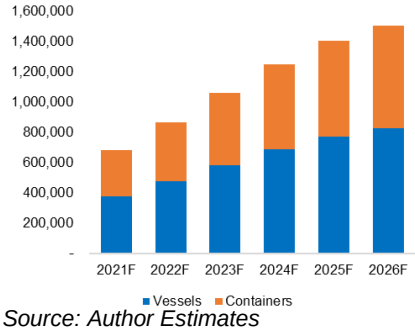
Source: Author Estimates

Figure 62. Annual Average Freight Rates per Trade (USD/TEU)



Source: Author Estimates

Figure 63. CAPEX Composition



Source: Author Estimates

Table 9. WACC Estimation

WACC Rate Assumption	
Rf	-0.41%
Beta	2.23
ERP	4.95%
Re	**10.61%**
Rd	**6.62%**
t	32.30%
WACC	**7.45%**

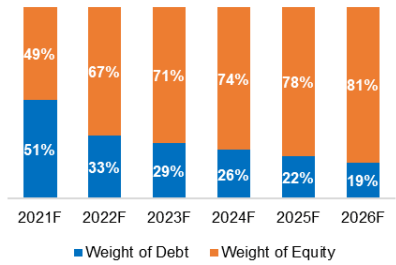
Source: Author Estimates

WACC assumptions

The FCFF are discounted using the WACC rate (Table 9), assuming the company has a **stable capital structure**. To compute the WACC rate firstly, it was estimated the **cost of equity** using the **capital asset pricing model (CAPM)**, where we assume a **risk-free rate (Rf)** of **-0.41%** which corresponds to the 10-year average German Government bond (Appendix 15), an **equity risk premium (ERP)** of **4.95%** calculated using historical **market risk premium** based on rating default spread of **4.72%** and **country risk premium** of **0.23%** (Appendix 17), and a **beta** of **2.23** which corresponds to the historical beta based on the GDAX Index with the Blume adjustment (Appendix 16). This resulted in a **cost of equity (Re)** of **10.61%** (Appendix 19). Then, it was estimated the **cost of debt (Rd)** of **6.62%** using the 2020 implied interest rate paid on debt (Appendix 18).

Thus, we arrived at a **WACC rate** of **7.45%**, considering a stable **D/(E+D) ratio** of **51%** (Figure 64).

Figure 64. Capital Structure



Source: Author Estimates

Terminal Value assumptions

A **long run sustainable growth rate** of **0.08%** (Appendix 21) is assumed meaning that the company will continue to generate cash flows at that constant rate, however the growth is expected in a small scale because the company is operating almost at is full capacity.

Table 10. Unlevered Cost of Capital Inputs

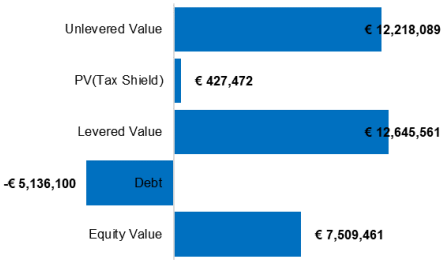
Unlevered Cost of Capital Rate Assumption	
Beta Equity	2.23
1+(D/E)	2.06
(1-t)	67.70%
Unlevered Beta	**1.60**
Rf	-0.41%
ERP	4.95%
Ru	**7.49%**

Source: Author Estimates

Flow-to-Equity Method

The Flow-to-Equity method is used to complement the DCF approach based on WACC method. When applying this method, we arrived at **equity value** of **€26.571m** which corresponds to a **price** of **€151.14/share** in **2022YE** (Appendix 22). This price is lower comparing to the one estimated using the WACC method because in the Flow-to-Equity method we used the **FCFE** which excludes the impact of interest expenses and net debt issuance. Additionally, the **Re** of **10.61%** is used as the discount rate since it reflects the amount that left to equity investors.

Figure 65. APV Breakdown

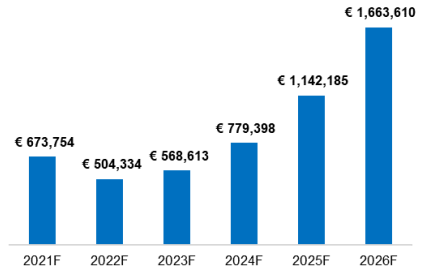


Source: Author Estimates

Adjusted Present Value Method

We also applied the APV method which is like the DCF model. However, instead of the WACC rate, the **FCFF** were discounted at the **unlevered cost of capital (Ru)** of **7.49%** (Table 10 & Appendix 20) based on the CAPM model, taking in account the **unlevered beta** using Hamada Formula simplified of **1.60** (Appendix 16). We arrive at the **unlevered value** of **€12.218m**. Also includes the benefits of raising debt that is the **interest tax shield** that is discounted at the **Rd** of **6.62%**. We reach at **levered value** of **€12.645m** and a **price** of **€42.72/share** in **2022YE** (Appendix 22 & Figure 65). This method is not as accurate as the DCF method in estimate the price target as it discounts the FCFF based uniquely in the value of Hapag-Lloyd ignoring the effects of debt. Differently from DCF, this method values the effects of the cost of equity and cost of debt separately.

Figure 66. Shareholders Cash Flow

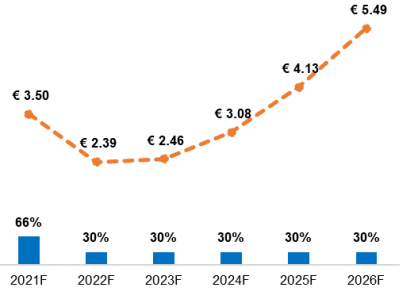


Source: Author Estimates

Dividend Discount Model

When applying the Dividend Discount Model, we considered **two-sages**. The first stage considers the **expected cashflows of the shareholders** (Figure 66) discounted at **Re** of **10.61%** and assumes to have a higher rate that is **short term growth rate** of **9.5%** being aligned with the Real GDP growth rate including the inflation rate, whereas the second stage assumes the **long run sustainable growth rate** of **7.57%** (Appendix 21). This model results in **equity value** of **€39.442m** which corresponds to a price of **€224.36/share** in **2022YE** (Appendix 23). This method seems to be in accord with the WACC method. We assumed that **dividends are stable** and that Hapag-Lloyd´s target is to pay out **at least 30%** of its net income attributable to shareholders (Figure 67).

Figure 67. DPS and Payout Ratio Forecasted



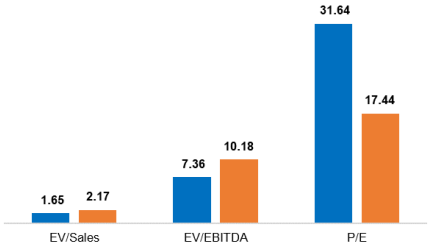
Source: Author Estimates

Multiples Based Approach

An alternative method to the DCF model is the **Multiples approach** that compares Hapag-Lloyd with its industry peers. Based on the process conducted on the IO&CP to identify the most appropriate peers of Hapag-Lloyd, **5** companies were selected as the company´s peers namely **A.P. Moller – Maersk A/S, Orient Overseas Container Line, Evergreen Marine, Yang Ming Marine, Hyundai Merchant Marine** (Appendix 18). Firstly, we used **two Enterprise Value multiples,** the **EV/Sales** and **EV/EBITDA**, and **one Price Multiple**, the **P/E**.

We estimated the **industry average EV/Sales**, **EV/EBITDA,** and **P/E** of **1.65x**, **7.36x** and **31.64x** respectively. Therefore, Hapag-Lloyd´s **Enterprise value multiples** are **higher** than the average industry, whereas the **Price multiple** is **lower** than its peers (Figure 68 & Appendix 24).

Figure 68. Multiples Comparison

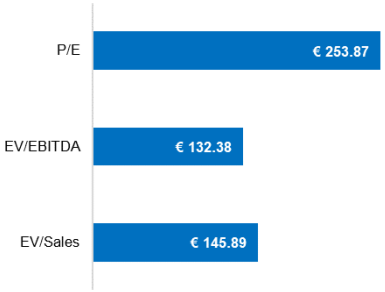


Source: Author Estimates

The average **EV/Sales multiple** resulted in Hapag-Lloyd´s **enterprise value** of **€27.432m** which corresponds to an **equity value** of **€25.648m** or a **price target** of **€145.89/share** in **2022YE**. Meanwhile, the average **EV/EBITDA multiple** resulted in Hapag-Lloyd´s **enterprise value** of **€25.056m** which corresponds to an **equity value** of **€23.271m** or a **price target** of **€132.38/share** in **2022YE**.

On the other hand, the average **P/E multiple** directly results in the **equity value** of **€44.631m** or a **price target** of **€253.87/share** in **2022YE** (Figure 69 & Appendix 24).

Figure 69. Market-Based Valuation



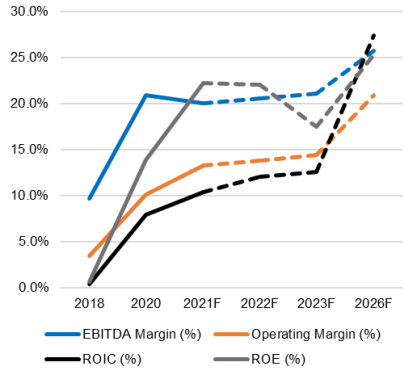
Source: Author Estimates

7. Financial Analysis

Increasing profitability

Hapag-Lloyd´s **margins** have an upward trend between 2018 and 2026F. The **EBITDA margin** and **EBIT margin** increased to **20.9%** and **10.1%** in **2020** and are expected to further increase to **25.8%** and **20.9%** in **2026F** respectively. That means the company´s profitability is improving due to the efficient control of costs as a part of PSP and revenue management. The **Return on equity (ROE)** also rose to **13.9%** in **2020** and will increase to **25.3%** in **2026F** mainly lead by the improvement in margins. The **Returns on investments (ROI)** are exceeding the costs by **7.9%** in **2020** and the potential return from investments is expected to be **27.4%** in **2026F** (Figure 70).

Figure 70. Profitability and Return Ratios

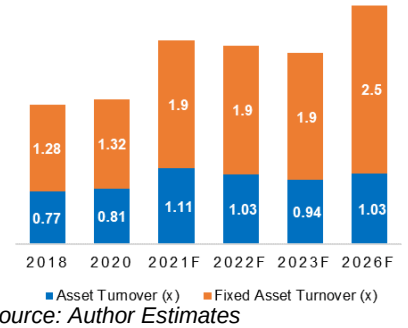


Source: Author Estimates

Efficient asset management

The company´s **activity ratios** in overall presented a slightly increase from 2018 and 2026F. The **fixed asset turnover** is expected to rise from **1.32x** in **2020** to **2.5x** in **2026F**. This is owning to the fact that Hapag-Lloyd holds its assets for many years and thus are more depreciated, reflecting in lower carrying amount of its assets. Meanwhile, the **asset turnover** is likely to change from **0.81x** in **2020** to **1.03x 2026F** which might indicate the company is improving is ability of using assets to generate its revenues (Figure 71).

Figure 71. Asset Utilization

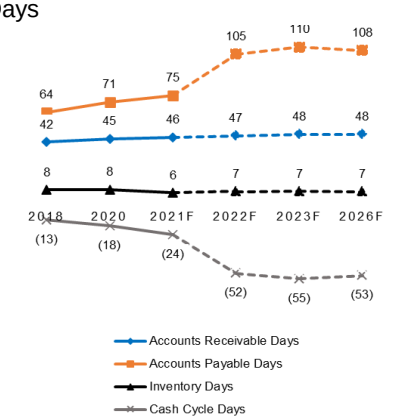


Source: Author Estimates

Capacity to collect cash

Hapag-Lloyd **inventories days** remained stable ranging from **8 days** in **2020** to **7 days** in **2026F** meaning that its inventories are liquid. The **accounts receivable days** are stable varying from **45 days** in **2020** to **48 days 2026F**, indicating that the company will take few days to receive cash from its customers. The **accounts payable days** are expected to rise from **71x** in **2020** to **108x** in **2026F** that could be due to the exploitation of relaxed supplier terms. Thus, the extended periods of **negative cash conversion cycles** might be mainly due to the supplier finance Hapag-Lloyd´s operations (Figure 72).

Figure 72. Cash Conversion Cycle Days

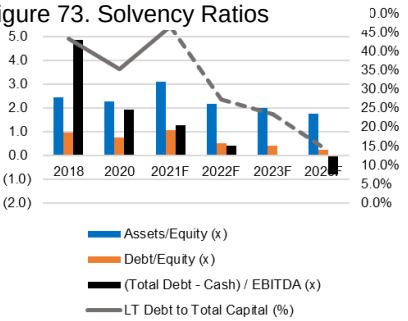


Source: Author Estimates

Stable capital structure and strong solvency

Hapag-Lloyd´s **financial leverage** is expected to slightly decrease from **2.26x 2020** to **1.76x** in **2026F**, meaning that the company will reduce the use of debt to finance its operations. The **debt-to-equity** ratio also is expected to decrease from **0.77x** in **2020** to **0.24x** in **2026F**, indicating that the company can take more debt in the future. Additionally, the **net debt-to-EBITDA** is expected to fall from **1.94x 2020** to **-0.78x 2026F**, which indicates that the company may not take many years to pay its debts. Furthermore, the **capitalization ratio** is likely to drop from **35.2%** in **2020** to **14.5% in 2026F**, which means that the company will likely lower the proportion of long-term debt it uses to fund its assets. Overall, the company is expected to improve its solvency and reduce its financial risks (Figure 73).

Figure 73. Solvency Ratios

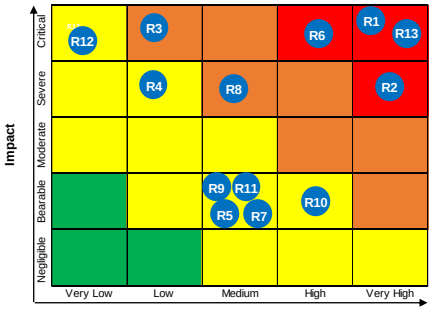


Source: Author Estimates

8. Investment Risks

The container shipping industry has been risky over the years. The following risks (Figure 74) tend to have the most impact in the company´s profits:

Figure 74. Risk Matrix



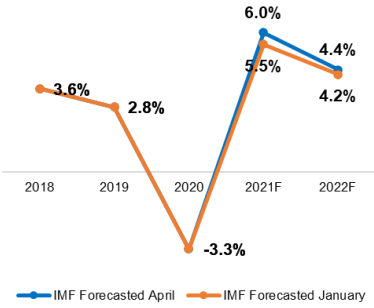
Source: Author Estimates

Economic & Political Risk

GDP Growth (R1)

The demand for container shipping services follows the pace of the world economy growth. The current projections of the 2021F GDP are **more optimistic of a recovery** projecting **more 0.5% of growth** comparing with the last forecast (Figure 75). However, there is high uncertainty surrounding the global economy growth as the future depends on the path of the health crises and currently there is renewed waves and new variants of the virus. The changes in GDP have a critical impact in Hapag-Lloyd earnings and are certain to occur.

Figure 75. GDP Growth April vs January 2021

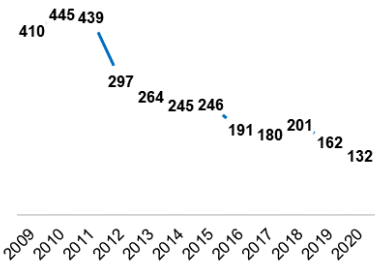


Source: IMF (2021)

Political Uncertainties (R2)

Hapag-Lloyd is active in many countries around the world. Its commercial activities can be impeded by **political tension, wars, terrorism, and other political problems in individual countries.** This could result in disruptions in supply chain concretely on ports or other major shipping channels. Also, individual countries could react by adopting protectionist measures such as introducing import or foreign exchange restrictions, which will severely impact on the development of container shipping, thus affecting negatively Hapag-Lloyd's revenue and earnings. This risk is very likely to occur.

Figure 76.Number of Piracy



Source: Bloomberg

Legal and Regulatory Risk (R3)

Hapag-Lloyd is subject to numerous regulations with domestic and international applicability that comprises **safety, security, and customs** in the countries of origin, and destination.

Additionally, the increasing digitalization of business processes is altering Hapag-Lloyd AG's risk exposure, which means that the additional risks relating to **data protection law** must be continuously assessed and managed.

Moreover, the company is subject to **IMO and supranational institutions** existing regulations and measures to increase the maritime industry's contribution to **climate protection efforts**.

The company not only can face considerable fines but also shut down its operation if it infringes the applicable regulations. There is a low chance to this risk occur as the company has a compliance team which ensures that the company can legally conduct its operations.

Operational Risk

Vessel´s Operation (R4)

Hapag-Lloyd is subject to risks resulting from the operation of vessels such as **piracy, accidents, collisions, loss of a vessel, fire, explosion, loss or damage of cargo, human error,** and **loss of certification of vessels** (Figure 76 & Figure 77) that

impede a shipment´s progress, might lead to death or injury of people and could damage the reputation of the company. Therefore, Hapag-Lloyd counters these risks with insurance policies that might or not cover the full amount of all types of damage. Because these risks are generally within the control of the company, and throughout the years the numbers are decreasing they are not likely to occur.

Information Technology & Security – Cyberattack (R5)

The availability of IT systems is indispensable to Hapag-Lloyd as it enables continuous processing of data to ensure efficient management of business processes and costs. **An IT systems failure**, for example due to defective hardware and software components or also due to cyberattacks, could obstruct business processes and lead to higher costs because of business interruptions. To reduce these risks, the IT systems are protected in several ways. Hapag-Lloyd is certified in accordance with ISO 27001 as well as ISO 27701 and has a corresponding information security management system to respond to information security risks. Thus, it is a risk that a company can bear and has a medium likelihood to occur.

Average Freight Rate (R6)

The development of freight rates is particularly dependent on the transport demand and capacity supply on routes and therefore on economic developments in individual regions. Freight rates more than double in mid-May relatively to the same period last year, and since then have been in an increasing trend (Figure 78). Fluctuations in average freight rate has a significant influence on Hapag-Lloyd's financial and earnings position and are likely to occur.

