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STRATEGY AND BUSINESS MODELS IN TRAMP SHIPPING. FROM FINANCIALISATION TO DIGITALIZATION.

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TESTIMONIALS

'Strategy and Business Models in Tramp Shipping by Peter Borup and Martin Jes Iversen is intended for professionals and board members as well as students in maritime studies. By dissecting the complex forces of maritime logistics and economics, especially in the past quarter century, the authors provide deep insights into the strategic implications for tramp shipping arising from financialization, digitalization, reporting requirements and regulatory pressures. Their perceptive, data-packed analysis considers the underlying shifts in cost in the industry and the diverse ways to manage and integrate them into corporate strategy. A novel feature of the book that differentiates it from textbooks is that it will have a dynamic learning platform with cases, podcasts, and interviews with firms. That will be greatly appreciated by readers.'

Pang Eng Fong
Emeritus Professor of Strategy and Entrepreneurship
Singapore Management University

'Over the past few decades, the anatomy of the shipping business has changed markedly: from shipowners having to possess the capital to purchase ships as well as competencies required of technical management, chartering, commercial operations and sourcing of manpower to a landscape wherein capital has become available to potential shipowners via entities like private equity funds, leasing companies and public capital markets while the competencies are now available in a disaggregated fashion from technical managers, commercial managers, manning agencies, employment pools and operators. At the same time, the users of shipping have also developed differing methodologies for managing their supply chain risks and costs. This opens up a multitude of structures and methods by which one can engage in the business of being a shipowner as this book lucidly illustrates. The options that shipowners thus face requires them to carefully consider their own risk appetite and ability to manage both costs and risks in a market that is intensely competitive because of barriers to entry having diminished due to the above-mentioned disaggregation. The authors have drawn upon their many years of rich experience with bulk shipping to adeptly guide the reader in understanding the choices of structures and operational methods (collectively the strategy) for building a shipping business most appropriate, considering their own strengths, weaknesses and aspirations.'

Rohet Tolani
Managing Director
Tolani Shipping Pte. Ltd., Singapore

'In terms of timing, the publication of this wide ranging and superbly researched book could hardly be better. Owners and operators are facing a multitude of challenges to an extent never really seen before and quite aside from good old commercial realities, they must tackle the environmental commitments made by the industry, along with the more recent 'arrival' of digitalization and its potentially massive impact - so interestingly deliberated in the chapter on maritime digital integration. The dry bulk market is in many ways epitomizes the perfect market, yet with these and many other complex issues requiring owners/operators' best possible judgement, the challenges do indeed seem almost endless. I believe this book may well be a unique in-depth look at the fascinating dry bulk segment of shipping and I think heartiest congratulations to Peter Borup and, as a key contributor, Professor Martin Jes Iversen are richly deserved. The book will be of interest to the most seasoned of professionals, let alone for those with aspiring to join our wonderful industry.'

Esben Poulsson
Non executive Board Chairman - Board Member
former president of International Chamber of Shipping

'This deep analysis of the shipping industry includes new contributions to business strategy in global markets that are applicable anywhere. Nearly every aspect of life involves some form of movement, and the authors' perspectives on the businesses that transit things by sea is a source of insight and ideas for all. On the water, it is essential to keep an eye on the horizon. This platform creates opportunity for anyone seeking to expand and clarify their vision. Messrs Borup & Iversen have illustrious track records, and their combined contributions herein provide tomorrow's leaders a precious vantage for interpreting future challenges.'

James Tunkey QRM CFE CII
Chief Operating Officer
OnAsia Limited

'The literature on maritime transport is quite limited, most of shipping professionals have learned about shipping knowledge from job experiences. The publication of "Strategy and Business Models in Tramp Shipping" will add alternative sources of information, as it covers quite wide ranges of shipping business and the challenges that lie ahead, such as market, business models, digitalization in shipping and environmental issues.'

Mukhlizin Aziz,
Independent Shipping Consultant, Indonesia

STRATEGIC MANAGEMENT IN INTERNATIONAL TRAMP SHIPPING

INTRODUCTION

By Peter Borup & Martin Jes Iversen

At the dawn of the 21st Century tramp shipping companies faced a strategic transformation of their markets created by geo-political, technological and economic upheavals. The most successful companies looked to financialization, digitalization, portfolio management and an active approach to the environmental, social and governmental (ESG) conditions in order to create a sustainable foundation of their activities during these challenging conditions.

This learning platform concerns strategic management in the field of international bulk shipping. The subject field is maritime transportation of various dry and wet products. Regarded from a commercial perspective a fundamental categorization distinguishes between industrial shipping and tramp shipping. Industrial shipping concerns bulk shipping that is embedded in industrial relations – either through the industrial shippers direct ownership of vessels or through purpose built and tailored transportation. In contrast tramp shipping operates like taxi services: searching and serving the fluctuating demands of the market.

Bulk shipping is marked two rather distinct characteristics rarely seen in other industries. Firstly the - and in contrast to land-based transportation – vessels do not have a commercial homebase from which they operate in and out. The market field of tramp shipping consists in principle of all accessible oceans and reachable ports. The second perceptible feature of tramp shipping are the costly assets. Both in terms of the vessels - a medium sized product tanker vessels can reach a new building price of 30-40 million USD – and the cargo an oil tanker often exceed 100 million USD dependent on the oil price. It follows that the entrance barriers to ship ownership are rather high, and that the financial aspects are critical in maritime strategies. It often takes between 1.5 and 3 years to contract and built a new vessel, meaning that a certain increasing demand cannot be met by a rapid response of additional supply in terms of new tonnage. And when demand for transportation erodes because of financial crises then supply in terms of tonnage on the water continues to be present. It calls for resilience and a certain nimbleness of mind to survive not to mention succeed in such an industry.

Accordingly, the first part of the platform will seek to establish a shared language about the fundamentals of tramp shipping, including short descriptions of some of the adjacent industries that either supplies tonnage or buys tonnage capacity from the shipping industry.

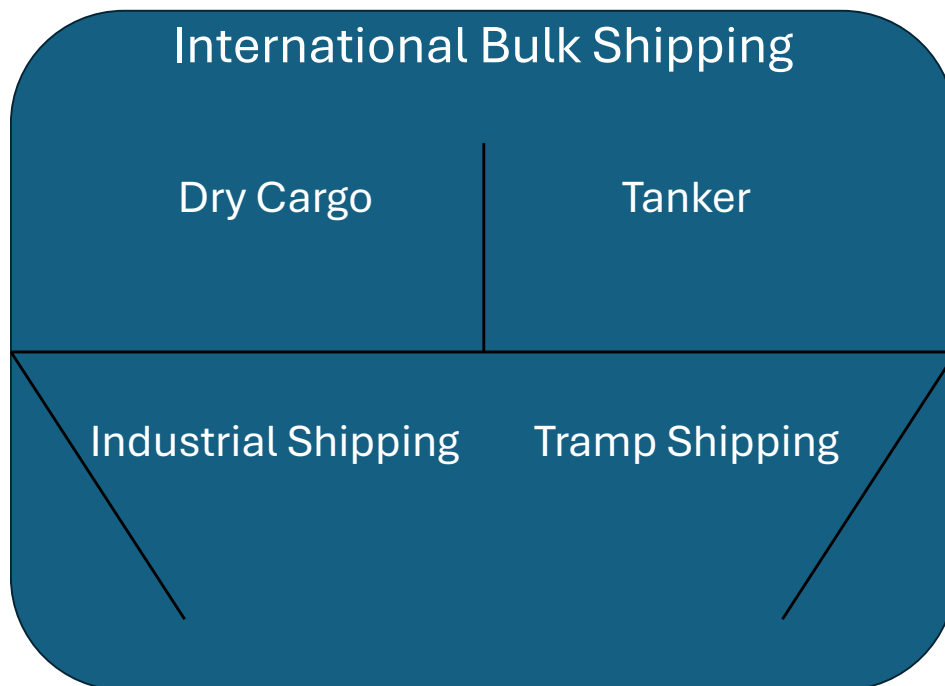
Developing and implementing plans to help an organization achieve its goals and objective – that is the craft of Strategic Management. Importantly the logics of strategies differ between industries and over time. In international bulk shipping a flexible market-based approach is essential. Sustainable planning and successful execution must per definition be based on the ability to live with and manage uncertainty. Volatilities in freight rates and asset values over the years are testament to how quickly the effect of geopolitical events can affect even solid and well-established corporate strategies.

As co-authors we approach the topic from two different vantage points. Martin comes from an academic perspective, having now spent more than 15 years teaching and analysing the shipping industry, whereas Peter has some 30 years of experience from within the industry in senior management positions on three continents.

The development of a strategy, and perhaps more importantly, how it is implemented – and recalibrated when the world changes has fascinated us throughout our professional lives.

The first thing that is revealed when you start developing a strategy is whether the company has a shared language. How often do we spend days debating strategy only realize towards the end that we are in basic agreement, but we are using different or unclear terms.

Part I will also develop a framework for understanding different market types, different ownership approaches and traditional strategy approaches for each of these. Our focus will be on bulk shipping, divided between the dry cargo segments, and the tanker segments. In both segments we distinguish between conventional tramp players who acquire tonnage capacity to operate in the mostly spot chartering markets, and the industrial tramp owners, who buy tonnage for dedicated and long-term trades or contracts.