Charter Rates (R7)

Chartering vessels in the periods of increasing demand can be more expensive for the company than operating its own vessels, as charter rates follows the trend of freight rates which are dependent on expectations regarding the future development of supply and demand for container transport. Since the beginning of last year, charter rates present an increasing trend (Figure 79) because of the rise in demand for container ship, and thus impacting Hapag-Lloyd´s earnings. This risk is bearable and has a medium probability of occurrence.

Transport Volume (R8)

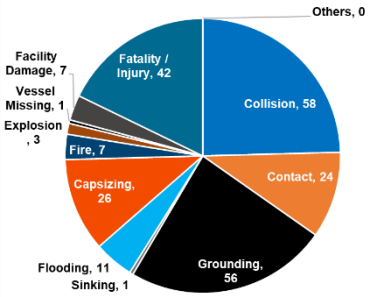
The development of transport volumes depends heavily on economic activity in the regions linked together by the trades. The COVID-19 intensified the degree of uncertainty regarding economic developments, and therefore on the levels of demand for container transport. Fluctuations in transport volumes directly impact Hapag-Lloyd's earnings position and have a medium likelihood of occur.

Market and Financial Risk

Interest Rate (R9)

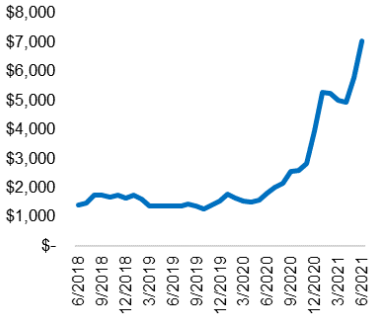
Fluctuations in the interest rate arises because of the **liquidity procurement on the international money and capital markets** that are managed within the scope of interest rate management. This risk is bearable for the company has it can be limited by using interest **rate hedges** and has an intermediate probability of occur.

Figure 77. Marine Accidents Q1 2021



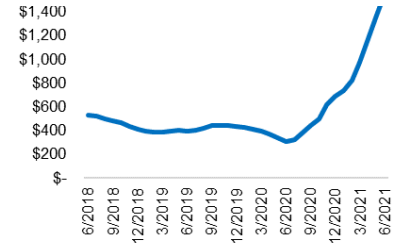
Source: Statistics (Marine)

Figure 78.Monthly Freight Rates (USD/FEU)



Source: Drewry WCI (2021)

Figure 79. Monthly Container Time Charter (USD/FEU)



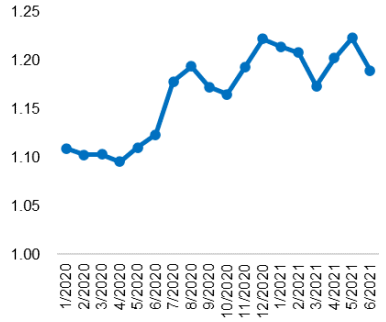
Source: Peter Doehle Schiffarts Kg

Currency Exchange Rate (R10)

Hapag-Lloyd has a worldwide presence through its business activities and thus is exposed to risk of **exchange rate fluctuations** because various currencies such as **EUR, CNY, HKD, CAD, SGD, INR and USD**, account for its income and expenses. The **US dollar is the functional currency** within the Hapag-Lloyd as it is the currency in which the container liner shipping services are usually invoiced. The **reporting currency for Hapag-Lloyd AG is the Euro**, therefore, changes in the **EUR/USD exchange rate** thus have an impact on the company´s key financial indicators and earnings. So, the company not only monitors the materiality of this fluctuations in ongoing basis but also it partially hedges against these euro risk if necessary. This risk is sure to occur as the company operates around the world and the currencies vary from region to region.

The exchange rate EUR/USD is expected to decrease from 2020 to 2026F, meaning that the dollar is weak comparing with euro, and for liner shipping companies this is positive as it will increase the bottom line (Figure 80).

Figure 80. Exchange Rates (EUR/USD)

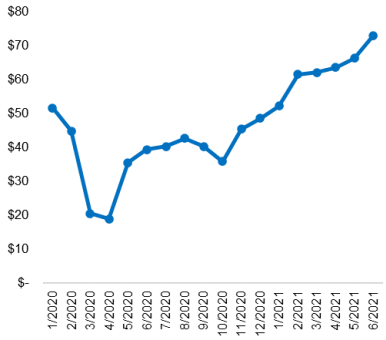


Source: Bloomberg

Bunker Price (R11)

The bunker consumption price (Figure 81) is the most important factor influencing **fuel costs**, which is one of the main cost components for the container shipping industry and thus impacting the Hapag-Lloyd´s transport expenses and consequently its net income. The partial risk of bunker price increases is compensated on freight rates in form of bunker surcharge to customers. The remaining price risk emanating from fuel procurement are hedged using derivative hedging transactions. This risk is bearable by the company and has a medium likelihood of occur.

Figure 81. Average Brent Crude Oil



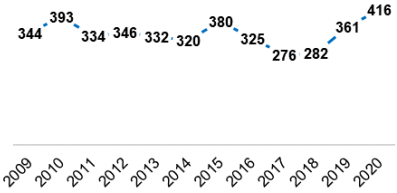
Source: Bloomberg

Environmental Risk

Weather (R12)

Weather hazards can be **natural disasters** (Figure 82), which are getting more unpredictable. For instance, storms and hurricanes can harm the vessels and in some serious circumstances it can even sink the ships causing a significant impact to the company. This risk is rare to occur. To protect against weather threats the company has a fleet with modern ships designed to stand firm against such weather threats and weather forecast helps to predict beforehand so the ships can either delay or alter their routes.

Figure 82. Number of Natural Disaster



Source: Our World Data; Statistica

Pollution (13)

Vessels emit large quantities of pollutants into the air, mainly in the form of sulphur dioxide, nitrogen oxides and particulate matter, which have been steadily rising and endangering human health. They also create between 2 and 3 per cent of the world's total greenhouse gas emissions such as carbon dioxide, contributing to global warming and extreme weather effects. Furthermore, releases of ballast water have a negative impact on the marine environment. Hapag-Lloyd to mitigate these risks complying with the IMO to reduce the industry's greenhouse gas emissions by at least 50 per cent by 2050 compared with 2008 and the sulphur cap limit in bunkers through developing more sustainable vessels and testing alternative fuels (Appendix 7). This risk has a critical impact in the environment and is extremely sure to occur.

Sensitivity Analysis in Price Target

We applied the sensitivity analyses to study the outcome of changes in the WACC rate and long run sustainable growth rate on Hapag-Lloyd price target. Also, we evaluate the effect on Hapag-Lloyd´s price target of fluctuations in the freight rates of the Atlantic trade and EUR/USD exchange rates.

Freight rate Atlantic trade vs EUR/USD exchange rate

The Hapag-Lloyd **freight rates** of **Atlantic** trade in 2021F were set to **increase** (decrease) **$600/TEU** from the expected $1,647.47/TEU, whereas the **EUR/USD exchange rate** was set to **increase** (decrease) **0.3 units** from the projected 1.14 in 2021F. When the EUR/USD exchange rates decreases (increases) 0.3 units, Hapag-Lloyd´s price target decreases (increases), while keeping freight rates Atlantic trade constant (Figure 83).

Figure 83. Freight Rates Atlantic Trade vs Exchange Rates (EUR/USD)

EUR/USD exchange rate 2021F	Freight Rates Atlantic trade 2021F				
	$ 447.47	$ 1,047.47	$ 1,647.47	$ 2,247.47	$ 2,847.47
0.54	€ 183.72	€ 185.87	€ 188.03	€ 190.18	€ 192.34
0.84	€ 198.65	€ 202.01	€ 205.36	€ 208.71	€ 212.07
1.14	€ 213.59	€ 218.14	€ 222.69	€ 227.24	€ 231.79
1.44	€ 228.52	€ 234.27	€ 240.02	€ 245.77	€ 251.52
1.74	€ 243.46	€ 250.40	€ 257.35	€ 264.30	€ 271.24

Source: Author Estimates

Figure 84. WACC Rate vs Long Run Sustainable Growth Rate

long run sustainable growth rate	WACC rate				
	5.45%	6.45%	7.45%	8.45%	9.45%
-1.92%	€ 239.67	€ 207.07	€ 181.52	€ 160.99	€ 144.15
-0.92%	€ 272.30	€ 230.99	€ 199.65	€ 175.09	€ 155.35
0.08%	€ 317.05	€ 262.40	€ 222.69	€ 192.56	€ 168.95
1.08%	€ 382.25	€ 305.50	€ 252.95	€ 214.76	€ 185.78
2.08%	€ 486.04	€ 368.28	€ 294.47	€ 243.92	€ 207.19

Source: Author Estimates

WACC rate vs Long run sustainable growth rate

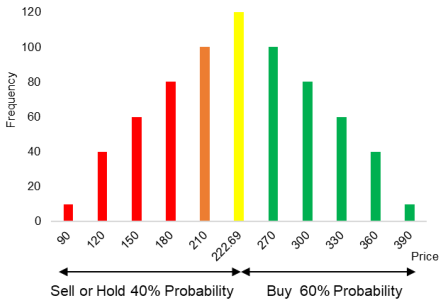
The sensitiveness of Hapag-Lloyd´s price target mainly impacted by the WACC rate and the long-term growth rate. Therefore, a **1% increase** (decrease) in **WACC rate** and **1% decrease** (increase) in the **growth rate**, **decreases** (increases) the **PT** and consequently, would have led us to issue a sell (buy) recommendation (Figure 84).

Monte Carlo Simulation

To supplement the previous analysis, we performed a Monte Carlo Simulation using the Crystal Ball Software where we covered 6000 simulations. The **variables** analysed that affect Hapag-Lloyd price target are **Freight rates for Atlantic trade**, **EUR/USD exchange rate**, the **WACC rate** and the **growth rate in perpetuity**. The first two variables were considered due to their impact on earnings, whereas the remaining are the inputs for the DCF approach.

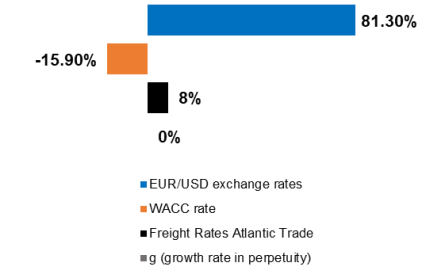
The output of the Monte Carlo simulation indicated a **mean for the price target** of **€225.69**, not far from the Hapag-Lloyd price target of €222.69 (Figure 85), which is in accordance with the Hold recommendation. The **EUR/USD exchange rate** and the **WACC rate** are the variables that **affect the most** Hapag-Lloyd price target with a proportion of **81.3%** and **-15.9%** respectively (Figure 86).

Figure 85. Monte Carlo Simulation



Source: Crystal Ball Software; Author Estimates

Figure 86. Hapag-Lloyd PT Sensitiveness

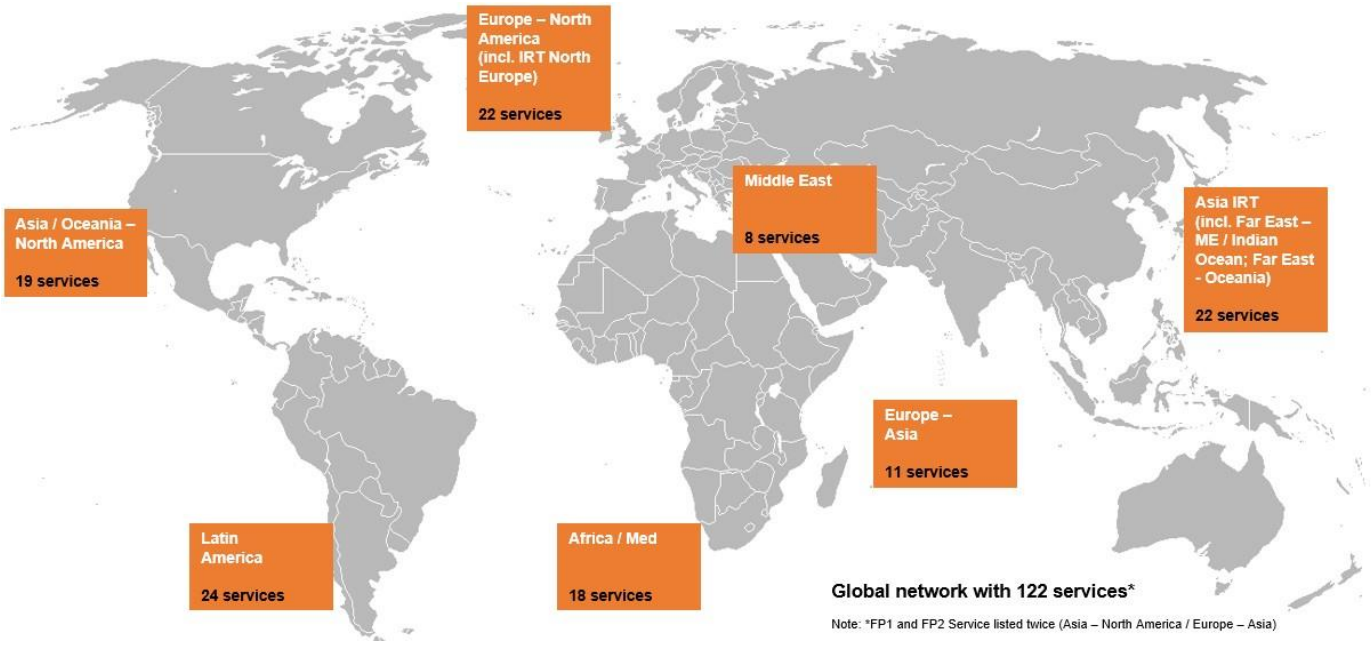


Source: Author Estimates

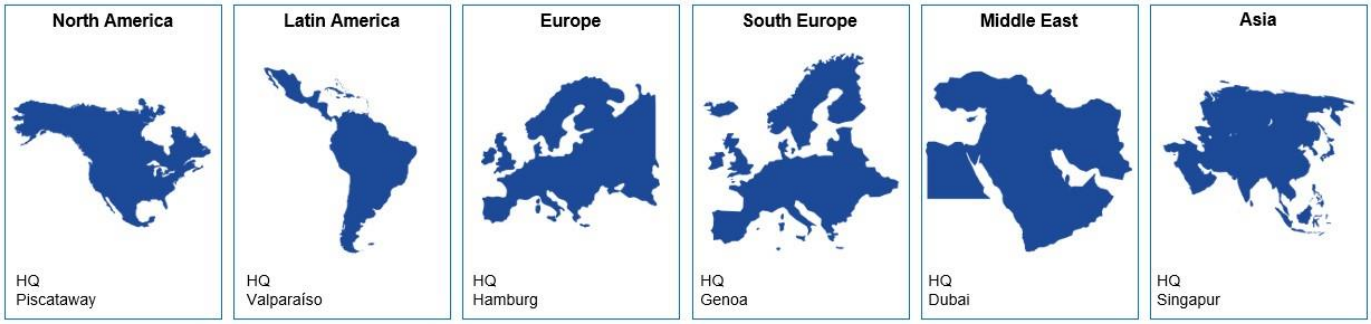
Appendices

Appendix 1: Hapag-Lloyd Worldwide Activity

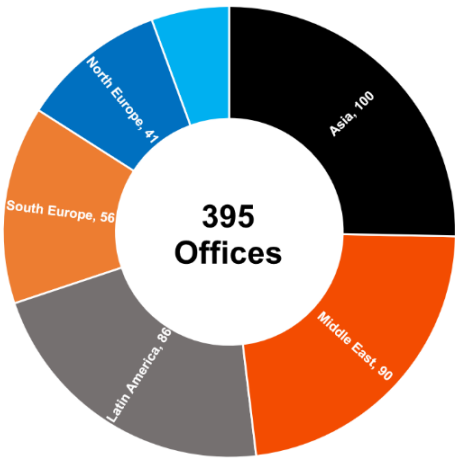
1.1 Services



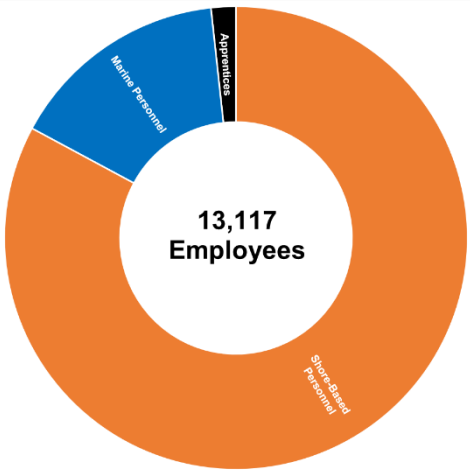
1.2 Regions



1.3 Number of Offices



1.4 Number of Employees



Source: Company Data

1.5 Container Fleet

Dry Cargo Container

Standard

Special Cargo Container

Flatrack / Platform

Reefer Cargo Container

Reefer

Standard / Hardtop

Open Top / Hardtop

Source: Company Data

1.6 Vessels Fleet

> 19,000 TEU

A 18 Class

15,000 - 18,000 TEU

A 15 Class

13,000 - 15,000 TEU

A 13 Class

10,000 - 13,000 TEU

Hamburg Express Class
Valparaiso Express Class

8,000 - 10,000 TEU

Colombo Express Class
Prague Express Class
Vienna Express Class
C-Class
T-Class

6,000 - 8,000 TEU

Dalian Express Class
M-Class
A 7 Class
Other

4,000 - 6,000 TEU

Dallas Express Class
Dublin Express Class
Kobe Express Class
Toronto Express Class
L-Class
Other

2,300 - 4,000 TEU

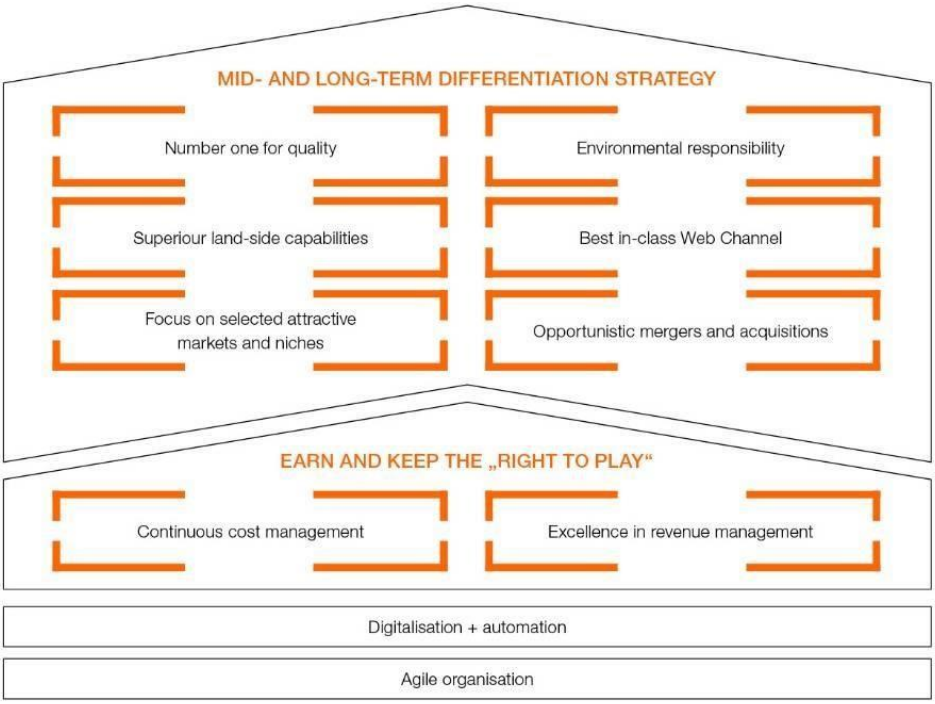
Charleston Express Class
Lisbon Express Class
Milan Express Class
Mississauga Express Class
St. Antonio Express Class

< 2,300 TEU

Other

Source: Company Data

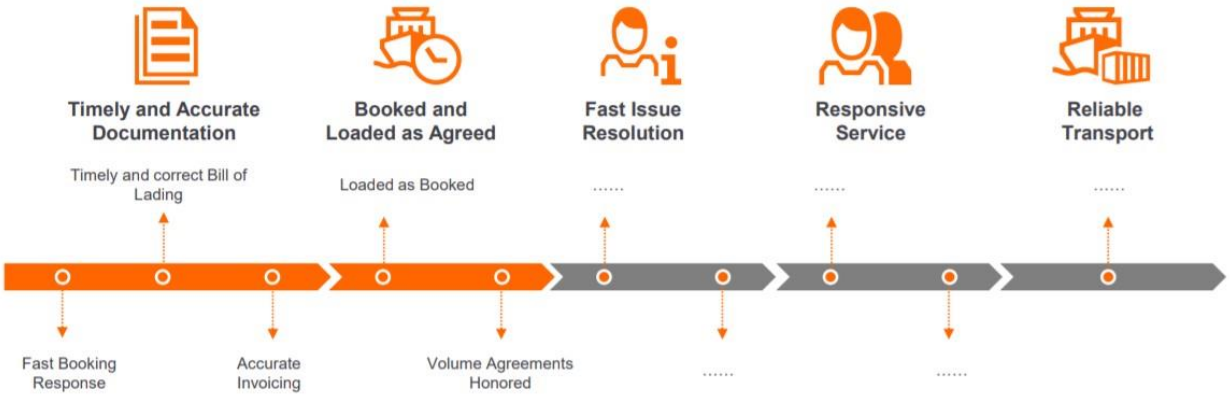
1.7 Strategy 2023



THESE ARE THE MOST IMPORTANT ELEMENTS OF STRATEGY 2023

Source: Company Data

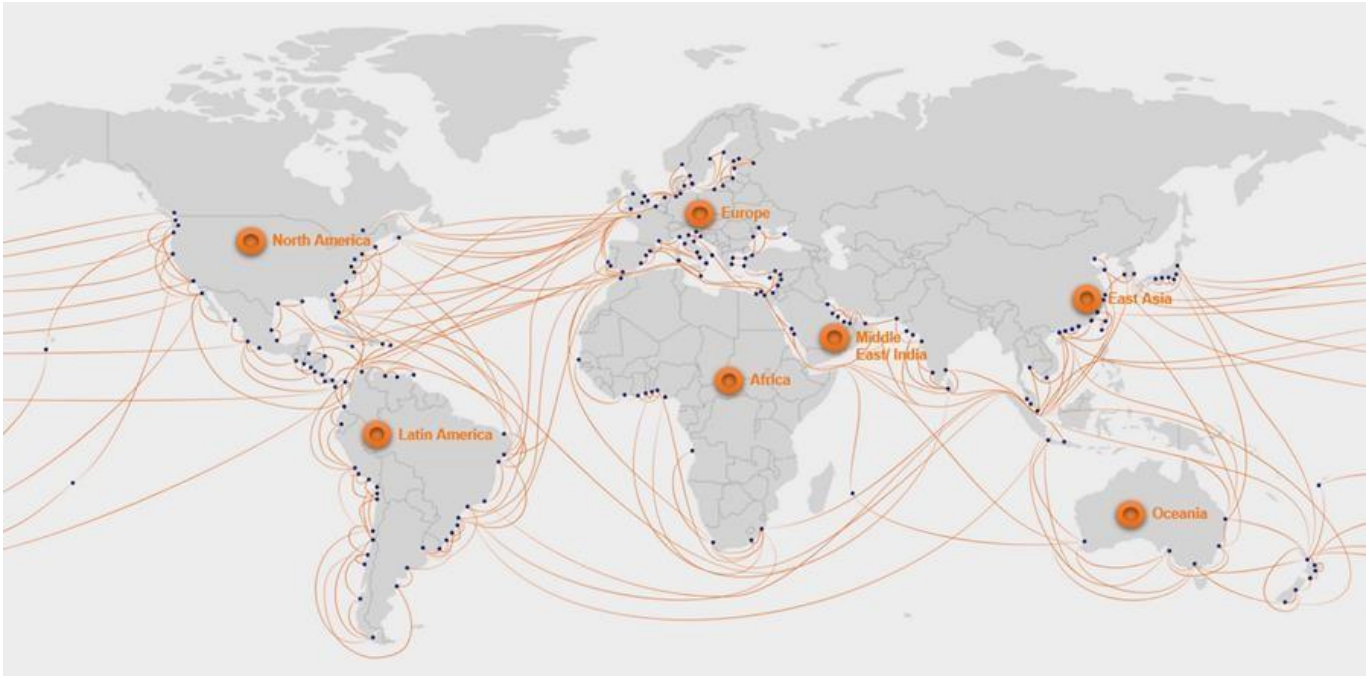
1.8 Quality Promises



Source: Company Data

Appendix 2: Hapag-Lloyd Segments

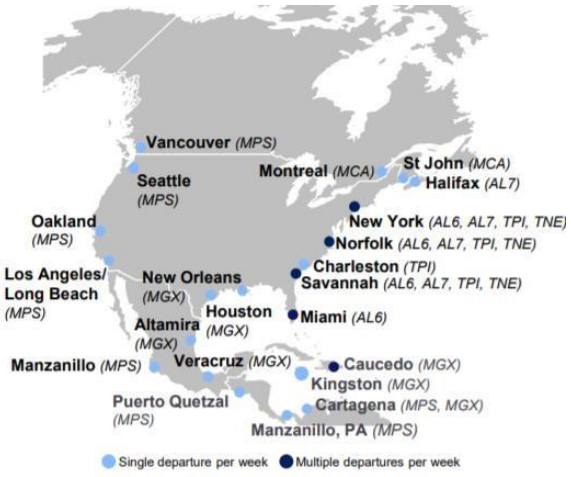
2.1 Hapag-Lloyd Geographic Trades



Source: Company Data

2.2 Atlantic Trade

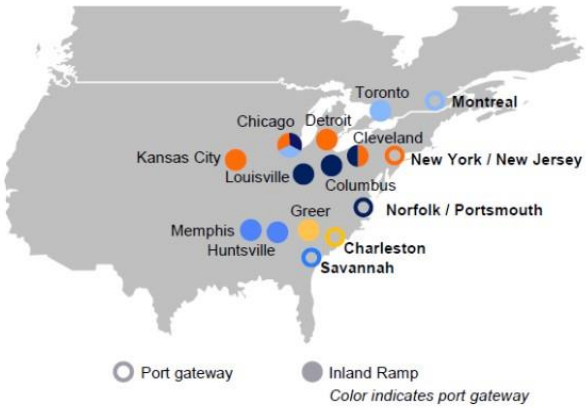
2.2.1 Port Coverage



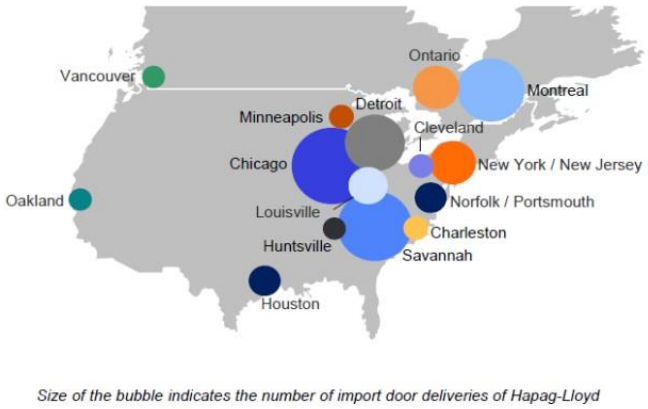
Source: Company Data

2.2.2 Intermodal Connections

85 trains per week between the 10 biggest port-ramp combinations in the Atlantic Trade



200,000 truckloads per year from/to the 15 biggest door locations in the Atlantic Trade



2.3 Middle East Trade

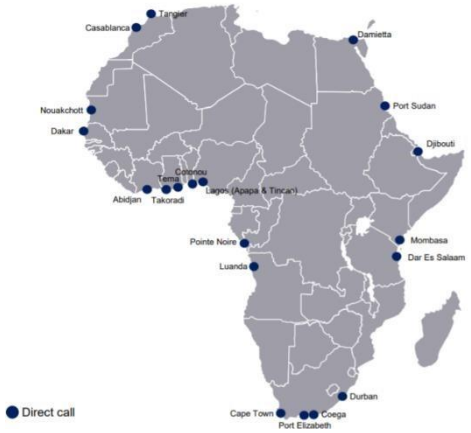
2.3.1 Port Coverage

2.4 EMA East Trade

2.4.1 Network

European Network

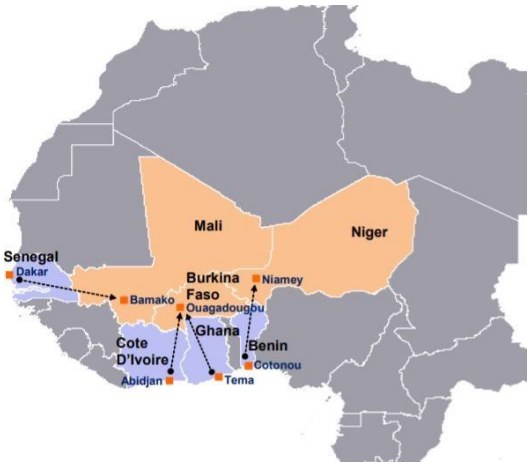
African Network



Source: Company Data

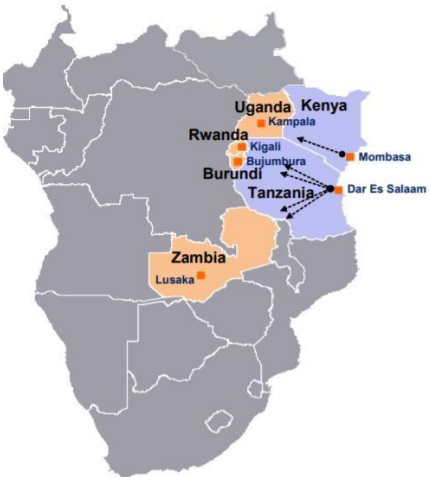
2.4.2 Africa Hinterland Locations

West African Hinterland Locations



Southern African Hinterland Locations

East African Hinterland Locations



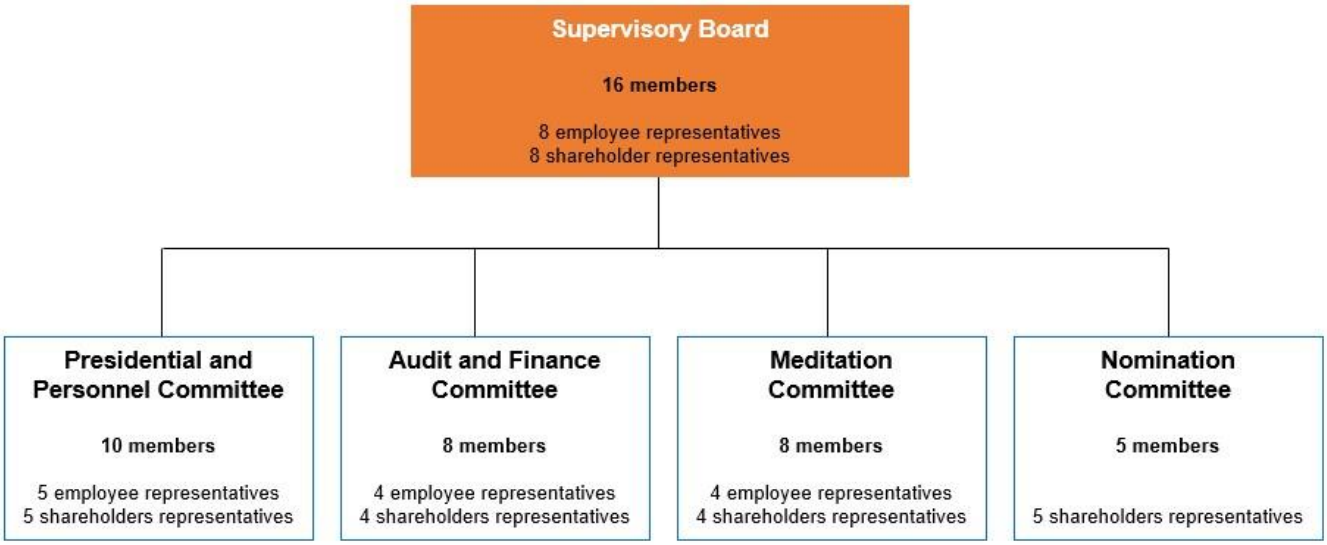
Source: Company Data

Appendix 3: Hapag-Lloyd Organizational Structure

3.1 Compliance Team

Source: Company Data

3.2 Governance Model



Source: Company Data

3.3 Members of Executive Board

Executive Board	Position	Compensation (€)	Start	Age	Tenure
Rolf Habben Jansen	CEO	2,523,347	7/1/2014	54	6.7
Mark Frese	CFO	1,952,747	3/1/2020	56	1.0
Dr Maximilian Rothkopf	COO	1,657,228	7/1/2019	40	1.7
Joachim Schlotfeldt	CPO	1,777,781	4/1/2018	66	2.9

Source: Bloomberg

3.4 Members of Supervisory Board

Board of Directions	Position	Compensation (€)	Start	Age	Tenure
Michael Behrendt	Chairman of the Supervisory	216,000	12/3/2014	69	6.3
Klaus Schroeter	Deputy Chairman	137,000	11/6/2018	61	2.3
Oscar Eduardo Hasbún Martínez	Deputy Chairman	119,500	6/5/2020	52	0.8
Sabine Nieswand	Employee Representative	81,000	8/26/2016	56	4.6
Maya Schwiegershausen-Güth	Employee Representative	66,000	10/26/2018	37	2.4
Felix Albrecht	Employee Representative	71,000	3/11/2019	33	2.0
Svea Stawars	Employee Representative	33,000	8/26/2020	33	0.6
Arnold Lipinsk	Board Member	107,000	6/26/2001	63	19.8
José Francisco Pérez Mackenna	Board Member	81,000	12/3/2014	63	6.3
Nicola Gehrt	Board Member	66,000	8/26/2016	50	4.6
Uwe Zimmermann	Board Member	107,000	8/26/2016	58	4.6
H. E. Sheikh Ali bin Jassim Al-Thani	Board Member	81,000	5/29/2017	60	3.8
Annabell Kröger	Board Member	92,000	6/10/2017	56	3.8
Turqi Alnowaiser	Board Member	90,500	2/23/2018	44	3.1
Karl Gernandt	Board Member	133,666	6/5/2020	60	0.8
Dr Isabella Niklas	Board Member	61,417	6/5/2020	49	0.8

Source: Bloomberg

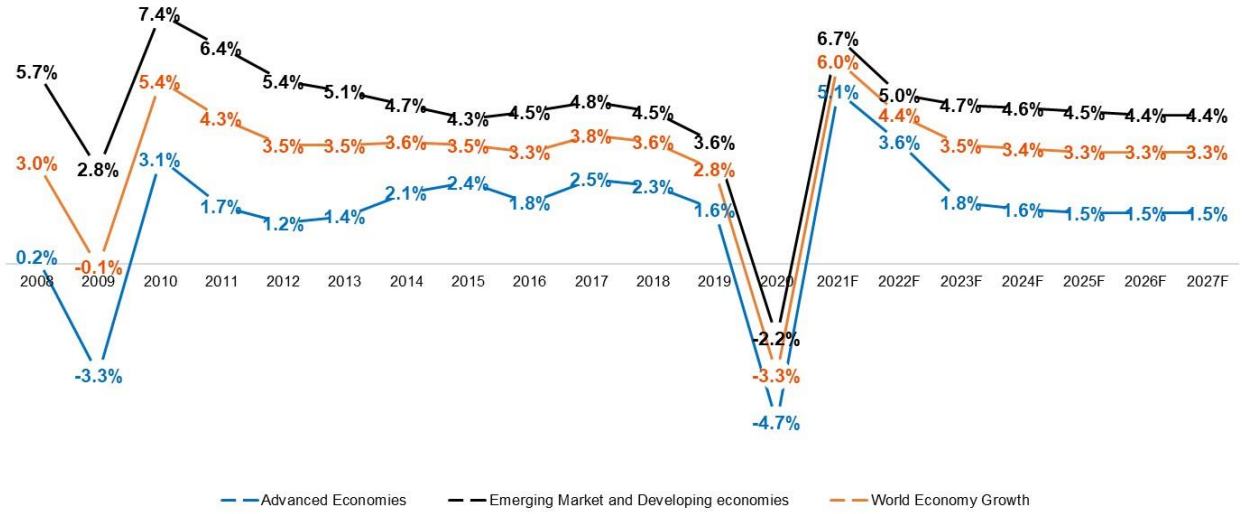
3.5 Supervisory Board Committees

Name	Title	Age
Audit & Finance		
Oscar Eduardo Hasbún Martínez	Chairman	52
Turqi Alnowaiser	Member	44
Karl Gernandt	Member	60
Annabell Kröger	Member	56
Arnold Lipinsk	Member	63
Uwe Zimmermann	Member	58
Mediation		
Michael Behrendt	Chairman	69
José Francisco Pérez Mackenna	Member	63
Klaus Schroeter	Member	61
Nomination		
Michael Behrendt	Chairman	69
Karl Gernandt	Member	60
H. E. Sheikh Ali bin Jassim Al-Thani	Member	60
José Francisco Pérez Mackenna	Member	63
Presidential & Personnel		
Michael Behrendt	Chairman	69
Karl Gernandt	Member	60
H. E. Sheikh Ali bin Jassim Al-Thani	Member	60
Arnold Lipinsk	Member	63
Sabine Nieswand	Member	56
José Francisco Pérez Mackenna	Member	63
Klaus Schroeter	Member	61
Uwe Zimmermann	Member	58