INTRODUCTION TO THE LEARNING PLATFORM

This learning platform is intended to provide an overview of strategic management in the international tramp shipping enterprises. Our fundamental view is that a successful strategy reflects a deep understanding and acceptance throughout the organisation about what the company seek to achieve and how the organization will achieve its objectives. In other words that the management succeed to combine – and convince the organization about – both the overall vision of the company and the operational plans for concrete actions processes. But also, an understanding that any choice means there are things an organisation have chosen NOT to do. This is mirrored in a strong focus of management resources and invested capital on the selected strategy.

The role of the combined cases and podcasts is to provide the user with a deep understanding of the specific contents, dilemmas and logics of specific strategic aspects in tramp shipping. As an illustration the block about digitalization is divided in four dimensions of integration of key-actors. Each of these dimensions will be investigated through a case with a following podcast. The “technological” integration will be introduced in the case and illustrated further through several podcast conversations with organizations and individuals who have been driving and defining that avenue. In this case for instance managers from ZeroNorth who develop software which connects corporate headquarters with individual vessels in order to enhance efficiency and lower costs and emissions. We will also problematize this integration through conversations with ship managers selected about the challenges for seafarers and welfare when vessels are no longer autonomous entities but rather part of a digital, integrated network.

The purpose of uploading a dynamic platform rather than printing a traditional textbook is to mirror the dynamic features of the topic. Strategic Management in bulk will continue to change, and increasingly so. We will also continue to change and develop the platform through the engagement of selected key-actors and active users.

Why does tramp shipping require its own learning platform on strategy.

Shipping has historically been one of the most, if not the most unregulated industry of all. Many of its segments are very fragmented both on the ownership and the charterers side. The markets also have depth, i.e., you can choose to make decisions in the spot market or make long term decisions on both cargo and vessels. And political events tend to have an outside effect on markets and trade routes. The industry operates vessels far at sea, often unseen by the people making the commercial or operational decisions.

Shipping strategy and its implementation hence requires high degrees of resilience and ability to be recalibrated as external events changes conditions. Military strategists will refer to the “fog of war”¹ or how “no plan survives the first contact with the enemy”². These are familiar concepts to any shipping executive.

What is strategy?

The word strategy comes from the Greek ‘strategia’ or the ‘art of the general, the relationship between military force and political ends, but also the application of this theory, i.e. the strategy of an organisation.

Military strategists have laid the early groundwork for much of today’s expansive literature on strategy in business: From Chinese strategist Sun Tzu’s *The Art of War* and its focus on winning without actually engaging in war and the importance of superior information; he describes five different types of spies. The inherent uncertainty and lack of reliable information, features which resonates with modern tramp shipping, was described by Clausewitz as “the fog of war”. The Prussian general and military theorist underlined the importance of defining objectives. In land warfare that would be the possession and acquisition of land, as it could be the gain of market shares for a shipping company.

As new means of warfare became dominant other military thinkers added new concepts.

Understanding the strengths and limitations of naval power were best described by Alfred Thayer Mahan and Sir Julian Corbett and reflects an understanding “that you cannot conquer the sea, because it is not susceptible to ownership.” Corbett differed from Mahan on not believing that the point of naval warfare was the destruction of the enemy’s naval assets, but rather “the act of passage on the Seas” and your ability to protect your own traffic (troops or goods for

¹ Carl von Clausewitz (1780-1831) in his seminal work on military strategy “*Vom Kriege*” (Also known as “*On War*”)

² German Field Marshall, Helmut von Moltke, (1800-1891)

example) and deter that of your enemies³. Analogically, the modern tramp company is embedded in a complicated ecosystem, in which your ability to manoeuvre is based on a strong reputation which is more important than your ability to control and dominate various aspects of the value-chain.

We shall later look into the finer characteristics of the tramp markets. The wider ecosystem in which shipping companies are operating is illustrated in Exhibit 1.2 below.

Exhibit 1.1: The Ecosystem of Modern Shipping



Shipping has historically been unregulated but remain subject to nation states and their rules when entering their waters. What happens on a ship in international waters will be subject to the laws and the courts of the vessel’s flag state. Much of the enforcement of international maritime rules, such Safety of Life at Sea (SOLAS) resides with the flag state but also Port State Controls and Classification societies plays important roles in inspecting and confirming that a given vessel lives up to these requirements.

In our block on ESG we will discuss how Corporate Social Responsibility and Environment, Society and Governance standards have been adopted slowly and by a limited number of shipping companies. The EU has from the beginning decided to regulate this area by making it mandatory for EU financial institutions to enforce ESG through their financing agreements. – Hence ESG reporting is now becoming an unavoidable requirement for most shipping companies.

³ Sir Julian Corbett: “Some Principles of Maritime Strategy” (1911), and Alfred Thayer Mahan: “The influence of Sea Power upon History” (1890) is considered his most influential work.

A corporate strategy is a long-term plan that outlines clear goals for a company. While the objective of each goal may differ, the ultimate purpose of a corporate strategy is to improve the company. How do you determine whether you have a good or a bad strategy? Richard Rumelt⁴ suggests that without action, or implementation, strategy is just blue sky “wheel-spinning”. Fundamentally there are three elements which constitutes the substance a successful approach:

- 1) Diagnosis: what are the impediments to the organisation’s success? Identify key factors in the organisation or environment that are critical to its success.
- 2) A guiding policy: Guardrails that define the boundaries of the organisation’s strategy, i.e., what it does not do.
- 3) Coherent actions: A set of coherent actions which must be mutually reinforcing and not independent.

A key feature of Rumelt’s thinking is that strategy should NOT be thought of as ambition, leadership, vision or complex planning. Rather, it must be an honest acknowledgement of the challenges ahead and coherent action backed by insight into the business. He provides examples from national security to business of good and bad examples of strategy. The good ones always define the goals precisely and identify the obstacles and then assesses which assets a successful strategy needs to draw one to accomplish the goal. His practical and hands-on approach to strategy, devoid of buzzwords and management consultant jargon, is a good fit to the challenges of most shipping companies. We have all encountered CEO’s whose eloquent strategies never really leaves the walls of the conference room.

To develop a good strategy Rumelt makes the following observations:

Having a coherent strategy—one that coordinates policies and actions. A good strategy doesn’t just draw on existing strength; it creates strength through the coherence of its design. Most organizations of any size don’t do this. Rather, they pursue multiple objectives that are unconnected with one another or, worse, that conflict with one another.

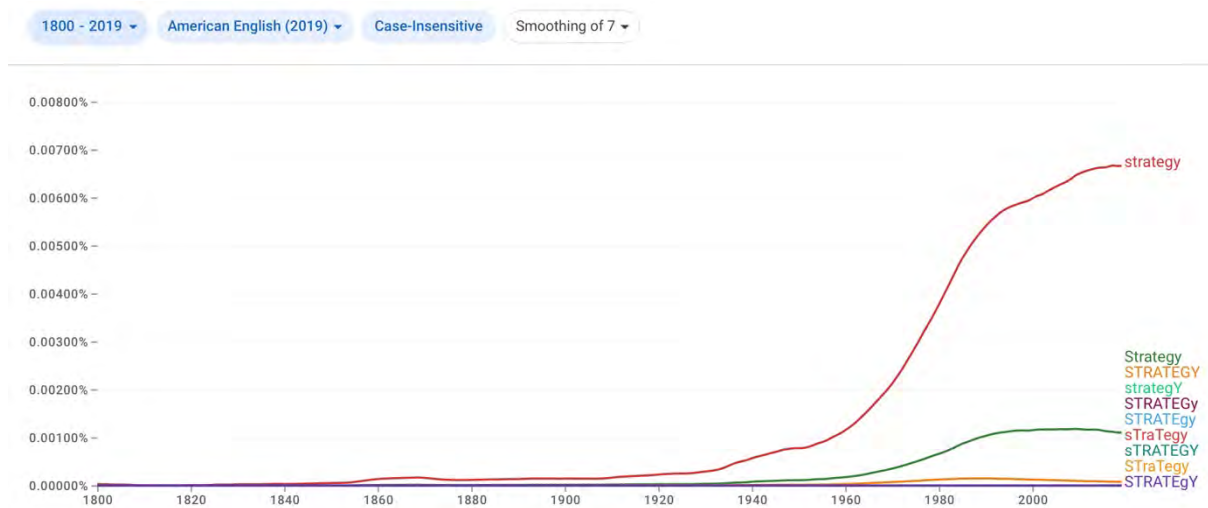
The creation of new strengths through subtle shifts in viewpoint. An insightful reframing of a competitive situation can create whole new patterns of advantage and weakness. The most powerful strategies arise from such game-changing insights. See also the chapter on business models where we describe NORDEN’s strategies and business models.

Like weeds crowding out the grass, bad strategy crowds out good strategy. Leaders using bad strategies have not just chosen the wrong goals or made implementation errors. Rather, they have mistaken views about what strategy is and how it works.

The literature on business strategy has had to adapt to significant changes in the industries observed, from manufacturing to services, from cars to concepts, from asset heavy to much more conceptual ways of competing.

The increased reference to ‘strategy’ is reflected in the below Google statistics (Google Books Ngram Viewer) – demonstrating an exponential increase in the use of the word ‘strategy’ in Google Books in recent years:

⁴ Richard Rumelt, “Good Strategy / Bad Strategy – The Difference and Why it Matters”, (2011), Random House LLC, USA

Exhibit 1.2: Google Books Ngram Viewer Use of the word strategy in English

Major contributors to how we use and understand strategy in the business world have come from:

Porter's 5 Forces⁵ framework has been the go-to framework to analyse the competitive forces within the operating environment of an industry looking to determine the competitive intensity and understand who has the relative power in the key relationships. The most unattractive industry would be one approaching "pure competition", in which available profits for all firms are driven to normal profit levels.