Source: Bloomberg

Appendix 4: Economic Outlook

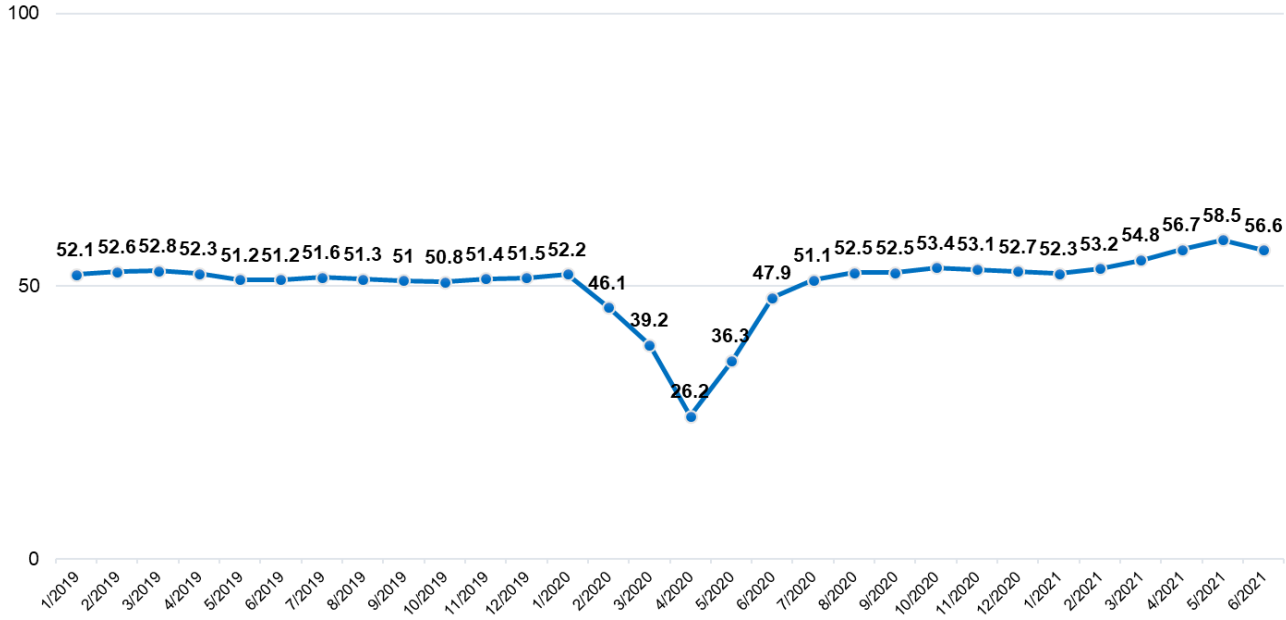
4.1 Real GDP Growth (Annual percentage change)



Source: IMF (2021)

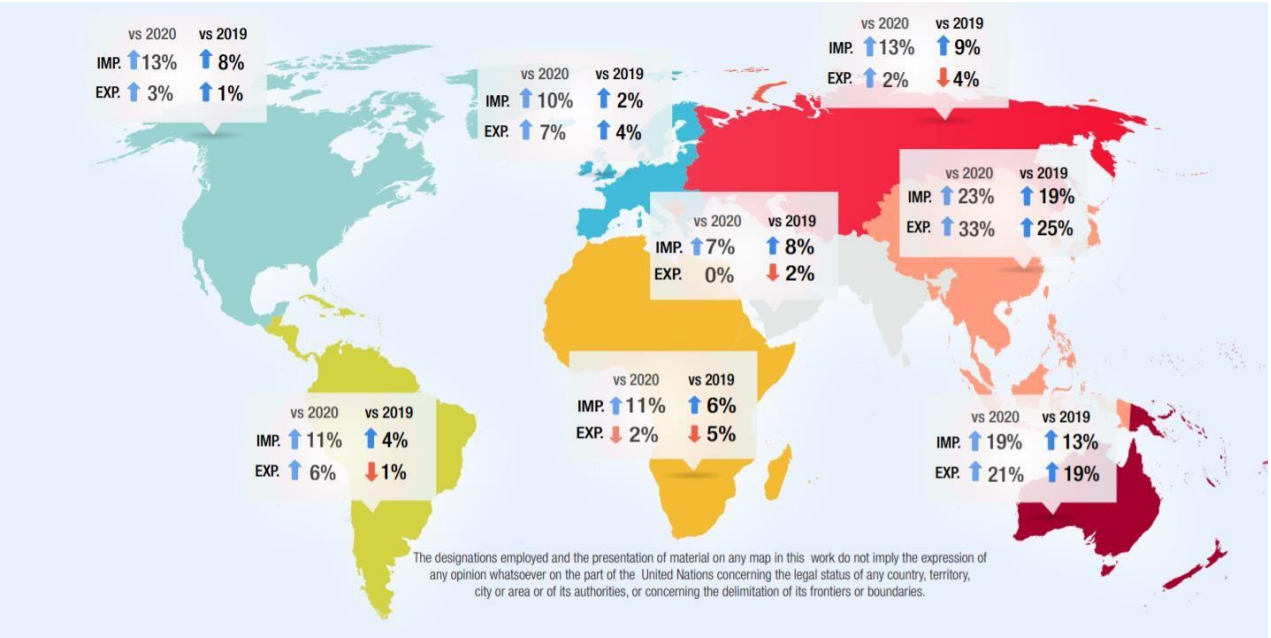
4.2 Global Manufacturing PMI Index (Monthly percentage)

>50 = improvement since previous month



Source: Bloomberg

4.3 Trade by region Q1 2021 relative to Q1 2020 and Q1 2019



Source: UNCTAD (2021)

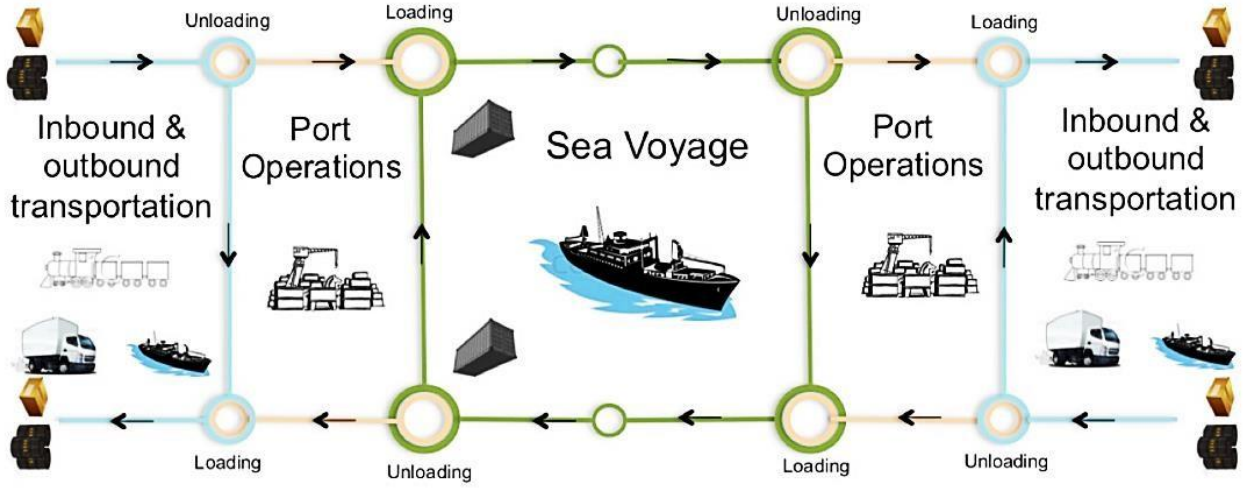
4.4 Analysis PESTEL

POLITICAL	ECONOMIC	SOCIAL	TECHNOLOGICAL	LEGAL	ENVIRONMENTAL
-Foreign trade policy -Government policy -Trade restrictions -Political stability overseas -Tax policy.	-Economic growth -Exchange rates - Inflation -Disposable income of consumers - Oil prices	-Population demographic -Changes in consumer taste and lifestyle -Attitude towards product quality and customer services	-Technological awareness -Digitalization and automation -E-commerce -Innovation	-Health and safety laws -Labour laws -Consumer protection laws	- Pollution - Decarbonization -Climate change - Environmental legislation - Weather - Recycling and waste management

Source: Author Estimates

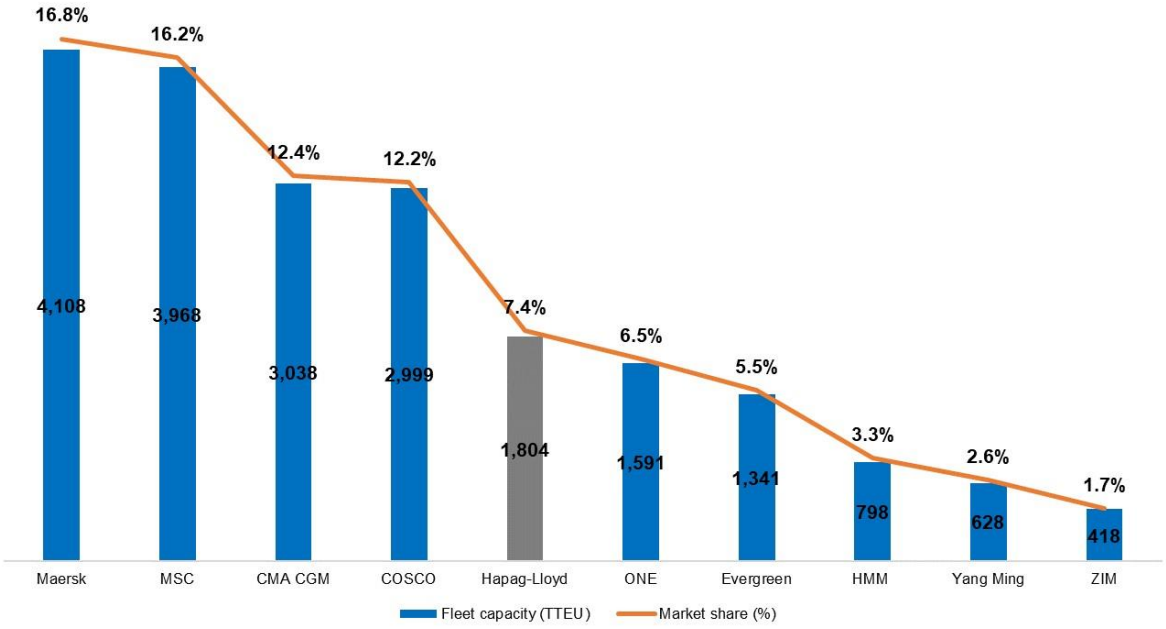
Appendix 5: Container Liner Shipping Business

5.1 Liner Shipping Supply Chain



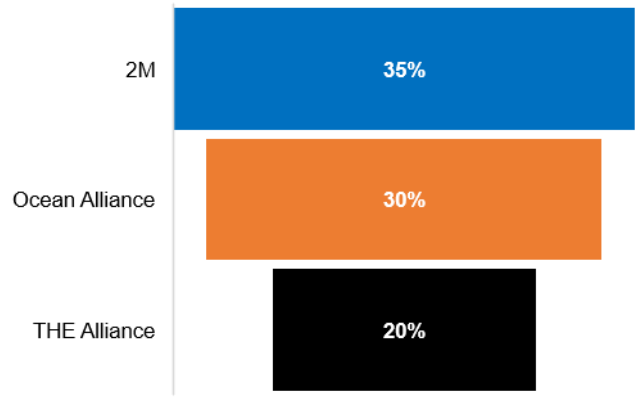
Infographic: Sea Traffic Management Validation Project

5.2 Fleet Capacity and Market Share of Top 10 Liner Shipping Companies



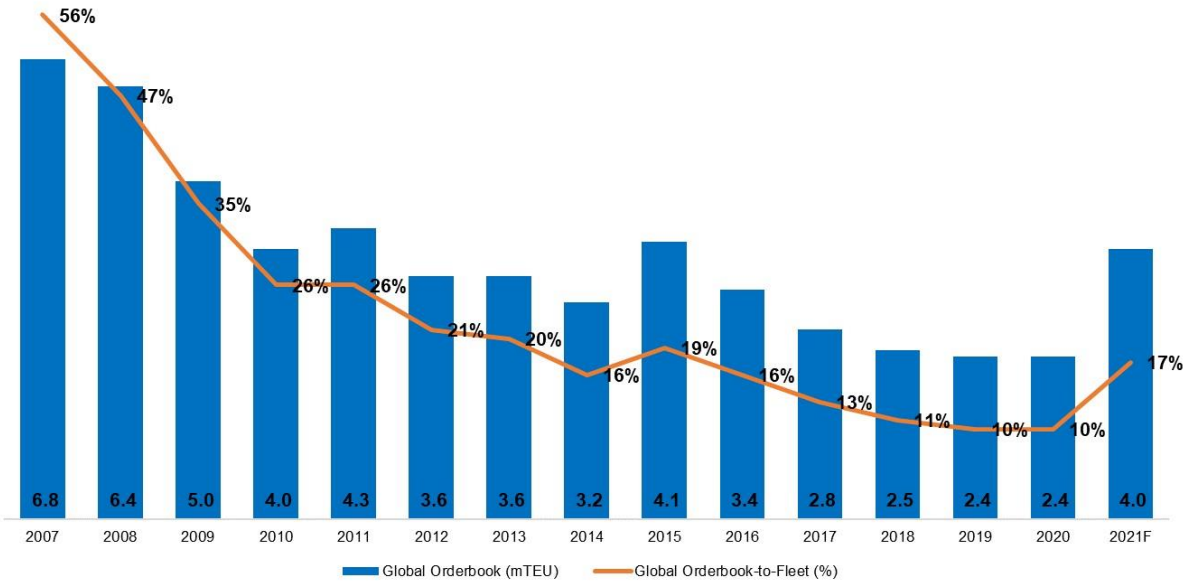
Source: Alphaliner (2021)

5.3 Market Share of Alliances (in percentage)



Source: Company Data

5.4 Orderbook Share of Fleet

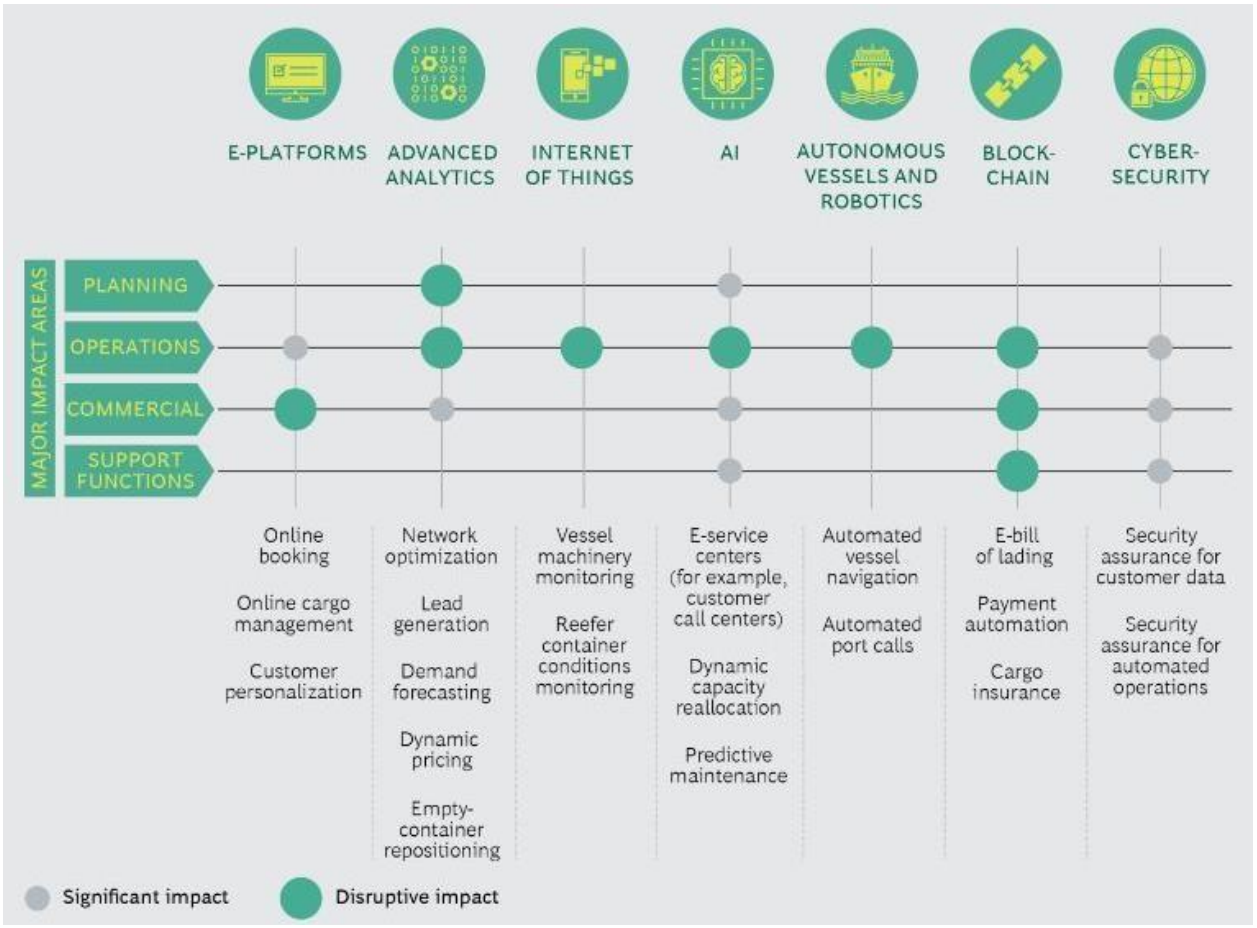


Source: MDS Transmodal; Clarsons, Drewry (2021)