Strategy analysis offers plenty of academic and practical frameworks helping to discover and analyse the external factors that may affect the business in the present and the future (PESTEL, an acronym for political, economic, social, technological, environmental, and legal factors)⁶, and is frequently used in conjunction with Porter's Five Forces to help develop the SWOT (strengths, weaknesses, opportunities & threats)⁷. This offers an overview of competitive strengths and weaknesses in a specific organisation.

Important contributions as to how we implement such strategic frameworks have been influenced by thinkers such as Daniel Kahneman⁸ (See his "Thinking Fast and Slow"), one of the founders of behavioural psychology and a Nobel Prize winner in Economics.

Harvard professor Clayton Christensen's "Innovators Dilemma"⁹ has been influential also in influencing Maersk's thinking on changing their business model in 2015 where the then chairman, Jim Hagemann Snabe concluded that the Maersk Line service offering was well into mature territory and that there was a need to reinvent the company's value proposal.- Through this multi-industry study, Christensen introduced his theory of "disruptive innovation" that has changed the way managers and CEOs around the world think about innovation.

"Profit Pools"¹⁰ is a strategy model that can be used to help managers or companies focus on profits, rather than on revenue growth. The method was conceived by O. Gadiesh and James L. Gilbert, both consultants at Bain & Co. They offered the following definition: "the total profits earned at all points along the value chain of an industry. Companies that see what others do not see, will be best prepared for capturing a larger share of the profits in an industry."

⁵ Michael E. Porter, "How Competitive Forces Shape Strategy", *Harvard Business Review*, May 1979 (Vol. 57, No. 2), pp. 137–145

⁶ PESTEL or PESTLE was developed by American academic, Frances Aguilar in his 1967 book "Scanning the Business Environment".

⁷ The origin of the SWOT analysis in the 1960s is often credited to Albert Humphrey, a business and management consultant.

⁸ Kahneman, Daniel (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.

⁹ Christensen, Clayton M. (1997 and 2016). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press.

¹⁰ "Profit Pools: A Fresh Look at Strategy" (*Harvard Business Review*, May 1, 1998)

The idea states that managers need to look beyond revenues to see the shape of their industry's profit pool. Strategies can then be created which result in profitable growth. While the concept is simple, the structure of Profit Pools can usually be quite complex. Some segments of the value chain will have deeper pools than the others. The depths may also vary within an individual segment. For example, the profitability of a segment may vary widely by customer group, product category, geographic market, and distribution channel. The pattern of profit concentration in an industry will often differ from the pattern of revenue concentration.

The model is often applied to identify new sources of profit, to rethink the role of a company in the value chain, refocusing a company on its traditional sources of profit, and applied when making product, pricing, and operational decisions.

Another influential management thinker has been IMD professors Thomas Malnight and Peter Killing and their “Must Win Battles”¹¹, which gained widespread application amongst shipping companies in the 2000s and 2010s.

We will briefly refer to some of these approaches below but will otherwise leave the reader to seek more detailed knowledge of each concept in the existing literature which describes their application in many different industries.

There is a scarcity of literature on strategies in shipping. Peter Lorange has been the more prolific writer on the subject with his book “Shipping Company Strategies: Global Management under Turbulent Conditions”¹², in which he describes the choice between asset play and operations strategies, and strategies for operating in niche segments with few specialized vessels and much larger segments with many vessels of the general design. He expands further on innovation in shipping in “Innovation in Shipping”.¹³

These are indeed the traditional two strategies to operate in shipping: As a tonnage owner or as an operator. In either case the choice of strategy and business model must reflect at which part of the value chain the company believes it can add the most value with its current and anticipated skills and access to resources.

In an article from 2009, K. Fagerholt, M. Christiansen et al. distinguishes between “industrial, tramp and liner shipping” and proposes a decision support mechanism for strategic planning in industrial and tramp shipping.¹⁴

In this article they point out the strong interplay in these two segments of strategic, tactical, and operational planning.

Over the past 25-20 years the choice of strategy and business model has also been driven by a conscious choice of which risks a company chooses to take on and master, and which ones it will hedge or outsource.

The financialization of especially dry cargo shipping in this period has led to more efficient markets, competitive freights and at times bumper profits for the best managed of these shipping companies.

Another aspect of this trend has been an increased specialisation where even large shipping companies will outsource hitherto important parts of the value chain to service providers such as crew managers, technical managers etc. Today approximately 20% of the world fleet is managed by 3rd party ship managers. The distance from the boardroom to the bridge has never been farther.

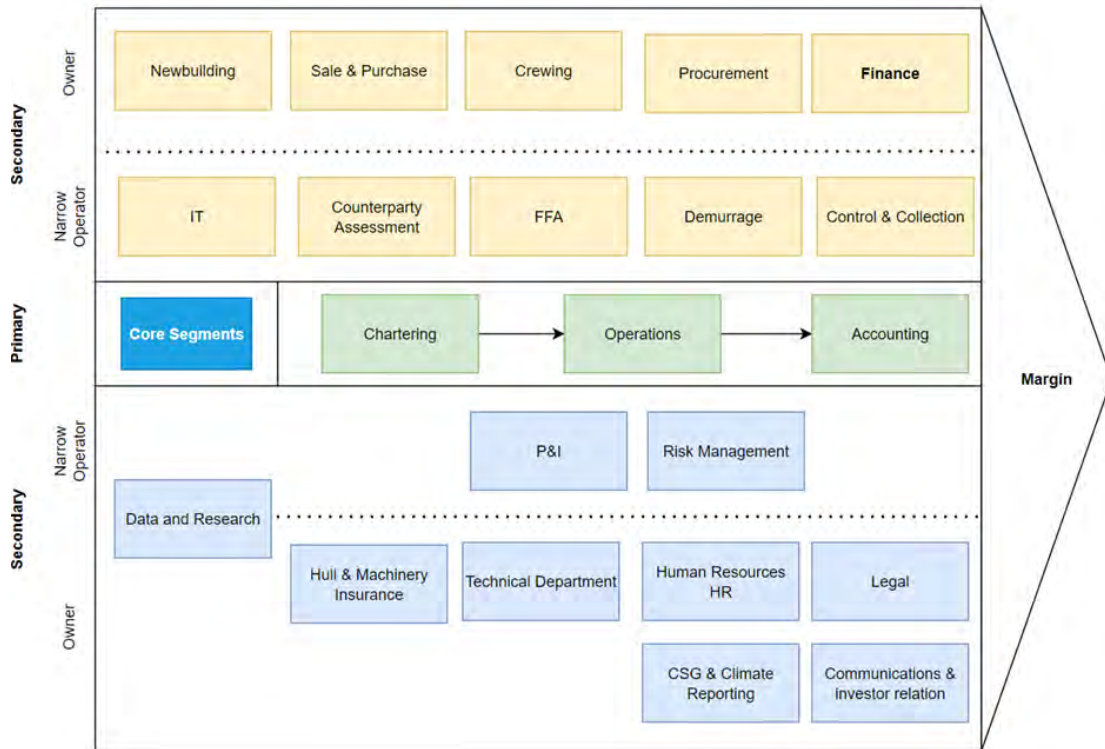
This comes with the loss of intimate knowledge of the actual operations onboard the ships and will deprive owners and operators of an ability to engage and motivate crews in addressing some of the operational challenges of shipping. Increased fuel efficiency is but one important challenge where increasingly reliable data can be combined with motivated crews to deliver superior results.

¹¹ P. KILLING, T. MALNIGHT & T. KEYS: “MUST-WIN BATTLES: HOW TO WIN THEM* (2006) WHARTON SCHOOL PUBLISHING

¹² Peter Lorange, *Shipping Company Strategies: Global Management under Turbulent Conditions* (2005) Emerald Publishing

¹³ Peter Lorange, *Innovation in Shipping*, (2020), Cambridge University Press

¹⁴ ” A decision support methodology for strategic planning in maritime transportation”, *Omega* (2010) 465-474, 38(6), Fagerholt, Kjetil, Christiansen, Marielle, Magnus Hvattum, Lars, Johnsen, Trond A.V., Vabø, Thor J.



The above is merely an illustration of which functions an operator and a traditional shipowner will choose to have in house. There are a multitude of different set-ups. The specialisation of the modern operator, where the company very consciously chooses select risks that it will take and then outsource pretty much everything else has proven very competitive.

The question is of course whether newer technology and cheaper data connections even at sea can make some of the traditional functions worthwhile to have in house again. Improved access to data about what goes on offshore may very well make it possible to manage in detail how each vessel and crew optimizes the vessels fuel and emissions economy. – Hence it could be advantageous to build a stronger in-house technical department and potentially take over crewing yourself.

Most companies have for some time paid close attention on how to burn less fuel on the ships' voyages. And most bigger shipping companies will have joined their peers in providing annual CSR reports on their carbon footprint etc. These numbers have generally reflected assumptions about emissions given certain engine types and the fuel consumption onboard the specific ship. It is now increasingly possible to measure actual emissions which should provide data to benchmark ships and crew against each other thus rewarding the best performers and educating the laggards.

Shipping companies broadly operate in one of three segments: liner shipping, industrial shipping or trading segments, where the latter is commonly referred to as tramp shipping. In this book we focus on the two latter segments.

Industrial shipping versus trading platforms

Industrial shipping is characterized by a high degree of vessel ownership, often, but not always, based on longer term cargo commitments. Examples are very large ore carriers and some capesize players in bulk, LNG, and gas vessels in general, and large crude carriers.