5.5 Container Ship Growth

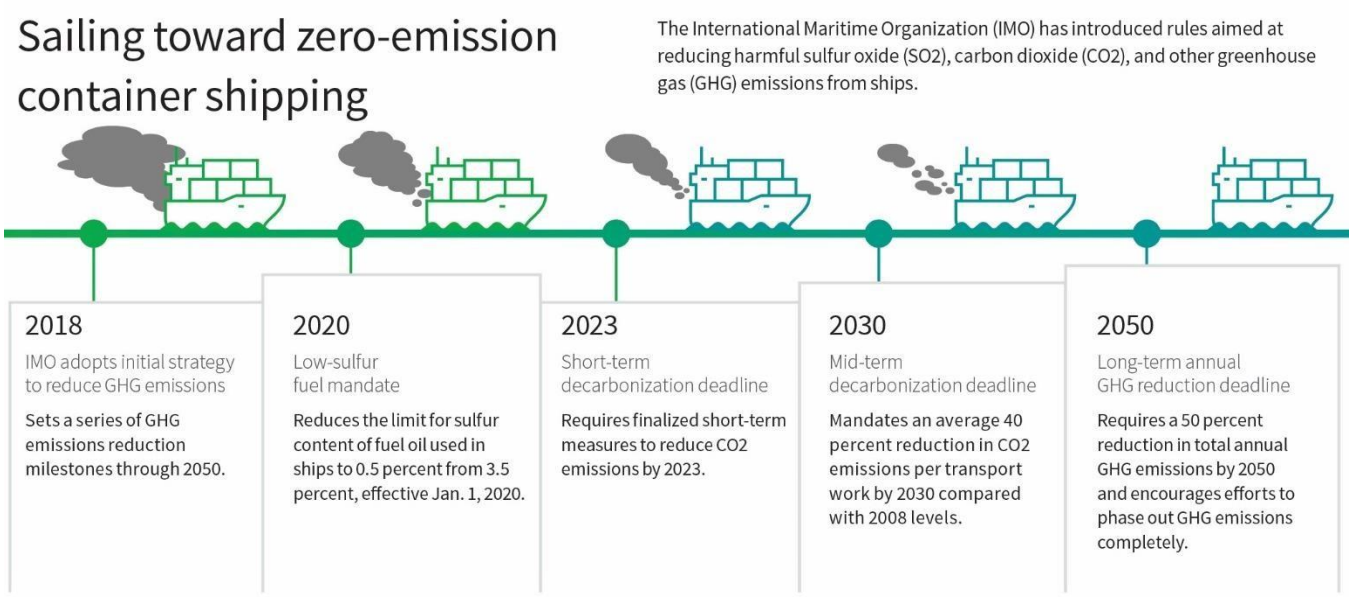
Infographic: MaritimeCyprus

5.5 Digital Trends That Will Transform Container Shipping



Infographic: BCG analysis

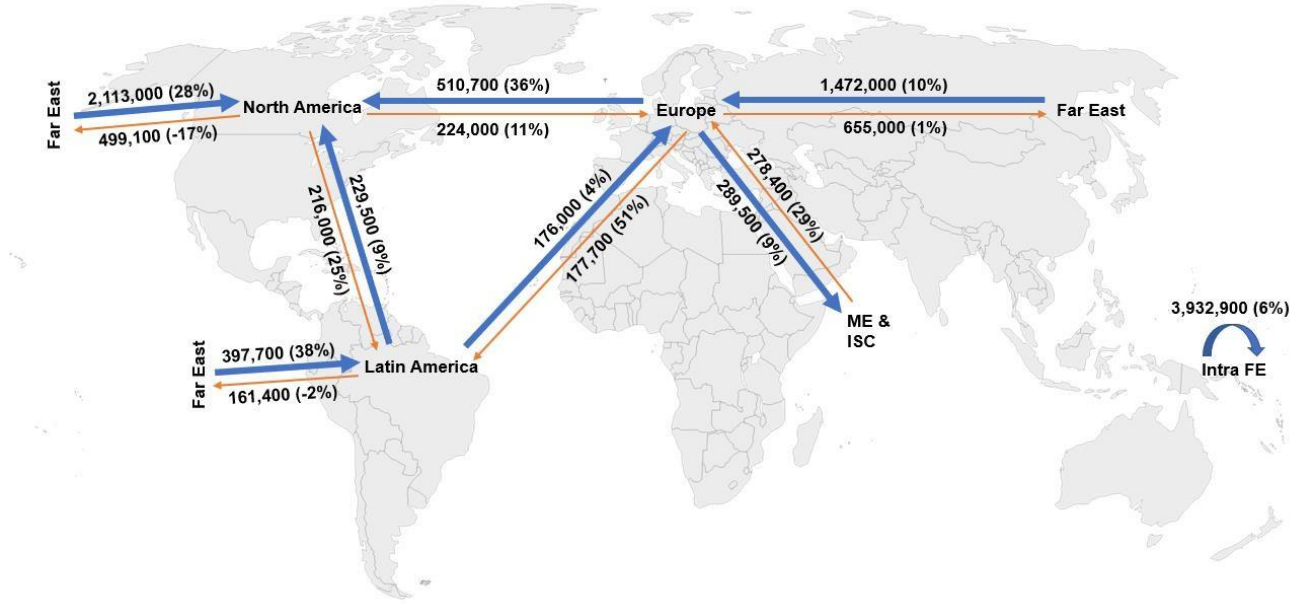
5.6 IMO Strategy to Reduce GHG Emissions



Infographic: IHS Markit

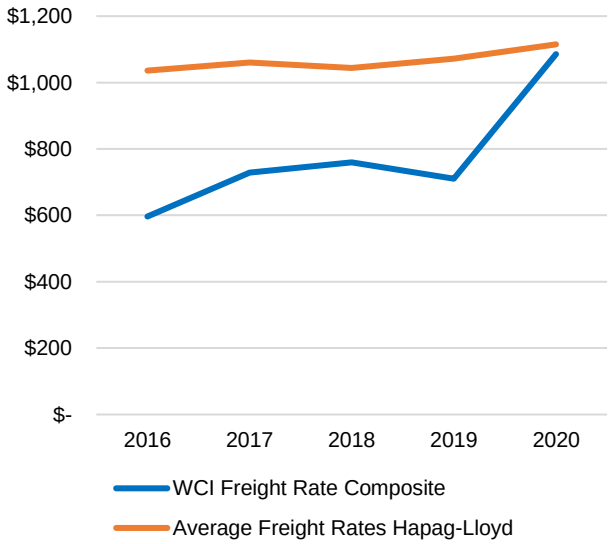
Appendix 6: Key Drivers of Profitability

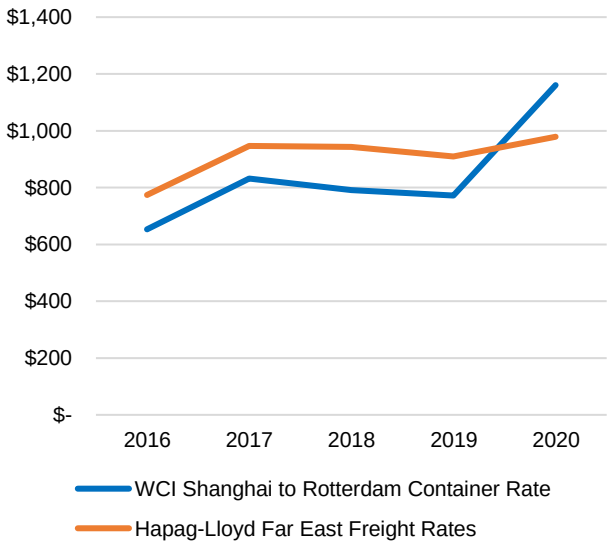
6.1Transport volume and growth rates for global container traffic per trade (volume June 2021 in million TEU; in brackets: June 2021 vs. June 2020, change in %)

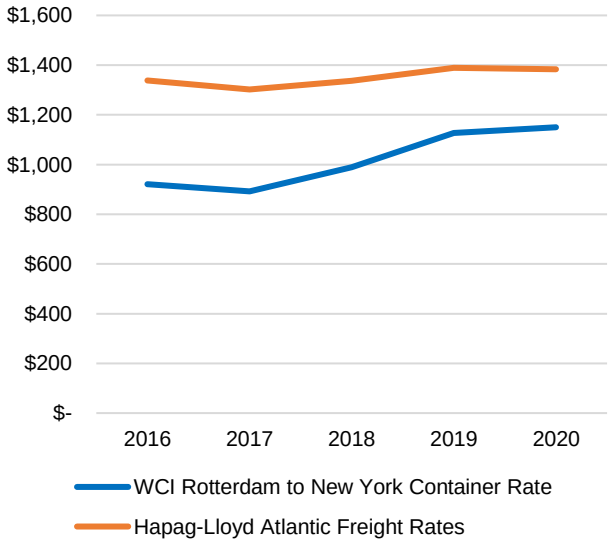


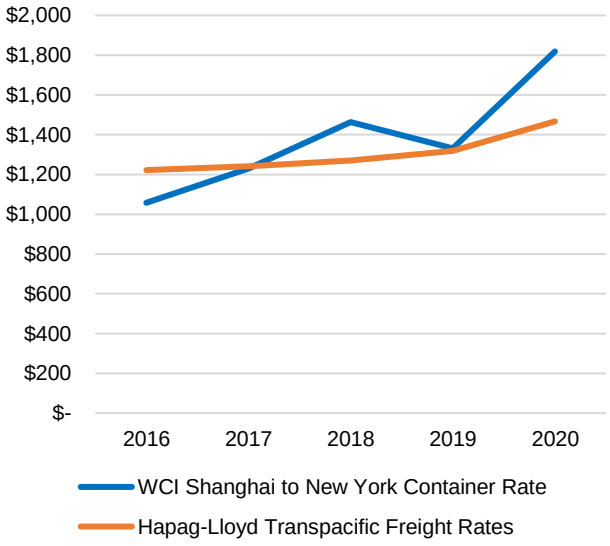
Source: Author Analysis; CTS (2021)

6.2 Hapag-Lloyd Freight Rates vs Industry Freight Rates









Source: Company Data; Drewry WCI (2021)

Appendix 7: Income Statement

For the year ended December 31, in thousand EUR

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Revenue	11,617,500.00	12,607,900.00	12,772,400.00	17,100,986.93	16,592,455.85	16,268,937.77	17,644,375.93	20,222,557.62	23,581,655.03
Cost of Revenue, Total	9,586,400.00	9,700,200.00	9,130,500.00	12,572,927.93	12,050,562.46	11,669,128.84	12,484,573.74	14,114,051.53	16,232,769.62
Gross Profit	**2,031,100.00**	**2,907,700.00**	**3,641,900.00**	**4,528,059.01**	**4,541,893.39**	**4,599,808.93**	**5,159,802.19**	**6,108,506.08**	**7,348,885.41**
Selling/General/Admin. Expenses, Total	645,000.00	974,600.00	964,500.00	998,257.50	1,030,201.74	1,062,137.99	1,095,064.27	1,129,011.26	1,162,881.60
Depreciation/Amortization	694,200.00	1,174,400.00	1,286,400.00	1,160,409.77	1,109,193.14	1,085,551.29	1,087,190.39	1,110,061.19	1,148,175.08
Depreciation	594,900.00	1,074,800.00	1,154,700.00	1,087,454.77	1,039,885.89	1,019,709.40	1,024,640.60	1,050,638.88	1,091,723.90
Amortization of Intangibles	99,300.00	99,600.00	131,700.00	72,955.00	69,307.25	65,841.89	62,549.79	59,422.30	56,451.19
Interest Expense, Net - Operating	-	-	-	-	-	-	-	-	-
Interest/Investment Income - Operating	36,900.00	10,200.00	15,400.00	15,939.00	16,449.05	16,958.97	17,484.70	18,026.72	18,567.52
Unusual Expense (Income)	900.00	(20,200.00)	85,700.00	85,700.00	85,700.00	85,700.00	85,700.00	85,700.00	85,700.00
Impairment-Assets Held for Use	900.00	-	98,800.00	98,800.00	98,800.00	98,800.00	98,800.00	98,800.00	98,800.00
Loss(Gain) on Sale of Assets - Operating	-	(20,200.00)	(13,100.00)	(13,100.00)	(13,100.00)	(13,100.00)	(13,100.00)	(13,100.00)	(13,100.00)
Other Unusual Expense (Income)	-	-	-	-	-	-	-	-	-
Other Operating Expenses, Total	254,000.00	(6,500.00)	5,500.00	5,692.50	5,874.66	6,056.77	6,244.53	6,438.12	6,631.26
Operating Income	**400,100.00**	**775,200.00**	**1,284,400.00**	**2,262,060.24**	**2,294,474.81**	**2,343,403.90**	**2,868,118.30**	**3,759,268.79**	**4,926,929.94**
Interest Expense, Net Non-Operating	(367,200.00)	(423,500.00)	(340,100.00)	(355,302.01)	(251,849.54)	(241,725.98)	(232,075.50)	(222,874.42)	(214,100.30)
Interest/Invest Income - Non-Operating	54,000.00	72,000.00	44,200.00	46,396.02	48,769.34	51,334.28	54,106.29	57,102.11	60,339.80
Interest Income - Non-Operating	15,800.00	12,200.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00
Investment Income - Non-Operating	38,200.00	59,800.00	27,200.00	29,396.02	31,769.34	34,334.28	37,106.29	40,102.11	43,339.80
Interest Inc.(Exp.),Net-Non-Op., Total	(313,200.00)	(351,500.00)	(295,900.00)	(308,905.99)	(203,080.19)	(190,391.70)	(177,969.20)	(165,772.31)	(153,760.50)
Other Non-Operating Income (Expense), Net	(9,100.00)	(7,400.00)	(7,200.00)	(7,452.00)	(7,690.46)	(7,928.87)	(8,174.66)	(8,428.08)	(8,680.92)
Net Income Before Taxes	**77,800.00**	**416,300.00**	**981,300.00**	**1,945,702.25**	**2,083,704.15**	**2,145,083.33**	**2,681,974.44**	**3,585,068.40**	**4,764,488.52**
Provision for Income Taxes	31,800.00	42,900.00	45,800.00	628,461.83	673,036.44	692,861.91	866,277.74	1,157,977.09	1,538,929.79
Net Income After Taxes	**46,000.00**	**373,400.00**	**935,500.00**	**1,317,240.42**	**1,410,667.71**	**1,452,221.41**	**1,815,696.69**	**2,427,091.31**	**3,225,558.73**
Minority Interest	(9,200.00)	(11,400.00)	(8,600.00)	(8,600.00)	(8,600.00)	(8,600.00)	(8,600.00)	(8,600.00)	(8,600.00)
Net Income Before Extra. Items	**36,800.00**	**362,000.00**	**926,900.00**	**1,308,640.42**	**1,402,067.71**	**1,443,621.41**	**1,807,096.69**	**2,418,491.31**	**3,216,958.73**