Container liner shipping would also be characterized as industrial shipping although the degree of ownership has been reduced as the bigger players have consolidated and use chartered in tonnage to build size without having to put the added equity at risk.

As a rule of thumb industrial shipping is focused on minimizing unit costs. Either by focusing on high utilisation as in liner shipping, or on reducing financing and operating costs as in many of the other segments.

It is a common feature in many of the industrial segments that ships are built for purpose – i.e., with specific features that optimizes intake or reduces costs for a certain project or trade. This obviously builds barriers to entry – but at the expense of tradability. The asset will be harder to dispose of in a possible exit from the segment.

Key strategy: High focus on cost. Acquisition cost, financing costs as well as securing lenient loan agreements with as few covenants as possible. Technical competencies and developing a technical department fit for the age and type of vessel will be critical. Some of the technical skills you need to possess inhouse will require a certain fleet size to be properly utilized.

A trading strategy tends to be agnostic when it comes to the ownership of the vessels. It is typical of the large tramper segments in bulk and to a much lesser degree in product tank and crude. While the tanker segments are also tramper markets the inherent safety concerns in these segments puts a high premium on ownership and full control over the quality of the crew and the maintenance of the vessels. This limits the liquidity of the segments compared to bulk.

Trading platforms will very much be seeking to own and control standard types in order to be better able to take advantage of the high volatility in these markets and to possess the ability to easily substitute vessels for future cargo commitments. A trading strategy is all about securing optionality for the company and never granting any such optionality to contract partners.

Equity investors in these markets will pay a premium for assets that are considered easy to sell in any market, knowing that less reputable ship designs from lesser yards will be forced to offer steep discounts in distressed markets.

Key strategy: Top management must ensure that owned vessels are of standard designs that are easy to transact in asset and chartering markets. For vessels chartered longer term, it is key to secure as many purchase options and options to extend the charter period at predetermined rates as possible.

For cargo commitment, make sure to not grant optionality or to limit it as much as possible.

On the chartering desks, a high volume of transactions is key to better business decisions. If you are only really in the market once a week you will always be behind the curve of where the market is heading.

Many daily transactions on the other hand means you have your finger on the market pulse, you tend to be offered a lot of market information on one transaction that will help you take other profitable positions.

Organisational structure

The organisational structure of a given company must reflect the characteristics of the underlying business. There will be trade-offs between the need for agility and speed of decision making versus safety for example.

Organisational design must reflect the need for knowledge sharing at different levels. In a trading platform style company, most day-to-day trading will take place on the chartering desks but information on volumes and levels and their trends in the market will be key information for heads of asset trading in determining when it is a good time to sell into a rising market, or to take advantage of market weakness to secure good assets at lower prices.

Companies generally have made a decision also to the age range of their fleets: It requires a different skill set in technical, operations and chartering to operate a modern fleet of new buildings or modern ships, than it does to operate ships in the 5-15 years range and yet an entirely different approach with even older ships where the demolition vale and scrap steel prices will be an important feature in your tonnage disposal decisions.

In industrial shipping much key information will be about opportunities to reduce marginal costs and secure better utilisation.

Key strategy: Organize to make sure that the company organisational design allows to take most advantage of the information and insights generated in the organisation.

Identify key strategic challenges.

It rests with senior management and the board of directors to identify the key strategic must-wins for the company. In a time of rapid technological change and the threat of new competitors always on the radar screen.

Key strategic challenges could range from being prepared for digitalisation in shipping to meeting and staying on top of the increased regulation of the company's environmental and societal impact, and how not just to meet the formal requirements but also how to be regarded as an attractive employer with the ability to attract top talent. It could be the threat from non-shipping players such Ali Baba or Amazon to large liner players.

For many shipping companies the challenge from rapid technological change is one where they simply do not have the size to attract the kind of talent required to be prepared for the technological change. Yet others have already invested significant resources in being a leader and have adopted many of the features of private equity and Silicon Valley to drive innovation. Maersk Line in particular comes to mind.

Maersk furthermore broke up the company's conglomerate structure to ensure maximum agility and ability to adjust rapidly to the expected changes in its competitive landscape.

Key strategy: Identify the key strategic challenges and assess gaps in the company's competencies or even its corporate structure.

NEW PLAYERS IN THE INDUSTRY

Traditionally shipping has been funded by a combination of bank loans, retained earnings and seed funding from more established players taking a bet on promising newcomers. Funding from capital markets, from IPOs and bond issues grew in the 1990s and 2000s.

Since the mid 2000s new players have entered the fray. From the 1970's Asia's Tiger economies used shipbuilding as an important tool in industrializing their economies. Japan has remained an important source of competitively priced, high-quality tonnage for many segments through a combination of low interest rates and a domestic tax system favouring the ordering of new tonnage to avoid paying taxes on older ships. In the end 2000s China attempted to compete or at least offer an alternative by promoting new leasing structures for Chinese built tonnage hence seeking to turn high export earnings into an advantage in promoting an even strong Chinese ship building industry by financing the demand for Chinese built ships.

The profits generated in the 2000s and the downturn in the 2010s attracted more sophisticated financial players to the shipping markets. Private equity players went in big time, presumably attracted by "historically low" share prices and the high volatility of the prices on the underlying assets. And at a time where the "quantitative easing" of the world's central banks flooded markets with cheap cash.

These new sources of financing have created additional demand for ships at a time in the cycle where consolidation and a reduced number of orders for new ships would have been the name of the game.

Key strategy: Particularly the entry of private equity (PE) into the shipping industry has added important new perspectives on strategy and new tools to address gaps between strategic must-wins and the competencies required to achieve them.

Skills that are not easily available in talent market can sometimes be brought in on board level and then offer strategic direction to the organisation through working groups etc.

What is the right size? Own or operate: Buy or charter?

We work on the assumption that the objective of any company, incl. shipping companies, is to generate the best possible risk-weighted returns to its shareholders. The challenge when expanding is often not just what is the right size but how do we amend the business model and the organisational hierarchy to generate the desired returns from the new size.

It is also crucial to understand that in markets with high volatility in particular, scalability is important. Hence this section where we discuss organisation changes in an expanding organisation, and the composition of the fleet and how it is controlled. Degree of ownership, and in which segments. New buildings or second-hand tonnage. Long term structured deals, perhaps with purchase and period options. Period and short-term time charters?

It is obviously possible to add turnover by expanding the number of segments the company operates in and at the same time adding new geographical areas. But this is often where companies that have been successful for a year or two, loses their focus and do not get the right resources and/or new structure in place in time.

Small and medium-sized companies

Many of the bulk operator run fleets that scale up and down quickly but tend to be below 50 vessels at any given time. Such companies tend to operate in flat hierarchies with strong knowledge sharing and a somewhat relaxed attitude about standard operating procedures but focusing on getting the job done.

Medium- to large companies

This size of owner / operator tends to have many more functional capabilities in-house (see earlier chapter) but will still be fairly flat in their decision-making capability. Due to their size (50-500 vessels) and the need to move people around from office to office and sometimes to other segments, these companies need clearly defined processes and standard operating procedures.

Very large shipping companies

There are only very few shipping companies with more than 500 vessels. They need to be very clear about mandates and authority at all levels of their organisations. While they might be tramp companies, they will appear almost industrial in their ability to take cargo in many areas. They tend to have added functions where their basic market insights will provide advantages, specialized areas where expert teams can protect a niche. This could be in parcelling, liner services of breakbulk cargoes, renting out grabs and floating cranes etc. I.e. leveraging their already dominant presence in certain geographies to control a larger part of the whole infrastructure value chain. – There is significant upside in controlling for example river barging, transshipment, and ocean shipping, just by reducing waiting times and better utilization of all assets involved.

The real challenge is to retain organisational nimbleness while still maintaining a strong central sense of the direction of the market. Some of the companies in this size range are the major Japanese owners, and state-owned company like Chinese COSCO. They tend to manage their size by acting as traditional shipping companies being very focused on their balance sheets and not much on extracting value from the positions they hold.

German bulk player Oldendorff stands out as an example of a privately held bulk player that has retained significant nimbleness and ability to derive value from their freight market presence in many related markets. Being privately held their actual financials and activity is difficult to ascertain but Oldendorff's presence in the freight markets is clearly being leveraged to derive more profit in FFA markets and many niche markets (transshipment etc).

Organisationally such company will try to retain their nimbleness through a small group of experienced executives setting direction – and with bigger teams of booking agents focusing on specific ports or areas in given segments.

Classical Strategy pitfalls in Shipping:

A classical pitfall is to expand into a new segment and be too careful. There are scores of operators who have started and succeeded in handysize or supramax and then wanted to go into panamax in a controlled and conservative manner. This typically means that they pick a small team from their existing organisation instead of picking a few strong specialists from the outside, it also often leads to a very cautious approach to fining cargoes and vessels. This results in too little activity, which leads to a substandard chartering performance compared to the index. Too little activity also means that the expected number of bad outcomes due to weather or pure bad luck are much harder to absorb.

Overall, such a cautious approach because it is understood to be risky to start in a new segment, all too often turns out to be a self-fulfilling prophecy, requiring too much attention also from senior management and therefore coming an unnecessary drain on the company's resources both in terms of management attention and cashflow.

Another oft repeated feature in the tramp markets is the danger of 1-2 years of success. Companies enjoy success for a multitude of reasons. Hard work, smarts, insights. The right positioning for market changes. Occasionally well-run

companies enjoy windfall profits because of their positioning and hard work but tend to put too much emphasis on their own ability to predict market movements and end up taking too much risk in misplaced faith in their own abilities.

Composition of fleet

Once a company has settled on the appropriate structure and organisation for its size, the next decisions will focus on how its fleet is composed. What percentage of the fleet can be chartered – long term and/or short term, is it possible to identify price asymmetries between second-hand and newbuilding markets, and does technological advances favour expanding through a newbuilding program?

In an asset acquisition scenario, the owner will look at the cost of ownership rather than merely the newbuilding price. This includes the cost of financing and making assumptions about residual value of a given ship design.

Such calculation must be taken with a grain of salt – any such assumptions are an invitation to obtain the required rate of return on any such theoretical calculation. They do however have some merit for comparison purposes.

Considerations affecting the cost of ownership could be fuel economy, the ability to operate on less polluting fuels, and other technologies that make the ship design more future proof. While hard to include in a financial calculation, a tramp shipowner will look at how easy it would be to exit the investment. Much speculative investment goes into panamax and supramax designs for this very reason.

For industrial shipowners they quite often intend to hold on to the asset for much longer and will therefore have their own designs or a wish to have more generic designs amended to reflect the kind of maintenance and operation required by their fleet management.

A main consideration when buying second-hand tonnage is to acquire the vessel immediately and hence start earning money in a presumably rising market, without having to wait the 24-36 months that is the normal waiting time when ordering new buildings. Alternatively, investors buy second hand vessels when markets are down, and attractive vessels are for sale because somebody else needs to raise cash.

The benefit of owning the ships is obviously to have more control over the tonnage offered to your clients, to have the asset price upside and, increasingly, to have more control over more of the value chain, including the installation of more technology onboard the ships.

Chartering in of more vessel capacity deprives you of the asset price upside, but not of the possible upside in time charter earnings. What it does offer you is scalability, ability to act swiftly on changes in market outlook, maintain or build out fleet until you more clarity on certain technologies: Whether that is alternative future fuels, incoming regulatory standards, or something else entirely.

Building and owning ships requires a ship owner to have additional competencies compared to a pure operator. Even when outsourcing technical management and crewing, you still need to have a smaller supervisory technical department to make sure that you “manage the ship manager” properly.

Critical mass is an important consideration for smaller owners. If you have an inhouse technical department, some functions can comfortably serve 3-4 ships per employee, whereas others can easily cover 15-18 ships. Hence any fleet smaller than that will not fully utilize the organisation you need to put in place.

If you outsource to a technical and crewing manager, you might very well end up with new crews every 6 months or so. With no retention the learning process in terms of operation and maintenance of the ship will quickly seem a bit like “Groundhog Day” with the same mistakes being repeated twice a year. If you still intend to run officer’s seminars to build some sort of knowledge sharing between shore and ship, you quickly end up training officers for your competitors.

Some of these challenges can be overcome by being disciplined in identifying common maintenance challenges, and providing online training preparing each new crew for the particular quirks of the ship they are onboarding.

As a shipowner who outsources technical and crew management it is tempting to place your fleet with 2-3 different managers. While Daily Running Costs (DRC) of a handysize bulk carrier might quite consistently be in the USD 5,500-5,800 range, different managers will have different cost structures and additional savings can often be obtained through diligent benchmarking processes. Placing your fleet with a technical manager gives you competitive DRCs and strong cost control. But it often comes at the cost of not having dedicated crews and officers and hence deprives you of a potentially profitable feedback loop between bridge and shore.

Aguilar, F. J. (1967). *Scanning the business environment*. Macmillan.

Clausewitz, C. (1908). *On War*. Kegan Paul, Trench, Tubner & Co.

Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press.

Corbett, J. S. (1911). *Some Principles of Maritime Strategy*. AMS Press INC.

Fagerholt, K., Christiansen, M., Hvattum, L. M., Johnsen, T. A., & Vabø, T. J. (2010). A decision support methodology for strategic planning in maritime transportation. *Omega*, 38(6), 465-474.
<https://doi.org/10.1016/j.omega.2009.12.003>

Gadiesh, O., & Gilbert, J. L. (1998, May). Profit Pools: A Fresh Look at Strategy. *Harvard Business Review*.

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Killing, P., Malnight, T., & Keys, T. (2006). *Must-Win Battles: How to Win Them, Again and Again*. Pearson Education.

Lorange, P. (2005). *Shipping Company Strategies: Global Management Under Turbulent Conditions*. Emerald Group Publishing Limited.

Lorange, P. (2020). *Innovations in Shipping*. Cambridge University Press. <https://doi.org/10.1017/9781108347945>

Mahan, A. T. (1890). *The influence of sea power upon history 1660-1783*. Little, Brown, and Company.

Porter, M. E. (1979, May). How Competitive Forces Shape Strategy. *Harvard Business Review*, 57(2), 137-145.

Rumelt, R. P. (2012). Good Strategy/Bad Strategy: The Difference and Why It Matters. *Strategic Direction*, 28(8).
<https://doi.org/10.1108/sd.2012.05628haa.002>

CONCEPTUAL BLOCK 1



By Peter Borup

This conceptual block concerns the market logics of international bulk. We focus on the primary drivers of supply and demand, and how the imbalances between an exogenous demand for transportation and an indigenous relatively stable supply of vessels contributes to high volatility and unpredictability in traditional tramp markets.

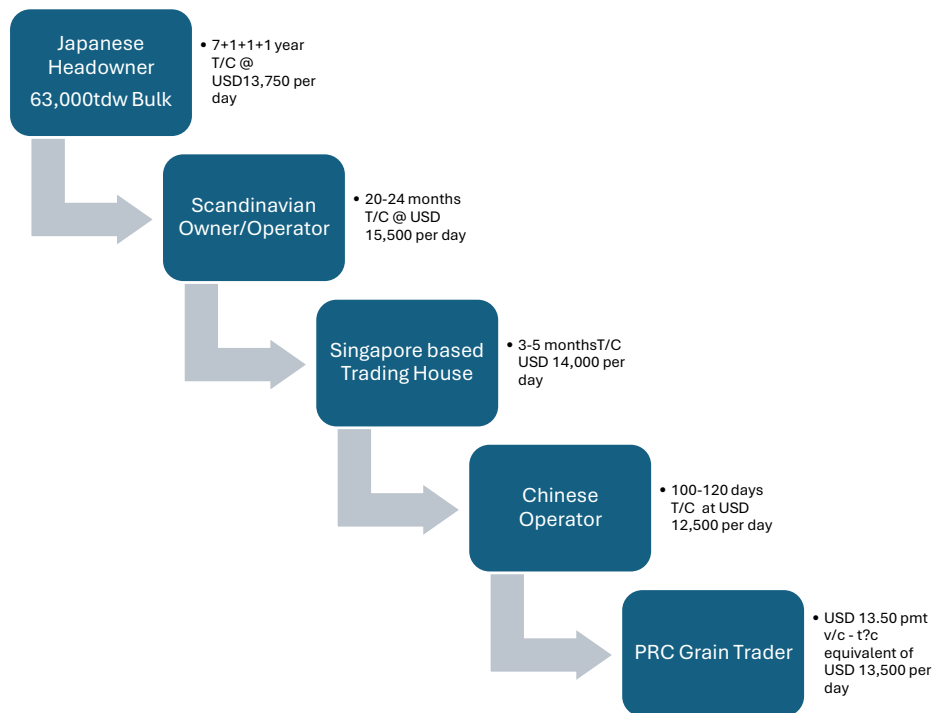
Dry Cargo intro: the structure

There are approximately 12.000 dry bulk vessels as of 2023 with cargo capacity of more than 912,2 million DWT. It is not meaningful to provide an average number of vessels per owner due to the prevalence of single ship companies for tax and risk mitigation purposes. The below exhibit does however illustrate the age profile of each segment.

No single player, charterer, or owner controls more than 3% of the dry cargo markets. There are niches or segments where one or more players enjoys dominant positions. This is clearly the case for ‘cape-size’ and the very large ore carrier markets and may at times also be the case in some of the small segments if further differentiated into certain geographical areas or trades.

Furthermore, the dry cargo markets remain characterized by long charter party chains, i.e., the fact that a head owner chartered a given vessel to a managing owner for several years and he in turns sub charters to an operator, who may again sublet to somebody else.

Exhibit 1.3: Example of a charter party chain in dry cargo



One of the challenges for many owners and operators after the collapse of the dry cargo markets during the 2008-2009 Global Financial Crisis (GFC) was the lack of transparency in long charter party chains where the terms of the c/p's could vary from link to link in the c/p chain. This meant that operators with otherwise good c/p's and credible counterparties if their ship got arrested due to a cash flow / payment of hire problem further up in the c/p chain. Since the GFC c/p chains have shortened.

Economists Daniel Chen & Darrell Duffie (2021) writes about market fragmentation in an article in 2021¹⁵: "We model a simple market setting in which fragmentation of trade of the same asset across multiple exchanges improves allocative efficiency. Fragmentation reduces the inhibiting effect of price-impact avoidance on order submission. Although fragmentation reduces market depth on each exchange, it also isolates cross-exchange price impacts, leading to more aggressive overall order submission and better rebalancing of unwanted positions across traders. Fragmentation also has implications for the extent to which prices reveal traders' private information. While a given exchange price is less informative in more fragmented markets, all exchange prices taken together are more informative." (Chen & Duffie 2021).

This very much matches the finding from the dry cargo markets. Particularly in the smaller sizes where fragmentation is most pronounced, we experience (1) lack of transparency in information on market positions; (2) large variety in port restrictions and cargo specifications; and (3) positions are covered at different prices reflecting different risk profiles.