Appendix 8: Statement of Financial Position

For the year ended December 31, in thousand EUR

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Assets									
Cash and Short Term Investments	663,500.00	511,600.00	681,300.00	1,055,068.75	2,391,668.85	3,541,126.45	4,736,082.98	6,146,837.19	8,001,275.41
Accounts Receivable - Trade, Net	1,217,700.00	1,239,800.00	1,362,600.00	2,141,137.27	2,122,925.17	2,126,105.02	2,305,854.06	2,642,783.56	3,081,766.97
Total Inventory	238,100.00	248,500.00	172,300.00	230,692.75	223,832.65	219,468.38	238,023.08	272,802.82	318,117.12
Prepaid Expenses	17,000.00	27,100.00	21,500.00	23,941.38	23,229.44	22,776.51	24,702.13	28,311.58	33,014.32
Other Current Assets, Total	83,700.00	110,100.00	46,700.00	46,700.00	46,700.00	46,700.00	46,700.00	46,700.00	46,700.00
Total Current Assets	**2,456,300.00**	**2,388,600.00**	**2,551,200.00**	**3,497,540.15**	**4,808,356.11**	**5,956,176.37**	**7,351,362.25**	**9,137,435.14**	**11,480,873.83**
Property/Plant/Equipment, Total - Net	9,119,700.00	10,064,900.00	9,300,600.00	8,893,760.88	8,721,198.83	8,763,373.52	8,985,727.31	9,337,112.27	9,751,614.14
Goodwill, Net	1,568,800.00	1,600,700.00	1,466,800.00	1,466,800.00	1,466,800.00	1,466,800.00	1,466,800.00	1,466,800.00	1,466,800.00
Intangibles, Net	1,773,200.00	1,716,900.00	1,459,100.00	1,386,145.00	1,316,837.75	1,250,995.86	1,188,446.07	1,129,023.77	1,072,572.58
Long Term Investments	331,000.00	342,100.00	336,900.00	336,900.00	336,900.00	336,900.00	336,900.00	336,900.00	336,900.00
Note Receivable - Long Term	8,800.00	9,100.00	12,100.00	12,100.00	12,100.00	12,100.00	12,100.00	12,100.00	12,100.00
Other Long Term Assets, Total	43,500.00	78,100.00	57,600.00	58,608.00	59,561.86	60,515.47	61,498.65	62,512.31	63,523.68
Deferred Charges	800.00	300.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Deferred Income Tax - Long Term Asset	36,000.00	39,700.00	28,700.00	28,700.00	28,700.00	28,700.00	28,700.00	28,700.00	28,700.00
Other Long Term Assets	6,700.00	38,100.00	28,800.00	29,808.00	30,761.86	31,715.47	32,698.65	33,712.31	34,723.68
Total Assets	**15,301,300.00**	**16,200,400.00**	**15,184,300.00**	**15,651,854.03**	**16,721,754.55**	**17,846,861.22**	**19,402,834.28**	**21,481,883.48**	**24,184,384.23**
Liabilities									
Accounts Payable	1,774,100.00	1,779,400.00	1,748,100.00	3,452,993.80	3,486,688.67	3,552,422.85	3,852,758.25	4,415,720.12	5,149,199.74
Accrued Expenses	24,200.00	33,400.00	23,800.00	23,871.40	36,151.69	35,007.39	37,453.72	42,342.15	48,698.31
Current Port. of LT Debt/Capital Leases	716,300.00	1,241,100.00	965,700.00	955,700.00	945,700.00	935,700.00	925,700.00	915,700.00	905,700.00
Other Current liabilities, Total	862,100.00	939,700.00	1,055,300.00	1,241,032.34	1,219,216.36	1,205,337.43	1,264,343.73	1,374,947.72	1,519,053.00
Customer Advances	297,900.00	374,700.00	547,900.00	733,632.34	711,816.36	697,937.43	756,943.73	867,547.72	1,011,653.00
Income Taxes Payable	62,800.00	59,000.00	49,700.00	49,700.00	49,700.00	49,700.00	49,700.00	49,700.00	49,700.00
Other Current Liabilities	501,400.00	506,000.00	457,700.00	457,700.00	457,700.00	457,700.00	457,700.00	457,700.00	457,700.00
Total Current Liabilities	**3,376,700.00**	**3,993,600.00**	**3,792,900.00**	**5,673,597.54**	**5,687,756.71**	**5,728,467.67**	**6,080,255.70**	**6,748,709.99**	**7,622,651.05**
Total Long Term Debt	5,301,600.00	5,156,000.00	4,170,400.00	4,409,976.71	2,857,664.91	2,714,781.66	2,579,042.58	2,450,090.45	2,327,585.93
Total Debt	6,017,900.00	6,397,100.00	5,136,100.00	5,365,676.71	3,803,364.91	3,650,481.66	3,504,742.58	3,365,790.45	3,233,285.93
Deferred Income Tax	5,300.00	8,700.00	10,100.00	10,100.00	10,100.00	10,100.00	10,100.00	10,100.00	10,100.00
Minority Interest	10,600.00	14,000.00	15,500.00	15,500.00	15,500.00	15,500.00	15,500.00	15,500.00	15,500.00
Other Liabilities, Total	358,400.00	421,500.00	488,200.00	489,561.50	490,849.87	492,137.91	493,465.89	494,835.03	496,201.08
Reserves	75,600.00	65,700.00	73,100.00	73,100.00	73,100.00	73,100.00	73,100.00	73,100.00	73,100.00
Pension Benefits - Underfunded	266,700.00	329,300.00	376,200.00	376,200.00	376,200.00	376,200.00	376,200.00	376,200.00	376,200.00
Other Long Term Liabilities	16,100.00	26,500.00	38,900.00	40,261.50	41,549.87	42,837.91	44,165.89	45,535.03	46,901.08
Total Liabilities	**9,052,600.00**	**9,593,800.00**	**8,477,100.00**	**10,598,735.75**	**9,061,871.49**	**8,960,987.24**	**9,178,364.17**	**9,719,235.47**	**10,472,038.06**
Shareholders Equity									
Common Stock, Total	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00
Retained Earnings (Accumulated Deficit)	5,754,800.00	6,068,200.00	6,797,300.00	7,117,500.00	8,014,120.11	8,991,701.39	9,901,793.80	10,991,943.10	12,453,946.79
Other Equity, Total	318,100.00	362,600.00	(265,900.00)	(2,240,181.71)	(530,036.04)	(281,627.42)	146,876.31	594,904.91	1,082,599.37
Total Equity	**6,248,700.00**	**6,606,600.00**	**6,707,200.00**	**5,053,118.29**	**7,659,884.07**	**8,885,873.97**	**10,224,470.11**	**11,762,648.01**	**13,712,346.16**
Total Liabilities & Shareholders' Equity	**15,301,300.00**	**16,200,400.00**	**15,184,300.00**	**15,651,854.03**	**16,721,755.55**	**17,846,861.22**	**19,402,834.28**	**21,481,883.48**	**24,184,384.23**

Appendix 9: Cash Flow Statement

For the year ended December 31, in thousand EUR

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Cash Flow-Operating Activities									
Net Income/Starting Line	46,000.00	373,400.00	935,400.00	1,317,240.42	1,410,667.71	1,452,221.41	1,815,696.69	2,427,091.31	3,225,558.73
Depreciation, Amortization and Impairme	695,100.00	1,174,400.00	1,385,200.00	1,259,209.77	1,207,993.14	1,184,351.29	1,185,990.39	1,208,861.19	1,246,975.08
Non-Cash Items	354,400.00	384,600.00	375,000.00	375,000.00	375,000.00	375,000.00	375,000.00	375,000.00	375,000.00
Changes in Working Capital	(22,600.00)	95,800.00	202,300.00	(867,963.78)	(58,767.06)	(66,918.60)	(102,031.66)	(191,252.63)	(249,181.90)
Cash from Operating Activities	**1,072,900.00**	**2,028,200.00**	**2,897,900.00**	**2,083,486.41**	**2,934,893.79**	**2,944,654.10**	**3,274,655.42**	**3,819,699.87**	**4,598,351.91**
Cash Flow-Investing Activities									
Capital Expenditures	(328,900.00)	(426,100.00)	(534,100.00)	(680,615.65)	(867,323.84)	(1,061,884.09)	(1,246,994.38)	(1,402,023.85)	(1,506,225.77)
Purchase of Fixed Assets	(328,900.00)	(426,100.00)	(534,100.00)	(680,615.65)	(867,323.84)	(1,061,884.09)	(1,246,994.38)	(1,402,023.85)	(1,506,225.77)
Other Investing Cash Flow Items, Total	224,600.00	56,600.00	56,500.00	-	-	-	-	-	-
Cash from Investing Activities	**(104,300.00)**	**(369,500.00)**	**(477,600.00)**	**(680,615.65)**	**(867,323.84)**	**(1,061,884.09)**	**(1,246,994.38)**	**(1,402,023.85)**	**(1,506,225.77)**
Cash Flow-Financing Activities									
Financing Cash Flow Items	(266,800.00)	(494,400.00)	(299,500.00)	(355,302.01)	(251,849.54)	(241,725.98)	(232,075.50)	(222,874.42)	(214,100.30)
Total Cash Dividends Paid	(115,700.00)	(39,500.00)	(203,500.00)	(615,300.00)	(420,620.31)	(433,086.42)	(542,129.01)	(725,547.39)	(965,087.62)
Issuance (Retirement) of Stock, Net	200.00	-	-	-	-	-	-	-	-
Issuance (Retirement) of Debt, Net	(563,300.00)	(1,283,700.00)	(1,689,100.00)	-	-	-	-	-	-
Cash from Financing Activities	**(945,600.00)**	**(1,817,600.00)**	**(2,192,100.00)**	**(970,602.01)**	**(672,469.85)**	**(674,812.41)**	**(774,204.50)**	**(948,421.82)**	**(1,179,187.92)**
Foreign Exchange Effects	29,200.00	13,400.00	(58,500.00)	(58,500.00)	(58,500.00)	(58,500.00)	(58,500.00)	(58,500.00)	(58,500.00)
Net Change in Cash	52,200.00	(145,500.00)	169,700.00	373,768.75	1,336,600.10	1,149,457.60	1,194,956.53	1,410,754.20	1,854,438.23
Net Cash - Beginning Balance	604,900.00	657,100.00	511,600.00	681,300.00	1,055,068.75	2,391,668.85	3,541,126.45	4,736,082.98	6,146,837.19
Net Cash - Ending Balance	**657,100.00**	**511,600.00**	**681,300.00**	**1,055,068.75**	**2,391,668.85**	**3,541,126.45**	**4,736,082.98**	**6,146,837.19**	**8,001,275.41**

Appendix 10: Common-Size Income Statement

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Revenue	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Revenue, Total	82.52%	76.94%	71.49%	73.52%	72.63%	71.73%	70.76%	69.79%	68.84%
Gross Profit	**17.48%**	**23.06%**	**28.51%**	**26.48%**	**27.37%**	**28.27%**	**29.24%**	**30.21%**	**31.16%**
Selling/General/Admin. Expenses, Total	5.55%	7.73%	7.55%	5.84%	6.21%	6.53%	6.21%	5.58%	4.93%
Depreciation/Amortization	5.98%	9.31%	10.07%	6.79%	6.68%	6.67%	6.16%	5.49%	4.87%
Depreciation	5.12%	8.52%	9.04%	6.36%	6.27%	6.27%	5.81%	5.20%	4.63%
Amortization of Intangibles	0.85%	0.79%	1.03%	0.43%	0.42%	0.40%	0.35%	0.29%	0.24%
Interest Expense, Net - Operating	-	-	-	-	-	-	-	-	-
Interest/Investment Income - Operating	0.32%	0.08%	0.12%	0.09%	0.10%	0.10%	0.10%	0.09%	0.08%
Unusual Expense (Income)	0.01%	(0.16%)	0.67%	0.50%	0.52%	0.53%	0.49%	0.42%	0.36%
Impairment-Assets Held for Use	0.01%	0.00%	0.77%	0.58%	0.60%	0.61%	0.56%	0.49%	0.42%
Loss(Gain) on Sale of Assets - Operating	-	(0.16%)	(0.10%)	(0.08%)	(0.08%)	(0.08%)	(0.07%)	(0.06%)	(0.06%)
Other Unusual Expense (Income)	-	-	-	-	-	-	-	-	-
Other Operating Expenses, Total	2.19%	(0.05%)	0.04%	0.03%	0.04%	0.04%	0.04%	0.03%	0.03%
Operating Income	**3.44%**	**6.15%**	**10.06%**	**13.23%**	**13.83%**	**14.40%**	**16.26%**	**18.59%**	**20.89%**
Interest Expense, Net Non-Operating	(3.16%)	(3.36%)	(2.66%)	(2.08%)	(1.52%)	(1.49%)	(1.32%)	(1.10%)	(0.91%)
Interest/Invest Income - Non-Operating	0.46%	0.57%	0.35%	0.27%	0.29%	0.32%	0.31%	0.28%	0.26%
Interest Income - Non-Operating	0.14%	0.10%	0.13%	0.10%	0.10%	0.10%	0.10%	0.08%	0.07%
Investment Income - Non-Operating	0.33%	0.47%	0.21%	0.17%	0.19%	0.21%	0.21%	0.20%	0.18%
Interest Inc.(Exp.),Net-Non-Op., Total	(2.70%)	(2.79%)	(2.32%)	(1.81%)	(1.22%)	-1.17%	(1.01%)	(0.82%)	(0.65%)
Other Non-Operating Income (Expense), Net	(0.08%)	(0.06%)	(0.06%)	(0.04%)	(0.05%)	(0.05%)	(0.05%)	(0.04%)	(0.04%)
Net Income Before Taxes	**0.67%**	**3.30%**	**7.68%**	**11.38%**	**12.56%**	**13.19%**	**15.20%**	**17.73%**	**20.20%**
Provision for Income Taxes	0.27%	0.34%	0.36%	3.68%	4.06%	4.26%	4.91%	5.73%	6.53%
Net Income After Taxes	**0.40%**	**2.96%**	**7.32%**	**7.70%**	**8.50%**	**8.93%**	**10.29%**	**12.00%**	**13.68%**
Minority Interest	(0.08%)	(0.09%)	(0.07%)	(0.05%)	(0.05%)	(0.05%)	(0.05%)	(0.04%)	(0.04%)
Net Income Before Extra. Items	**0.32%**	**2.87%**	**7.26%**	**7.65%**	**8.45%**	**8.87%**	**10.24%**	**11.96%**	**13.64%**

Appendix 11: Common-Size Statement of Financial Position

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Assets									
Cash and Short Term Investments	4.34%	3.16%	4.49%	6.74%	14.30%	19.84%	24.41%	28.61%	33.08%
Accounts Receivable - Trade, Net	7.96%	7.65%	8.97%	13.68%	12.70%	11.91%	11.88%	12.30%	12.74%
Total Inventory	1.56%	1.53%	1.13%	1.47%	1.34%	1.23%	1.23%	1.27%	1.32%
Prepaid Expenses	0.11%	0.17%	0.14%	0.15%	0.14%	0.13%	0.13%	0.13%	0.14%
Other Current Assets, Total	0.55%	0.68%	0.31%	0.30%	0.28%	0.26%	0.24%	0.22%	0.19%
Total Current Assets	**16.05%**	**14.74%**	**16.80%**	**22.35%**	**28.76%**	**33.37%**	**37.89%**	**42.54%**	**47.47%**
Property/Plant/Equipment, Total - Net	59.60%	62.13%	61.25%	56.82%	52.15%	49.10%	46.31%	43.47%	40.32%
Goodwill, Net	10.25%	9.88%	9.66%	9.37%	8.77%	8.22%	7.56%	6.83%	6.07%
Intangibles, Net	11.59%	10.60%	9.61%	8.86%	7.87%	7.01%	6.13%	5.26%	4.43%
Long Term Investments	2.16%	2.11%	2.22%	2.15%	2.01%	1.89%	1.74%	1.57%	1.39%
Note Receivable - Long Term	0.06%	0.06%	0.08%	0.08%	0.07%	0.07%	0.06%	0.06%	0.05%
Other Long Term Assets, Total	0.28%	0.48%	0.38%	0.37%	0.36%	0.34%	0.32%	0.29%	0.26%
Deferred Charges	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Defered Income Tax - Long Term Asset	0.24%	0.25%	0.19%	0.18%	0.17%	0.16%	0.15%	0.13%	0.12%
Other Long Term Assets	0.04%	0.24%	0.19%	0.19%	0.18%	0.18%	0.17%	0.16%	0.14%
Total Assets	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
Liabilities									
Accounts Payable	11.59%	10.98%	11.51%	22.06%	20.85%	19.91%	19.86%	20.56%	21.29%
Accrued Expenses	0.16%	0.21%	0.16%	0.15%	0.22%	0.20%	0.19%	0.20%	0.20%
Current Port. of LT Debt/Capital Leases	4.68%	7.66%	6.36%	6.11%	5.66%	5.24%	4.77%	4.26%	3.74%
Other Current liabilities, Total	5.63%	5.80%	6.95%	7.93%	7.29%	6.75%	6.52%	6.40%	6.28%
Customer Advances	1.95%	2.31%	3.61%	4.69%	4.26%	3.91%	3.90%	4.04%	4.18%
Income Taxes Payable	0.41%	0.36%	0.33%	0.32%	0.30%	0.28%	0.26%	0.23%	0.21%
Other Current Liabilities	3.28%	3.12%	3.01%	2.92%	2.74%	2.56%	2.36%	2.13%	1.89%
Total Current Liabilities	**22.07%**	**24.65%**	**24.98%**	**36.25%**	**34.01%**	**32.10%**	**31.34%**	**31.42%**	**31.52%**
Total Long Term Debt	34.65%	31.83%	27.47%	28.18%	17.09%	15.21%	13.29%	11.41%	9.62%
Total Debt	39.33%	39.49%	33.83%	34.28%	22.75%	20.45%	18.06%	15.67%	13.37%
Deferred Income Tax	0.03%	0.05%	0.07%	0.06%	0.06%	0.06%	0.05%	0.05%	0.04%
Minority Interest	0.07%	0.09%	0.10%	0.10%	0.09%	0.09%	0.08%	0.07%	0.06%
Other Liabilities, Total	2.34%	2.60%	3.22%	3.13%	2.94%	2.76%	2.54%	2.30%	2.05%
Reserves	0.49%	0.41%	0.48%	0.47%	0.44%	0.41%	0.38%	0.34%	0.30%
Pension Benefits - Underfunded	1.74%	2.03%	2.48%	2.40%	2.25%	2.11%	1.94%	1.75%	1.56%
Other Long Term Liabilities	0.11%	0.16%	0.26%	0.26%	0.25%	0.24%	0.23%	0.21%	0.19%
Total Liabilities	**59.16%**	**59.22%**	**55.83%**	**67.72%**	**54.19%**	**50.21%**	**47.30%**	**45.24%**	**43.30%**
Shareholders Equity									
Common Stock, Total	1.15%	1.09%	1.16%	1.12%	1.05%	0.99%	0.91%	0.82%	0.73%
Retained Earnings (Accumulated Deficit)	37.61%	37.46%	44.77%	45.47%	47.93%	50.38%	51.03%	51.17%	51.50%
Other Equity, Total	2.08%	2.24%	(1.75%)	(14.31%)	(3.17%)	(1.58%)	0.8%	2.8%	4.5%
Total Equity	40.84%	40.78%	44.17%	32.28%	45.81%	49.79%	52.70%	54.76%	56.70%
Total Liabilities & Shareholders' Equity	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Appendix 12: Key Financial Ratios