Tanker intro: the structure

The tanker markets are marked by a higher premium for control of the vessel. The need to own and crew your own tonnage are directly related to the risks associated with an oil spill and a significantly higher regulatory pressure on the industry. It is hence quite unusual for one owner to charter ships to a competitor, and if it does happen it tends to attract a premium over the prevailing time charter rates.

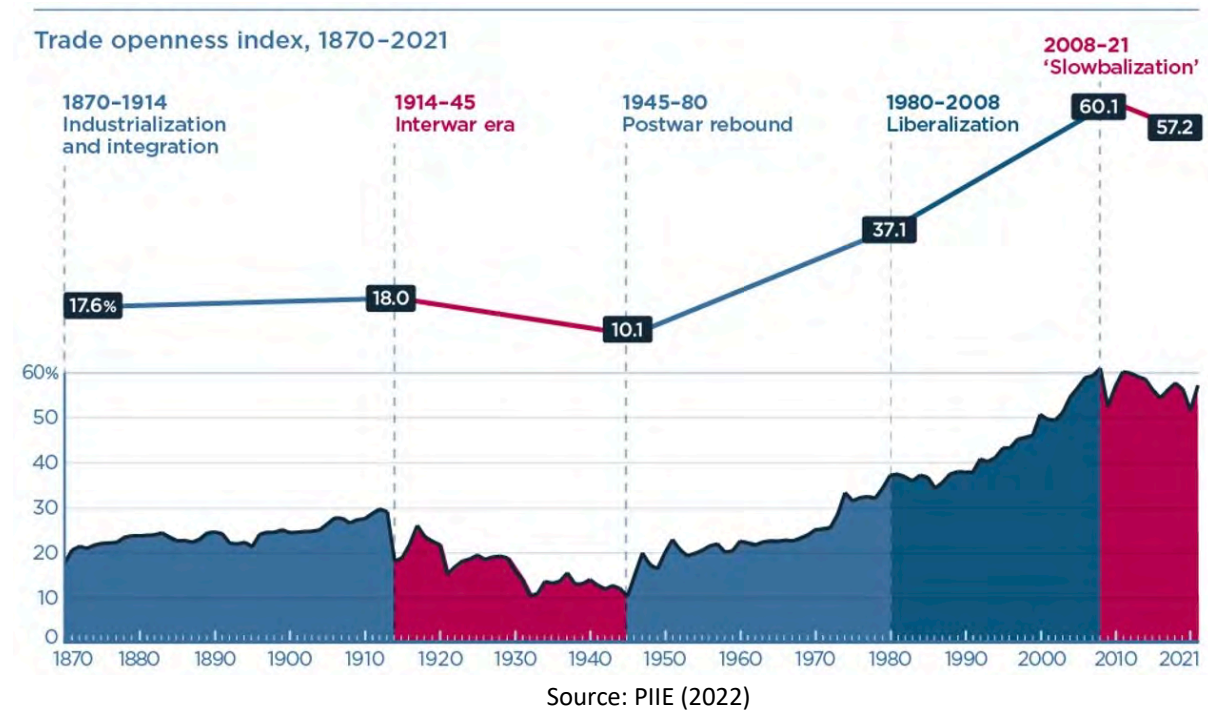
Charter party chains are hence typically short, and the ability to go long or short is not nearly as pronounced as in the dry cargo markets. Control over assets comes at a significant premium.

According to UNCTAD there are approximately 2,700 product carriers and 2,300 crude carriers on the water in 2022.

Historic Overview - from traditional shipowners to globalized financialization

Modern ship owning (since the advent of the steel ship) has its roots in the 1870s where entrepreneurs in the United Kingdom, Scandinavia, USA, Greece, and a little later Japan saw the potential in investing in steel ships under their own (coal) power, and hence achieving speed and higher degree of reliability of scheduling compared to the old sail ships. Eventually most coastal nations developed some shipbuilding capabilities to ensure supply to the local market.

¹⁵ Chen, Daniel, and Darrell Duffie. 2021. "Market Fragmentation." *American Economic Review*, 111 (7): 2247-74.

EXHIBIT 2.1: World Trade 1870-2022 (Source: PIIE)¹⁶

The Sea connects countries and shipping is global by nature. PIIE's Trade Openness Index depicted in Exhibit 1.1 above is a good proxy for maritime commerce. It shows the very significant slowdown from World War I, through the Interwar years and ending with conclusion of World War II and the establishing of the post war institutions around the Bretton Woods agreements. It also shows a strong increase in trade openness after the end of World War II – greatly helped by the large number of Liberty cargo ships having been built by the USA to support the war effort, and now being taken over by ship owners.

The post war economic booming the late 1950s and 1960s required large imports of crude oil, and the Western world and Japan became large net importers. This led to a boom in ever larger crude carriers and significant fortunes being made amongst entrepreneurial Norwegian and Greek shipping tycoons. The first oil crisis in 1973 when the leading Arab oil producers in the Organisation of Petroleum Exporting Countries (OPEC) imposed sanctions on the West for supporting Israel after the Yom Kippur war, also forced many of these shipowners with large newbuilding programs and excess debt on their balance sheets into bankruptcies.

The demand for larger ships required changes for shipyard's production methods and ability to process steel efficiently. The established European shipyards were generally unable to expand the size and production processes as they had increasingly been surrounded by the expansion of neighbouring cities. All but a few specialised or inhouse shipyards in Europe were closed by the early mid 1980s and instead Japan and Korea had taken over. Modern mega yards were built in Korea (Halla / Samho in the 1990s) and copied extensively on the up-coming Chinese shipbuilding scene.

¹⁶ PIIE, note: The trade openness index is defined as the sum of world exports and imports divided by world GDP. 1870 to 1949 data are from Klasing and Milionis (2014); 1950 to 1969 data are from Penn World Tables (10.0). 1970 to 2021 data are from the World Bank. Sources: Our World in Data; World Bank, World Development Indicators; and PIIE's calculations for 2021.

Ship finance was still in the hands of traditional shipping banks, except later in any shipping cycle where less experienced banks would tend to be lured in by the profits generated by the industry and the promise of more business. Often such late comers would end up with the less creditable counter parts and hence get the riskiest loans and counterparties. Other financing would be available from existing shipping companies who would often look for promising talent and offer them loans or make existing ships available for the newcomers to develop their own operating businesses. Yet other indirect finance would come from local Japanese banks investing in small, often family owned, ship owners with a few ships each. These companies rarely had the ability to commercially operate their ships – their key competencies were to secure financing, be tax efficient and arrange for technical management and crewing from external providers. Hence, they started out as tonnage providers to larger Japanese companies and only later would offer their tonnages to foreign entities at the behest of large and well-known Japanese trading houses, serving as mediators and guarantors of the performance of the foreign entity.

The fragmentation of virtually all segments ensured cutthroat competition and hence limited profitability in the more transparent trades. Specialized trades, cargoes, or state protected businesses whether Jones Act in the US or UNCTAD 40/40/20¹⁷ trade in Africa or SE Asia on the other hand could offer good profits to the ship owners enjoying the protection (Stopford, 2009).

The classical shipping business model is to buy assets close to the bottom of the cycle, secure competitive financing with limited bank covenants, hence ensuring maximum flexibility to the borrower, then operate the asset minimum at a breakeven level, or sometimes at modest a profit. Patience and stamina are two essential virtues of the traditional shipowner, who awaits the windows of opportunity in stronger markets. These – often short time periods – are used to play the assets by selling at the presumable height of the market. Strong shipping markets are attractive to inexperienced market actors including financial investors.

Inspired by increasing financialization of the economies in the 1980s and 1990s shipping also evolved and the operating model whereby a company with little equity would take ships or cargo commitments from the market and manage their books to generate profits was a watershed for shipping. This “asset light” business model developed first in Denmark and spread to Norway and Germany and later globally.

Financialization in shipping was about prizing optionality, selecting, and managing risks and being very conscious about the composition of the company’s portfolio of cargoes and ships, both in terms of quantity, pricing, and duration. And understanding that activity begets activity – as does any position you take as a trader.

Any good freight trader will be willing to act on his take on the market direction. This “take” can be pure gut feeling but is often a combination of observable trends in the market, e.g. fewer ships in each segment in each area while the number of cargoes to be shipping from ports in the same area is going up. This would lead to the trader seeking to go long on tonnage in the short term, knowing that the last vessel being contracted for the many cargoes will achieve a high time charter equivalent (TCE). Similarly, if you deem certain long-term factors warrant taking more ships, a good freight trader will seek to commit tonnage for the long term through long structured deals or by outright acquisition. An example of that would be the early 2000s where China’s industrialisation and large infrastructure investments created one of the longest and strongest booms in commodity and freight prices ever experienced, also often referred to as the ‘commodity super cycle’. Cautious players would go long in the short medium term, not willing to take too much risk on China’s ability to continue to grow (from iron ore import of 45 mill t. in 1998 to some 900 mill t. in 2009), whereas player with a strong trust in China’s ability to manage its growth added long-term tonnage capacity by all means available: charter, structured deals and by buying vessels.

¹⁷ UNCTAD 40/40/20 sought to help build shipping industries in emerging countries and was pushed by the “Group of 77” emerging economies through the UN system. It would protect 40% of the trade between any two countries to each country, leaving 20% to ship owners from 3rd countries. See also Martin Stopford, “Maritime Economics” 3rd Edition (2009), Routledge, London, pp688-89.

Conversely in a falling market, the good freight trader will try to secure cargo commitments, either in the short term if he is not too sure how long or how deep the downturn will turn out to be, or if he is very bearish, by taking long term contracts of affreightment (cargo commitments). Alternatively, an equally bearish freight trader will charter his vessels out to anyone willing to pay the best time charter rate for the period he seeks covered – assuming their credit quality is acceptable.

From ship owning to only taking shipping risk: The advent of “Financialization”

The image of the traditional ship owning enterprise is one of owning steel cargo ships, employing your own crews and lifetime employment for trusted officers and engineers. It was a business model where the shipowner needed to get his investment and divestment decisions right to be profitable and communication with your ships was challenging and left much operational control on the bridge in the hands of the captain.

Thought leaders in US capital markets and at US management schools changed focus in the 1970s and 1980s: Finance came to the fore as an important addition to any corporation’s profit margins and large conglomerates came under fire to be broken up so the value creation became transparent and value destroying business units could be sold off to better suited owners. Pure asset plays were in vogue whereas large integrated business groups were not. The peak of conglomerates in the USA was 1968 but poor performance led many to want to create more focused companies.¹⁸ The risk management inherent in a conglomerate was seen as something any investor could do on his own if he wanted a more conservative risk profile.

While the beginnings of financialization can be traced back to the 1950s, it was the fall of the Bretton Woods monetary system in the early 1970s that accelerated growth in global liquidity and prompted a surge of financial liberalization and deregulation. Financialization is a relatively new term, which covers such a range of phenomena that it is difficult to define precisely. The most-cited definition, from Gerald Epstein, states: “financialization means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies”¹⁹.

This was the intellectual backdrop for the “operator” revolution in shipping spreading into ship owning circles who started examining exactly how and where they added value. For many owners they arrived at the conclusion that their primary skill was taking and managing shipping risk.

Currency risk could be avoided, managed, or hedged. Bunker risk could also be mitigated by buying bunkers forward or hedging through derivatives. These instruments and the volumes were rarely perfect, but they would reduce the risk significantly. Even the complexity of crewing the ships could be outsourced to crewing managers who would set up in countries with rich ship faring traditions and because of unattractive alternatives on shore, going to sea would be able to attract the best and brightest from each generation. Full technical management with transparent and very competitive budgets from creditable ship managers (and quite a few not so creditable ones!) became widespread even amongst otherwise very traditional ship owners. For larger fleets, having 2 or more technical managers managing different parts of the fleet offered the opportunity to benchmark best practices across the range of technical service.

This was very much in tune with what was preached at leading business schools and furthermore resonated with thinking in capital markets. Today we might have called it derisking. It undoubtedly made for more sophisticated and better run shipping companies.

On the business side a few standout companies became more disciplined on the value of taking optionality and of analysing their own investment decisions as ‘real options’ wherever possible. An understanding that the higher volatility and a longer time an American call option was active the higher the value of the deal. : A European call

¹⁸ See Harvard Business Review December 2013, “Why Conglomerates Thrive (Outside the US)” by Ramachandran, Manikandan & Pant.

¹⁹ Epstein, G. A. (2005). Introduction: Financialization and the World Economy. In G. A. Epstein (Ed.), *Financialization and the World Economy* (pp. 3-16). Cheltenham: Edward Elgar Publishing Ltd.

option can only be declared at the specific time agreed, whereas an American call option can be declared in a time range, and on most of the structured deals concluded in Japan, such range tended to be from the end of year 3 of the charter until the end of the charter period, which could be 5+1+1+1 years, hence a very long period in which to declare such purchase option. Conversely, conceding cargo options to major counterparts could be costly – but could also be mitigated.

An example could be large global cement producers with cement plants around the world (with different cement products and very different price points) would often ask for pricing from a broad range of load ports to many different discharge ranges. Only the biggest owners or operators would be in play to win such large volume contracts. But in any given market, certain port combinations would be much more attractive to the shipowner than others and if the cement trader could freely decide which shipments would be nominated under the contract and which could be profitably covered in the open market, this option arbitrage could yield good profits to the charterers. And vice versa if such optionality could not be restricted by the shipowner it could prove very costly to concede.

The cement producer in question would seek to cover a significant portion of its annual production but it would not know in advance exactly which cement factories would supply to which clients in which countries so to conclude a contract a lot of optionality would have to be built in. Different ship sizes: Handysize or supramax, typically. Quantities could be 50,000 t., 10 percent in ship owner's option per shipment. The overall volume could be between 4-5 million t. As a ship owner, or operator, the attraction of the contract would be the volume, and the fact that many of the loading ports would be in Southeast Asia and most of the discharge ports somewhere in the Atlantic, hence offering freight cover on the very attractive backhaul trades. A backhaul trade is one origination in a typical discharge area, hence with many open ships looking for a cargo to avoid ballasting, and heading to a loading area, where there will be many different types of cargoes, and often to a variety of destinations.

Long term backhaul contracts has the benefit that when your market expectations turn out to be wrong and you suffer much bigger than expected losses on the backhaul leg of your voyage, the fronthaul leg will inevitably have increased even more in freight level than the backhaul. – So, this is a commitment with a built-in physical hedge, and it works if the trading patterns do not flip – which does happen, but very rarely.

But the danger of taking a contract as the one described with the cement company is that some of the port combinations are front hauls or something in between so there you do not have a built-in hedge in your commitment. And furthermore, the cement company invariably sells a higher volume than it has committed on a contract with you. So, in a rising market they will invariably nominate the cargoes to you that are most expensive for them to cover in the spot market.

As indices began to be developed in many segments companies also gained access to over the counter (OTC) markets for different financial derivatives. These OTC markets are different from the now much more prevalent cleared markets, where your derivative position is guaranteed by a clearing house (bank), and you will be paying in extra surety when you position suggest you have to pay in funds when the position must be settled.

Another feature of the OTC and cleared derivatives positions is that it can be very difficult to assess the financial health of a non-listed counterpart. Contracts on physical ships are generally reported and it is possible to track a counterparty's physical positioning. Not so for the derivatives position.

Such derivatives are obviously vulnerable to manipulation if liquidity is low or if the market is dominated by bigger, sophisticated players – or if the underlying index does not reflect the market accurately.

Today the dry cargo tramp markets are dominated by a group of “asset light” and very large owners / operators with core fleets of owned or long-term chartered vessels combined with very scalable fleets of short and medium chartered tonnage that can be increased or decreased depending on how the company sees the future markets.

Another large group of companies are smaller and very scalable pure operators, often very focused in terms of the segments and geographies they trade in.

A final group are the owners whose fleets are also composed of owned and chartered tonnage but where the owned proportion is much larger and where crewing and technical departments are in house and seen to provide an advantage in how they compete.

As the regulatory environment is getting more prescriptive and especially rules and regulations on emissions and types of fuels consumed are complicating how owners and operators operate their fleets, the latter type of owners, with extensive control over crew and technical matters are likely to benefit.

Regulatory environment

Tramp shipping has historically been one of the most liberal and least regulated of all industries. Characterized by mobile assets, flag states that are far away and the ability to place ownership in tax friendly and minimum regulation countries which are often different from the flag state, and with a large proportion of owners exhibiting very low standards with regards to the treatment of their crews and sometimes also the maintenance of their ships.

At the same time there is a large group of shipowners who maintain very high standards in terms of crew welfare, compliance with rules, paying their taxes and investing in the training and education of their offshore and onshore organizations. They now insist on a “level playing field”, i.e. the same rules must apply to everybody, and preferably be enforced in a similar manner across the world.

The nature of shipping is global, as ships carry cargo throughout the whole world. To facilitate shipping, the freedom of the sea principle was formulated by Hugo Grotius in the 17th century. Under this principle, ships were free to use the sea to go anywhere they wanted to go, and regulation of ships was in hands of the flag state, i.e. the state under which a ship is registered²⁰.

It is because of the global nature of shipping that intergovernmental decision making at the international level already started in the early 1950s and the IMO evolved into the central authority in maritime governance²¹. The International Maritime Organization was established in 1948 as an UN agency through the IMO Convention and started its work in 1958. It has adopted over 45 conventions related to maritime safety, environmental risks and liability and compensation for maritime claims (Blanco-Bazan, 2004).

Given the global nature of shipping, the dominant view within the shipping industry is that shipping should be regulated by uniform, international standards. For a long time, shipping enjoyed unlimited access to oceans and ports and did not pay the full costs for the pollution it is causing. Every standard set to shipping, whether this is to increase safety or to reduce environmental impact, is seen as a financial burden by the shipping industry. The shipping sector advocates uniform, international standards to spread this burden equally over the entire sector.

Other regulatory bodies within the shipping industry are Classification Societies, flag, coastal and port states, and other agencies of the United Nations.

Classification Societies are independent, commercial enterprises who develop and maintain standards for how ships must be built and maintained. They compete on efficiency and to some extent, reputation. There are some 70 different

²⁰ Paul G. Wright (2012) “Shipping Regulatory Institutions Regulations”

²¹ J Van Leuwen, The regionalization of maritime governance: Towards a polycentric governance system for sustainable shipping in the European Union

organizations marketing themselves as classification societies, whereas the world's top-class societies are members of the International Association of Classification Societies (IACS).

Having the ship entered with an IACS member is often a precondition of financing and access to the global marine insurance market.

The flag state is the state in which a given ship is registered. It has jurisdiction under its own internal laws over each ship registered under its flag. The flag state also has a duty to enforce regulations defined under international conventions on all ships flying its flag. If a given ship does not conform to international conventions its flag state can prevent it from sailing. Flag states are required to ensure that ships flying its flag are under effective jurisdiction and control. "A genuine link must exist between the flag state and the ship, and this is established through registration."²²

When the link between a flag state and a ship is not genuine, the flag flown by that ship is known as a flag of convenience. The International Transport Workers Federation (ITF) defines a flag of convenience as follows: "Where beneficial ownership and control of the vessel is found to be elsewhere than in the country of the flag the vessel is flying.