	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F
Profitability									
Gross Margin (%)	17.5%	23.1%	28.5%	26.5%	27.4%	28.3%	29.2%	30.2%	31.2%
EBITDA Margin (%)	9.7%	15.4%	20.9%	20.0%	20.5%	21.1%	22.4%	24.1%	25.8%
Operating Margin (%)	3.4%	6.1%	10.1%	13.2%	13.8%	14.4%	16.3%	18.6%	20.9%
Pretax Margin (%)	0.7%	3.3%	7.7%	11.4%	12.6%	13.2%	15.2%	17.7%	20.2%
Effective Tax Rate (%)	40.9%	10.3%	4.7%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%
Net Margin (%)	0.4%	3.0%	7.3%	7.7%	8.5%	8.9%	10.3%	12.0%	13.7%
DuPont/Earning Power									
Asset Turnover (x)	0.77	0.80	0.81	1.11	1.03	0.94	0.95	0.99	1.03
Pretax Margin (%)	0.7%	3.3%	7.7%	11.4%	12.6%	13.2%	15.2%	17.7%	20.2%
Pretax ROA (%)	0.5%	2.6%	6.3%	12.6%	12.9%	12.4%	14.4%	17.5%	20.9%
Leverage (Assets/Equity) (x)	2.45	2.45	2.26	3.10	2.18	2.01	1.90	1.83	1.76
Pretax ROE (%)	1.3%	6.5%	14.7%	39.1%	28.1%	24.9%	27.3%	32.0%	36.8%
ROE (%)	0.6%	5.6%	13.9%	22.3%	22.1%	17.5%	18.9%	22.0%	25.3%
Earnings Retention (x)	0.28	0.47	0.34	0.53	0.70	0.70	0.70	0.70	0.70
Reinvestment Rate (%)	0.2%	2.6%	4.7%	-88.0%	-19.4%	-5.7%	3.0%	4.0%	3.3%
Liquidity									
Quick Ratio (x)	0.66	0.54	0.63	0.58	0.81	1.00	1.17	1.31	1.46
Current Ratio (x)	0.73	0.60	0.67	0.62	0.85	1.04	1.21	1.35	1.51
Times Interest Earned (x)	1.2	1.8	4.1	9.63	13.51	14.19	17.04	21.85	28.38
Cash Cycle (days)	(13.4)	(15.1)	(17.6)	(23.95)	(51.51)	(55.46)	(53.86)	(52.61)	(53.19)
Leverage									
Assets/Equity (x)	2.45	2.45	2.26	3.10	2.18	2.01	1.90	1.83	1.76
Debt/Equity (x)	0.96	0.97	0.77	1.06	0.50	0.41	0.34	0.29	0.24
LT Debt to Total Capital (%)	43.2%	39.6%	35.2%	46.6%	27.2%	23.4%	20.1%	17.2%	14.5%
(Total Debt - Cash) / EBITDA (x)	4.88	2.90	1.94	1.26	0.41	0.03	(0.31)	(0.57)	(0.78)
Operating									
Accounts Receivable Turnover (x)	8.7	8.6	8.2	8.0	7.8	7.7	7.7	7.7	7.7
Average Accounts Receivable Days (days)	42	43	45	46	47	48	48	48	48
Inventory Turnover (x)	45.2	39.9	43.4	62.4	53.0	52.6	54.6	55.3	54.9
Average Inventory Days (days)	8	9	8	6	7	7	7	7	7
Average Accounts Payable Days (days)	64	67	71	75	105	110	108	107	108
Fixed Asset Turnover (x)	1.28	1.31	1.32	1.9	1.9	1.9	2.0	2.2	2.5
WC / Sales Growth (%)	1.6%	(3.6%)	(1.1%)	(6.3%)	(6.9%)	(7.4%)	(7.4%)	(7.4%)	(7.4%)
ROIC (%)	0.4%	3.1%	7.9%	10.4%	12.1%	12.5%	15.5%	20.6%	27.4%

Appendix 13: Revenues and Cost Breakdown

Freight rates per trade (USD/TEU)	2021F	2022F	2023F	2024F	2025F	2026F	Assumptions
Freight Rates - Atlantic	1,414.36	1,287.07	1,171.23	1,262.50	1,360.88	1,466.92	Forecasted based on the Drewry WCI projection of 23% growth in freight rates in 2021 and thereafter a decrease of 9% for the next two years. For the Atlantic segment, freight rates of Hapag-Lloyd are more $233.11 comparing to the industry as the company is able to differentiate (direct port coverage, fast transit times, multiple weekly sailing).
Changes from industry targets	*233.11*	*233.11*	*233.11*	*233.11*	*233.11*	*233.11*	
Hapag-Lloyd Freight Rates - Atlantic	1,647.47	1,520.18	1,404.35	1,495.61	1,593.99	1,700.04	
Freight Rates - Transpacific	2,236.71	2,035.40	1,852.22	2,064.24	2,300.54	2,563.88	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021 and thereafter a decrease of 9% for the next two years. For the Transpacific segment, freight rates of Hapag-Lloyd are less $351.46, due to strive competition in this trade.
Changes from industry targets	*(351.46)*	*(351.46)*	*(351.46)*	*(351.46)*	*(351.46)*	*(351.46)*	
Hapag-Lloyd Freight Rates - Transpacific	1,885.25	1,683.94	1,500.76	1,712.78	1,949.08	2,212.42	
Freight Rates - Far East	1,427.58	1,299.10	1,182.18	1,431.83	1,734.20	2,100.43	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021 and thereafter a decrease of 9% for the next two years. For the Far East segment, freight rates of Hapag-Lloyd are less $181.63, due to strive competition in this trade.
Changes from industry targets	*(181.63)*	*(181.63)*	*(181.63)*	*(181.63)*	*(181.63)*	*(181.63)*	
Hapag-Lloyd Freight Rates - Far East	1,245.95	1,117.46	1,000.54	1,250.20	1,552.57	1,918.80	
Hapag-Lloyd Freight Rates - Middle East	1,029.51	936.85	852.54	893.51	936.45	981.45	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021F and thereafter a decrease of 9% for the next two years. For the Middle East segment, Hapag-Lloyd is price taker therefore, it has the same freight rates as the industry.
Hapag-Lloyd Freight Rates - Intra Asia	744.15	677.18	616.23	670.52	729.59	793.86	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021F and thereafter a decrease of 9% for the next two years. For the Intra-Asia segment, Hapag-Lloyd is price taker therefore, it has the same freight rates as the industry.
Freight Rates - Latin America	1,335.28	1,215.10	1,105.74	1,321.88	1,580.26	1,889.15	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021F and thereafter a decrease of 9% for the next two years. For the Latin Americaa segment, Hapag-Lloyd is price setter therefore, it has freight rates of $45.41 above the industry because it is the major active player in this trade.
Changes from industry targets	*45.41*	*45.41*	*45.41*	*45.41*	*45.41*	*45.41*	
Hapag-Lloyd Freight Rates - Latin America	1,380.69	1,260.51	1,151.15	1,367.29	1,625.67	1,934.56	
Hapag-Lloyd Freight Rates - EMA	1,292.73	1,176.38	1,070.51	1,116.04	1,163.50	1,212.98	Forecasted based on the Drewry projection of 23% growth in freight rates in 2021F and thereafter a decrease of 9% for the next two years. For the EMA segment, Hapag-Lloyd is price taker therefore, it has the same freight rates as the industry.
Average Freight Rates Hapag-Lloyd	**1,317.96**	**1,196.07**	**1,085.15**	**1,215.13**	**1,364.41**	**1,536.30**	

Transport volumes per trade (TTEU)	2021F	2022F	2023F	2024F	2025F	2026F	Assumptions
Changes previous year	*1.33%*	*1.35%*	*1.36%*	*-1.70%*	*-1.70%*	*-1.70%*	Hapag-Lloyd´s capacity utilisation of container fleet on dominant legs in major trades was forecasted at 1.4% CAGR 2018-2020 in the period between 2021F and 2023F. Thereafter it is expected to decrease 1.70%.
Capacity Utilisation Dominant Leg Hapag Lloyd major trades	96.93%	98.27%	99.64%	97.94%	96.24%	94.54%	
Capacity Utilization Dominant Leg Industry	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	Hapag-Lloyd´s capacity utilisation of vessels on dominant legs of the remaining trades will be less 0.55% than the average capacity utilisation of the industry of 70% each year, as those are the regions wich generates less revenues to the company.
Changes from industry targets	*-0.55%*	*-0.55%*	*-0.55%*	*-0.55%*	*-0.55%*	*-0.55%*	
Capacity Utilisation Dominant Leg Hapag Lloyd remaining trades	69.45%	69.45%	69.45%	69.45%	69.45%	69.45%	
Aggregate vessel capacity (TTEU)	**1,782.60**	**1,827.17**	**1,907.96**	**1,992.33**	**2,080.42**	**2,172.41**	Projected to growth YoY in line with expected supply.

Revenues per trade (in Thousands USD)	2021F	2022F	2023F	2024F	2025F	2026F
Revenues Atlantic	2,846,548.30	2,729,648.81	2,669,708.16	2,918,273.71	3,191,384.60	3,491,419.84
Revenues Transpacific	3,257,377.55	3,023,699.34	2,852,988.29	3,342,019.80	3,902,316.68	4,543,727.56
Revenues Far East	2,152,776.78	2,006,525.32	1,902,069.64	2,439,415.28	3,108,459.56	3,940,710.00
Revenues Middle East	1,274,551.69	1,188,838.09	1,129,679.28	1,236,321.64	1,353,031.09	1,480,757.97
Revenues Intra Asia	921,270.93	859,315.46	816,554.32	927,776.53	1,054,148.22	1,197,732.90
Revenues Latin America	1,709,314.16	1,599,548.64	1,525,367.28	1,891,876.81	2,348,857.66	2,918,752.34
Revenues EMA	1,600,422.73	1,492,794.30	1,418,510.07	1,544,228.65	1,681,089.32	1,830,079.56
Revenue per trade	**13,762,262.14**	**12,900,369.97**	**12,314,877.05**	**14,299,912.42**	**16,639,287.13**	**19,403,180.18**
Revenue not assigned per trade	1,238,603.59	1,161,033.30	1,108,338.93	1,286,992.12	1,497,535.84	1,746,286.22
Revenues	**15,000,865.73**	**14,061,403.26**	**13,423,215.98**	**15,586,904.53**	**18,136,822.98**	**21,149,466.40**

Transport Expenses (in Thousands USD)	2021F	2022F	2023F	2024F	2025F	2026F
Bunker	1,757,568.51	1,518,493.19	1,326,426.47	1,397,234.07	1,459,419.80	1,507,807.06
Fuel/Revenue per trade	*12%*	*13%*	*12%*	*11%*	*10%*	*9%*
Efficiency	*0.006*	*-0.01*	*-0.01*	*-0.01*	*-0.01*	*-0.01*
Handling&haulage	5,642,527.48	5,289,151.69	5,049,099.59	5,862,964.09	6,822,107.72	7,955,303.87
Equipment and repositioning	1,376,226.21	1,290,037.00	1,231,487.70	1,429,991.24	1,663,928.71	1,940,318.02
Vessel&voyage (excluding bunker)	2,201,961.94	2,064,059.19	1,970,380.33	2,287,985.99	2,662,285.94	3,104,508.83
Change in transport expenses for pending voyages	50,600.00	50,600.00	50,600.00	50,600.00	50,600.00	50,600.00
Total Transport Expenses	**11,028,884.15**	**10,212,341.07**	**9,627,994.09**	**11,028,775.39**	**12,658,342.18**	**14,558,537.78**

Appendix 14: Forecast Assumptions

Income Statement Assumptions

	Notes	2021F	2022F	2023F	2024F	2025F	2026F	Assumptions
MACROECONOMIC ASSUMPTIONS								
Real GDP Growth - World	%	6.0%	4.4%	3.5%	3.4%	3.3%	3.3%	IMF (2021)
Inflation Rate, average consumer prices	%	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	IMF (2021)
Average EUR/USD exchange rate	€/$	1.14	1.18	1.212	1.132	1.115	1.115	The Economy Forecast Agent
CONTAINER LINER SHIPPING INDUSTRY								
Global demand for container transport	%	5.7%	3.7%	3.7%	3.7%	3.7%	3.7%	Drewry (2021)
Capacity growth	%	3.7%	2.5%	4.4%	4.4%	4.4%	4.4%	Alphaliner (2021)
Brent crude oil price	$/barrel	59.74	56.23	54.11	52.96	52.42	52.24	IMF (2021)
INCOME STATEMENT								
Revenue Atlantic trade	$	2,846,548.30	2,729,648.81	2,669,708.16	2,918,273.71	3,191,384.60	3,491,419.84	See Appendix 15
Revenue Transpacific trade	$	3,257,377.55	3,023,699.34	2,852,988.29	3,342,019.80	3,902,316.68	4,543,727.56	See Appendix 15
Revenue Far East trade	$	2,152,776.78	2,006,525.32	1,902,069.64	2,439,415.28	3,108,459.56	3,940,710.00	See Appendix 15
Revenue Middle East trade	$	1,274,551.69	1,188,838.09	1,129,679.28	1,236,321.64	1,353,031.09	1,480,757.97	See Appendix 15
Revenue Intra Asia trade	$	921,270.93	859,315.46	816,554.32	927,776.53	1,054,148.22	1,197,732.90	See Appendix 15
Revenue Latin America trade	$	1,709,314.16	1,599,548.64	1,525,367.28	1,891,876.81	2,348,857.66	2,918,752.34	See Appendix 15
Revenue EMA trade	$	1,600,422.73	1,492,794.30	1,418,510.07	1,544,228.65	1,681,089.32	1,830,079.56	See Appendix 15
Revenue not assigned per trade	% Revenues per trade	9%	9%	9%	9%	9%	9%	Based on 2 years historical average as a percentage of revenues per trade.
Bunker fuel	% Revenues per trade	12%	13%	12%	11%	10%	9%	Based on the ratio Fuel/Revenue per trade, which is expected to increase 0.6% in 2021F and decrease 1% thereafter, as the fuel prices are correlated with oil prices.
Handling & haulage	% Revenues per trade	41%	41%	41%	41%	41%	41%	Forecasted as a percentage of revenues per trade.
Equipment & repositioning	% Revenues per trade	10%	10%	10%	10%	10%	10%	Forecasted as a percentage of revenues per trade.
Vessel & Voyage (excluding bunker)	% Revenues per trade	16%	16%	16%	16%	16%	16%	Forecasted as a percentage of revenues per trade.
Selling/General/Admin. Expenses, Total	YoY	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	Expected to grow based on expected inflation rate.
Depreciation	%Depreciation rate	12%	12%	12%	12%	12%	12%	Refers to the depreciation rate of equipments specifically vessels and containers in which the company opted to amortize in 25 years and 13 years respectively.
Amortization of Intangibles	%Amortization of intangibles rate	5%	5%	5%	5%	5%	5%	Refers to the amortization rate of intangibles related to trademark rights and computer software that are amortized until the expiration (average useful life is 20 years).
Interest/Investment Income - Operating	YoY	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	Refers to exchange rate-related gains associated with operating business and thus it is adjusted to expected inflation rate.
Impairment-Assets Held for Use	YoY	0%	0%	0%	0%	0%	0%	Remains equal to 2020 as there are any indications of a potential loss in value on goodwill, other intangible assets and property, plant and equipment to the forseen periods.
Loss(Gain) on Sale of Assets - Operating	YoY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Refers to gains resulting mainly from the disposal of vessels. It remains equal to prior year.
Other Operating Expense	YoY	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	Expected inflation rate.
Interest Expense - Non-Operating	YoY	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	Estimations of Rd.
Investment Income - Non-Operating	YoY	8%	8%	8%	8%	8%	8%	Refers to the income received from long term investmentds, so it remains equal to 2020.
Interest Income - Non-Operating	YoY	0%	0%	0%	0%	0%	0%	Refers to pensions and similar obligations , so it remains equal to 2020.
Other Non-Operating Income (Expense)	YoY	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	Expected inflation rate.
Income Taxes	YoY	32.30%	32.30%	32.30%	32.30%	32.30%	32.30%	Expected tax expense is subject to tonnage and regular taxation. However, the former depends on tonnage of company's fleet. Therefore, it is used the statutory income tax rate which is expected to be stable at 32.3%.
Minority Interest	YoY	0%	0%	0%	0%	0%	0%	Remain the same amount as 2020, as it is not expected any changes in the company´s non-controling interests.

Statement of Financial Position Assumptions

BALANCE SHEET								
Inventory	% Revenues	1%	1%	1%	1%	1%	1%	Inventories consist of raw materials, consumables and supplies. It is forecasted at 1% of revenues.
Prepaid Expenses	%Revenues	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	Related to transportation charges paid in advance, and are expected to reach about 0.14% of Revenue each year.
Other Current Assets, Total	YoY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Related to discontinued operations. It will remain same amount as 2020.
Accounts Receivables	days	46	47	48	48	48	48	DSO are expected to reach industry average of 48 days by 2023F, increasing 1 day per year starting from 2021F.
CAPEX	%	27%	27%	22%	17%	12%	7%	Forecasted at historical CAGR from 2018-2020 of purchase of fixed assets, reflecting Hapag-Lloyd´s replacement investments and retrofitting of ocean-going vessels and containers. From 2023F, it is expected to decrease 5% each year to avoid overcapacity.
Property/Plant/Equipment	%	0%	0%	0%	0%	0%	0%	Related to vessels. containers, buildings and other equipments with useful life of 25 years, 13 years, 40 years and 10 years respectively
Goodwill	%	0%	0%	0%	0%	0%	0%	Goodwill is related to the acquisition of the company´s competitor NileDutch to further strengthen presence in Africa and no impairments are expected in the foreseen period.
Intangibles	%	0%	0%	0%	0%	0%	0%	Related with trademark rights and computer software which are assumed to have an averager useful life of 20 years, whereas Hapag-Lloyd brand has na unlimited useful life, therefore will not be amortised but subject to impairments tests.
Long Term Investments	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Refers to investments in equity-accounted investees. It remains equal to 2020.
Deferred Income Tax - Long Term Asset	%	0%	0%	0%	0%	0%	0%	Deferred income tax assets refers to loss carry forwards. It is expected to remain equal to previous year.
Other Long Term Assets	YoY	3.5%	3.2%	3.1%	3.1%	3.1%	3.0%	Expected inflation.
Notes Receivable	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Equal amount as 2020.
Deferred Charges	%	0%	0%	0%	0%	0%	0%	Equal amount as previous year, as it represents 0% of total assets.
Accounts Payables	days	74	77	80	80	80	80	DPO should increase 3 days each year until 2023F.
Accrued Expenses	%COGS	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	Refers to the amount the company has to pay for the services provided by its suppliers. It is expected to reach 0.3% of COGS each year.
Current Port. of LT Debt/Capital Leases	€	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	Hapag-Lloyd aims to rollover part of the prior year amount and only pay off 10 thousands a year in debt, despite amount being due in next year.
Customer Advances	%	4.29%	4.29%	4.29%	4.29%	4.29%	4.29%	Related to transportation invoice received in advance, and remain same amount as 2020. Should reach 4.29% of Revenues each year.
Income Taxes Payable	%	0%	0%	0%	0%	0%	0%	Income tax liability is hard to estimate as it might refer to temporary differences between taxable profit and accounting profit, which may well include both deferred tax assets and liabilities. Thus, remains equal to 2020 (it only represents 0.33% of total assets)
Other Current Liabilities	%	0%	0%	0%	0%	0%	0%	Equal amount as 2020.
Total Long Term Debt	%	35.2%	35.2%	5%	5%	5%	5%	Forecasted to rollover and increase in 2021F to finance 35.2% of the CAPEX. From 2023F it is expected to decrease 5% each year to meet the company´s aims of reducing debt.
Deferred Income Tax - LT Liability	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Deferred tax liabilities refers to temporary differences between the net assets and the carrying amount of subsidiaries for tax purposes. It is projected the same amount as 2020 year.
Reserves	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Capital reserves should remain the same amount as 2020.
Pension Benefits - Underfunded	%	0%	0%	0%	0%	0%	0%	Refers to defined benefit plans from pension obligations and other post-employment benefits. Being on the liabilities means that the item has a deficit that is the item is underfunded. It is forecasted to remain equal as 2020 year.
Other Long Term Liabilities	YoY	3.50%	3.20%	3.10%	3.10%	3.10%	3.00%	Expected inflation.
Common Stock, Total	%	0%	0%	0%	0%	0%	0%	Remains the same as in 2020YE i.e as in previous year each individual share represents EUR 1.00 of the share capital.
DPS	€	3.5	2.39	2.46	3.08	4.13	5.49	Stable DPS
EPS		5.30	8.02	8.26	10.33	13.81	18.35	
Payout Ratio	%	66%	30%	30%	30%	30%	30%	Hapag-Lloyd aims at least 30% of dividend pay out ratio.
# of Shares Outstanding	€	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	Remain constant throughout the forseen periods.

Appendix 15: Risk Free Rate Estimation

Government Bond Yields	2021F	Source	Comments
Germany Government Bond 10 years	-0.43%	Bloomberg july 2021	
Germany Government Bond 30 years	0.03%	Bloomberg july 2021	
Germany Government Bond 10 years- Average	**-0.41%**	Bloomberg july 2021	monthly average

Survey Estimations	2021F	Source	Comments
RFR - Germany	0.60%	Fernandez 2021	

Appendix 16: Beta Estimation

Financial Agencies	2021F	Source	Comments
Bloomberg	0.50		
Thompson Reuters	0.81		5Y Monthly
Yahoo Finance	1.02		5Y Monthly
Financial Times			

Historical BETA	2021F	Source	Comments
Raw Beta (Regression vs DAX)	2.84		
Blume Adjusted Beta	**2.23**		

Pure Play Method - Industry	2021F	Source	Comments
Unlevered beta corrected for cash	**0.74**	shipbuilding & marine	
D/E	0.85		
Corporate Tax	32.30%		
Levered beta	**1.17**		

Hamada Formula Simplified	2021F	Source	Comments
Beta Equity	2.23		
1+D/E	2.06		
(1-t)	67.70%		
Unlevered Beta	**1.60**		

Appendix 17: Equity Risk Premium Estimation

Historical Premium	2021F	Source	Comments
Market Risk Premium	4.72%	damadoram 2021	
Country Risk Premium	0.23%	damadoram 2021	
Equity Risk Premium	**4.95%**		

Survey	2021F	Source	Comments
MRP - Germany	5.80%	fernandez 2021	

Financial Agencies	2021F	Source	Comments
ERP - Bloomberg	6.29%	Bloomberg	

Appendix 18: Cost of Debt Estimation

Historical average interest rate	2021F	Source	Comments
Interest Expense	340,100		
Total Debt (€M)	5,136,100		
Cost of Debt	**6.62%**		

Current YTM	2021F	Source	Comments
Issuer:	Hapag-Lloyd AG		
Currency:	EUR		
Cost of Debt	-0.46%	Bloomberg	

Current Issuer Rating	2021F	Source	Comments
Standard & Poor's	BB	Bloomberg	
Moody's	Ba2	Bloomberg	

Credit Default Spread	2021F	Source	Comments
RF	-0.41%		
Country Default Spread	0.23%	damadoram 2021	
Operating income (€M)	2,262,060.24		
Interest Expense (€M)	355,302.01		
Interest Coverage Ratio (€M)	6.37		
Synthetic rating	Aaa		
Corporate Default Spread	0.69%	damadoram 2021	
Cost of Debt	0.51%		

Appendix 19: Cost of Cost of Equity and WACC Estimation

CAPM	
RF	-0.41%
Beta	2.23
ERP	4.95%
Re	**10.61%**

Capital Structure	
Weight of Debt	51%
Weight of Equity	49%

Cost of Capital - WACC	
Re	10.61%
E/(E+D)	49%
Rd	6.62%
(1-t)	67.70%
D/(E+D)	51%
WACC	**7.45%**

Appendix 20: Unlevered Cost of Capital Estimation

Unlevered Cost of Capital - Ru using CAPM	
RF	-0.41%
Unlevered Beta	1.60
ERP	4.95%
Ru	**7.49%**

Appendix 21: Long Run Sustainable Growth Rate Estimation

Stable growth model	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
World GDP Growth	3.6%	2.8%	-3.3%	6.0%	4.4%	3.5%	3.4%	3.3%	3.3%	3.3%
CAPEX	328,900.00	426,100.00	534,100.00	680,615.65	867,323.84	1,061,884.09	1,246,994.38	1,402,023.85	1,506,225.77	8,054,167.57
Depreciation, Amortization & Impairments	695,100.00	1,174,400.00	1,385,200.00	1,259,209.77	1,207,993.14	1,184,351.29	1,185,990.39	1,208,861.19	1,246,975.08	10,548,080.86
Change NWC	(22,600.00)	95,800.00	202,300.00	(867,963.78)	(58,767.06)	(66,918.60)	(102,031.66)	(191,252.63)	(249,181.90)	(1,260,615.65)
EBIT	400,100.00	775,200.00	1,284,400.00	2,262,060.24	2,294,474.81	2,343,403.90	2,868,118.30	3,759,268.79	4,926,929.94	20,913,955.98
Corporate tax	40.9%	10.3%	4.7%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%
Reinvestiment Rate	-164%	-94%	-53%	-94%	-26%	-12%	-2%	0.1%	0.3%	0.3%
ROE	1%	6%	14%	22%	22%	17%	19%	22%	25%	25%
g										**0.08%**

Dividend sustainable growth rate	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
Payout Ratio	57%	52%	66%	66%	30%	30%	30%	30%	30%	
Retantion Rate	43%	48%	34%	34%	70%	70%	70%	70%	70%	34%
ROE	1%	6%	14%	22%	22%	17%	19%	22%	25%	22%
g										**7.57%**

Appendix 22: DCF Methods

22.1 WACC Method

	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
Operating Income	1,284,400.00	2,262,060.24	2,294,474.81	2,343,403.90	2,868,118.30	3,759,268.79	4,926,929.94	4,926,929.94
Corporate tax	4.7%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%
(1-t)	95.3%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%
+EBIT*(1-t)	1,224,033.20	1,531,414.78	1,553,359.44	1,586,484.44	1,941,716.09	2,545,024.97	3,335,531.57	3,335,531.57
+Depreciation, Amortization and Impairments	1,385,200.00	1,259,209.77	1,207,993.14	1,184,351.29	1,185,990.39	1,208,861.19	1,246,975.08	1,246,975.08
+Loss(Gain) on Sale of Assets - Operating	13,100.00	13,100.00	13,100.00	13,100.00	13,100.00	13,100.00	13,100.00	13,100.00
-Changes NWC	202,300.00	(867,963.78)	(58,767.06)	(66,918.60)	(102,031.66)	(191,252.63)	(249,181.90)	(249,181.90)
-CAPEX	534,100.00	680,615.65	867,323.84	1,061,884.09	1,246,994.38	1,402,023.85	1,506,225.77	1,506,225.77
FCFF	**1,885,933.20**	**2,991,072.68**	**1,965,895.80**	**1,788,970.24**	**1,995,843.76**	**2,556,214.95**	**3,338,562.79**	**3,338,562.79**
WACC								7.45%
g								0.08%
Terminal Value								**45,280,086.78**
Enterprise Value								**43,832,545.46**
+Non operating assets								28,700.00
-Non operating liabilities								(10,100.00)
+Cash & Cash equivalents								1,055,068.75
-Debt								(5,365,676.71)
-Pension Benefit								(376,200.00)
-Minority Interests								(15,500.00)
Equity Value								**39,148,837.50**
Number of shares outstanding								175,800.00
Price per Share								**€ 222.69**

22.2 Flow-to-Equity Method

	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
+FCFF	1,885,933.20	2,991,072.68	1,965,895.80	1,788,970.24	1,995,843.76	2,556,214.95	3,338,562.79	3,338,562.79
-Interest Expense	340,100.00	355,302.01	251,849.54	241,725.98	232,075.50	222,874.42	214,100.30	214,100.30
Corporate tax	4.7%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%
(1-t)	95.3%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%	67.7%
+Net Borrowing	(1,261,000.00)	229,576.71	(1,562,311.80)	(152,883.25)	(145,739.08)	(138,952.13)	(132,504.52)	(132,504.52)
FCFE	**300,817.90**	**2,980,109.93**	**233,081.87**	**1,472,438.51**	**1,692,989.57**	**2,266,376.83**	**3,061,112.37**	**3,061,112.37**
Re								10.61%
g								0.08%
Terminal Value								**29,079,681.86**
Equity Value								**26,571,231.03**
Number of shares outstanding								175,800.00
Price per Share								**€ 151.14**

22.3 APV Method

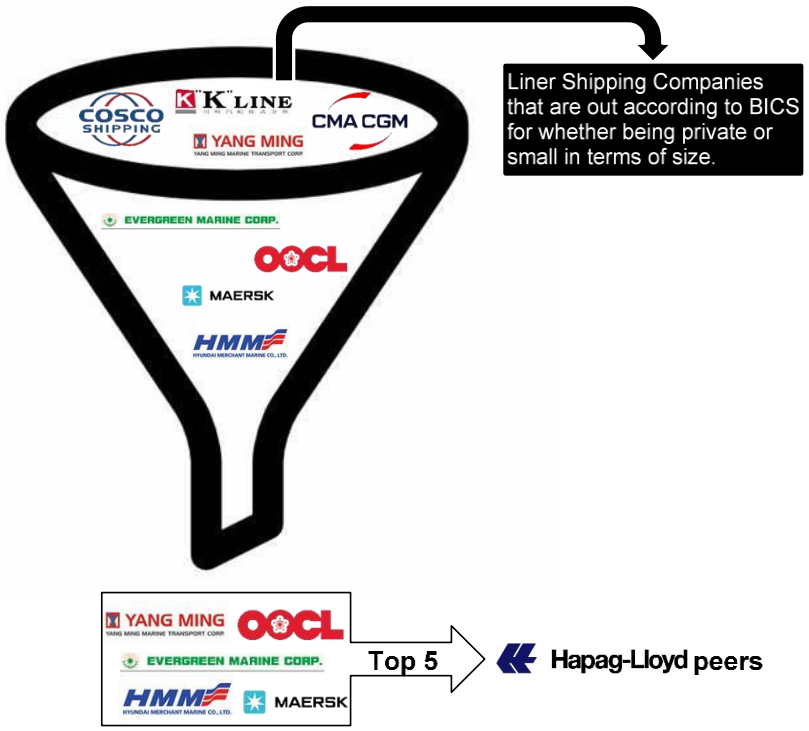
		2021F	2022F	2023F	2024F	2025F	2026F
FCFF		2,991,072.68	1,965,895.80	1,788,970.24	1,995,843.76	2,556,214.95	3,338,562.79
Ru	7.49%						
Unlevered Value of Firm (Vu)	**12,218,089.22**						
Debt Capacity	5,136,100.00	5,365,676.71	3,803,364.91	3,650,481.66	3,504,742.58	3,365,790.45	3,233,285.93
Interest Paid		(355,302.01)	(251,849.54)	(241,725.98)	(232,075.50)	(222,874.42)	(214,100.30)
Tax Shield		(114,762.55)	(81,347.40)	(78,077.49)	(74,960.38)	(71,988.44)	(69,154.40)
Rd	6.62%						
PV(Tax Shield)	**427,472.06**						
Levered Value of Firm (Vl)	**12,645,561.28**						
Debt	(5,136,100.00)						
Equity	**7,509,461.28**						
Number of shares outstanding	175,800.00						
Price per Share	**€ 42.72**						

Appendix 23: Dividend Discount Model

	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
DPS	3.50	3.50	2.39	2.46	3.08	4.13	5.49	
Number of shares outstanding	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	175,800.00	
Dividends	615,300.00	615,300.00	420,620.31	433,086.42	542,129.01	725,547.39	965,087.62	
Payout ratio	66%	66%	30%	30%	30%	30%	30%	
Shareholders CF	**615,300.00**	**673,753.50**	**504,334.27**	**568,613.19**	**779,397.71**	**1,142,184.81**	**1,663,609.76**	**58,784,855.96**
Re								10.61%
gs								9.50%
gl								7.57%
Equity Value								**39,442,058.14**
Number of shares outstanding								175,800.00
Price per Share								**€ 224.36**

Appendix 24: Relative Valuation

24.1 Selection of Industry Peers



											EV Multiples		Price Multiples
Rank	Company	Ticker	Market Cap (in EUR)	Revenues (in EUR)	ROE	EBITDA Margin	EBIT Margin	Dividend Yield	Type of Company	Selected Peer	EV/EBITDA	EV/Sales	P/E
BICS/Marine Shipping/Container Shipping													
1	AP MOLLER-B	MAERSKB DC Equity	44,174,081,078.86	25,553,289,381.972	9.59%	20.92%	9.90%	2.22%	Public	Yes	6.71	1.4	15.49
2	COSCO SHIP HOL-H	1919 HK Equity	29,543,129,676.84	21,077,465,870.3538	N.A.	12.10%	4.08%	N.A.	Private	No			
3	CMA CGM	144898Z FP Equity	N.A.	18,040,838,365.4713	N.A.	N.A.	N.A.	N.A.	Private	No			
4	HAPAG-LLOYD HOLD	30417027 GR Equity	23,587,000,000.00	9,973,400,000.00	13.9%	20.9%	10.1%	2.62%	Public	Yes	10.18	2.17	17.44
5	ORIENT OVERSEAS	316 HK Equity	7,215,689,499.22	7,150,717,762.6593	17.08%	17.63%	12.11%	3.74%	Public	Yes	6.43	1.13	6.93
6	EVERGREEN MARINE	2603 TT Equity	11,824,109,859.39	6,157,073,066.8085	29.44%	26.81%	16.72%	5.49%	Public	Yes	6.58	1.76	8.04
7	YANG MING MARINE	2609 TT Equity	7,778,636,625.28	4,248,589,877.6187	47.77%	24%	12.62%	N.A.	Public	Yes	4.81	1.15	6.49
8	HMM CO LTD	011200 KS Equity	11,605,871,227.70	4,204,562,999.3447	-10.20%	24.43%	15.29%	N.A.	Public	Yes	9.46	2.31	135.44
9	KAWASAKI KISEN	9107 JP Equity	1,971,589,507.44	3,181,963,259.7887	17.78%	6.95%	0.93%	N.A.	Public	No			
10	CHINA SHIPPING G	CSHGCZ CH Equity	N.A.	2,573,276,958.1944	N.A.	N.A.	N.A.	N.A.	Private	No			
										Average	7.36	1.65	31.64

24.2 Multiples-Based Approach

Enterprise Value Multiples	2021F	2022F
EV/EBITDA		
Peers Average		7.36
EBITDA	3,422,470.01	3,403,667.94
Enterprise Value	**25,195,083.35**	**25,056,668.84**
+Non operating assets	28,700.00	28,700.00
-Non operating liabilities	(10,100.00)	(10,100.00)
+Cash & Cash equivalents	1,055,068.75	2,391,668.85
-Debt	(5,365,676.71)	(3,803,364.91)
-Pension Benefit	(376,200.00)	(376,200.00)
-Minority Interests	(15,500.00)	(15,500.00)
Equity Value	**20,511,375.40**	**23,271,872.78**
Number of shares outstanding	175,800.00	175,800.00
Price per share	**€ 116.67**	**€ 132.38**
EV/Sales		
Peers Average		1.65
Sales	17,100,986.93	16,592,455.85
Enterprise Value	**28,273,631.73**	**27,432,860.34**
+Non operating assets	28,700.00	28,700.00
-Non operating liabilities	(10,100.00)	(10,100.00)
+Cash & Cash equivalents	1,055,068.75	2,391,668.85
-Debt	(5,365,676.71)	(3,803,364.91)
-Pension Benefit	(376,200.00)	(376,200.00)
-Minority Interests	(15,500.00)	(15,500.00)
Equity Value	**23,589,923.77**	**25,648,064.28**
Number of shares outstanding	175,800.00	175,800.00
Price per share	**€ 134.19**	**€ 145.89**

Equity Value Multiples	2021F	2022F
P/E		
Peers Average		31.64
Earnings	1,317,240.42	1,410,667.71
Equity Value	**41,675,291.58**	**44,631,175.18**
Number of shares outstand	175,800.00	175,800.00
Price per share	**€ 237.06**	**€ 253.87**

Disclosures and Disclaimer

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Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	0%≤	>0% & ≤10%	>10% & ≤20%	>20% & ≤45%	>45%
Medium Risk	-5%≤	>-5% & ≤5%	>5% & ≤15%	>15% & ≤30%	>30%
Low Risk	-10%≤	>-10% & ≤0%	>0% & ≤10%	>10% & ≤20%	>20%