Examples of regulation

The Paris Memorandum of Understanding was signed in 1982, and was co-signed by the International Maritime Organization (IMO) led to the introduction of Port State Controls²⁴. This meant that a vessel calling a port in a country other than its flag state could risk a Port State Control and hence an inspection of whether the ship complied with international agreements on safety and work conditions. This was an important first step in ensuring equal rules and convergence of application, regardless of the flag of the vessel.

Subsequently new rules have come from the IMO or large nation states. Main drivers have been significant accidents and cases of pollution but also geopolitical events such as the 9/11 attacks on New York City which led to globally enforced standards for security at ports around the world, and increased monitoring of financial cross border transactions as the US authorities tried to limit the cashflows financing the terror groups. And with almost all payments in international shipping taking place in US dollars, shipping cash flows were very exposed to US regulations and to different US agencies who could seize any USD payment that did not pass the sniff-test.

Obviously, this reduced the attraction of single-ship companies hidden behind the corporate veil in a tax efficient jurisdiction, which was often used to avoid taxation and liability by a sizable proportion of ship owners. Thus, the move towards corporatization which was already under way in many shipping hubs got an extra nudge.

See also the case study ("Case Study 2") with the DMA and MPA for more information on the increasing regulatory burden in shipping.

Increasingly, new regulation imposes cost and often timing problems of retrofitting the required equipment (ballast water convention, scrubbers to reduce sulphury content in the fuel burned are but the most recent examples). For the larger and more capable shipping companies this can be a rather complex and costly exercise, but it can also provide a competitive advantage if they are more capable of managing complex transitions than smaller competitors. And always provided that the rules are indeed enforced, and generally complied with globally.

²² Paul G. Wright (2012), see above.

²⁴ Andreas Nordseth, Director General of the Danish Maritime Authority, in an interview with the author on 30 October 2023

Summary

This section introduced you to a brief overview of the dry and tanker markets structures. The dry cargo structure is typically fragmented into long charter party chains, where the head charter may sub charter to an operator, and they may sub charter onto someone else, and so forth. After the 2008-2009 Global Financial Crisis (GFC), this type of structure gave problems to otherwise good c/p's, if a player further up on the charter party chain faced cash flow problems for example.

Based on the writings of Economists Daniel Chen & Duffie, the main issues of a fragmented (dry cargo) market are:

1. Lack of transparency in information on market positions.
2. Large variety in port restrictions and cargo specifications.
3. Positions are covered at different prices reflecting different risk profiles.

For the tanker market, there is a higher incentive for ownership of vessels and crew, due to the grave consequences of possible oil spills, and a significantly higher regulatory pressure on that industry. Tanker charter party chains are therefore typically shorter than in the dry cargo markets.

A historical overview of business market segments was discussed, and the classical shipping business model of buying near the bottom of the cycle and selling near the top was presented. The same principle goes for cargo commitments, where the main risk of taking on a low freight rate in a rising market is the main risk of the shipowner/operator and vice versa.

The rise of financialization in the 1980 was mainly about how to optimise and manage shipping risk. This was mainly done through hedging freight rates, bunkers, backhauls, etc, until you reach an acceptable risk manageable position. Third party technical managers and out of house expertise became the standard, yet with the rising regulatory environment through, for example: the IMO, classification societies and the stricter port security after the 9/11 terrorist attack in America, may be easier for companies with inhouse knowledge and corporate structure to follow.

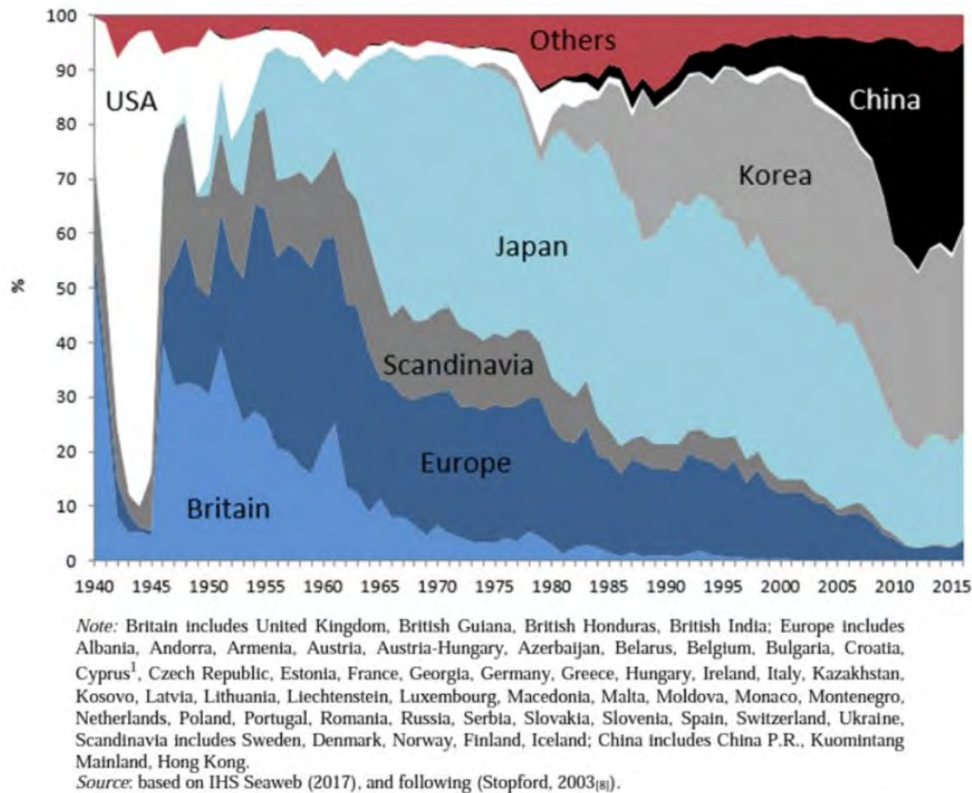
SUPPLY & DEMAND

The newbuilding market - drivers of supply

All strategies in shipping will contain elements of how and when to acquire transport capacity. Particularly companies operating in industrial shipping will be active in the newbuilding markets to acquire the right kind of ship design for their specific use and be selective about the specific equipment onboard and will seek to limit the maker's list to trusted, quality suppliers where the buyer already has strong and trusting relationships.

But also, the companies who are mostly acquiring tonnage in the second-hand market, or on medium- or long-term charter basis, needs to understand the drivers of newbuilding prices and delivery times at any given time. The newbuilding market affects pricing for all other types of long-term control of tonnage, and the keen investor will often be able to exploit the price asymmetries between newbuilds, modern 2nd hand tonnage and even between 1 year and 3-5 years' time charters.

For that reason, we will in the below chapter describe the key historical events in modern shipbuilding, as well as the drivers of demand and price levels.

Exhibit 2.2: History of Shipbuilding by region (% share of gross tons)

Source: Martin Stopford (2003)

Global shipping markets are characterized by a relatively stable supply of new ships. Periods of very high demand and the associated higher price levels for newbuilds allows shipyards to expand their capacity quicker by employing external contractors, experiment with constructing ships outside the dock etc – but only for as long as the unusually high demand and price levels allows for it.

In the timespan from 2000 to 2022 the lead time from ordering a newbuilding until delivery has fluctuated between 1.8 years and 3.8 years for the industry as an average for the main segments (container, crude, product tank and dry cargo) but with outliers at 1.75 and 4.5 years for individual segments in high demand (various research firms). What is more remarkable is that in 16 out of 23 years the lead time is in the range of 2 years plus/minus 25%. For dry cargo in isolation this figure is 13 out of 23 years within this range.

In other words, a remarkable consistency compared to the volatility on the demand side, in the chartering markets. In the next chapter we will examine the demand side of the shipping markets, and particularly the bulk tramp markets, where the volatility stands in stark contrast to the relative stability and long lead times on the supply side.

The Developmental State and Shipbuilding

The steam powered steel ship started becoming commercially viable by the 1870-80s. While many steam powered iron- and steel boats were built much earlier, the need to carry their own fuel (coal) meant that sail ships remained competitive because they did not have to sacrifice as much cargo carrying capacity as the new iron steamboats.

But by the 1870s, steam engine technology had improved enough, and coal replaced wind as the shipping industry's primary fuel. Shipbuilding no longer merely required easy access to good timber but required the supply of steel plate from local steel mills and the availability of industrial labour²⁵. See also Exhibit 1.1: World Trade 1870-2022 (Source: PIIIE)

Shipyards capable of building these modern ships were in the national interest of coastal states to develop capable naval capabilities on the one hand and to participate in the ever-increasing global trade on the other. Hence shipbuilding was primarily local and regional in nature at the time, with the two primary drivers being the build-out of naval capabilities, and commercial ships benefitting from the increasingly global nature of trade.

After World War II several East Asian states began to develop their economies through their private sectors but with strong state intervention. Chalmers Johnson²⁶ was first to conceptualize this brand of nation building as the “developmental state”.

In this model of capitalism (sometimes referred to as state development capitalism), the state has more independent, or autonomous, political power, as well as more control over the economy. A developmental state is characterized by having strong state intervention, as well as extensive regulation and planning. The term has subsequently been used to describe countries outside East Asia that satisfy the criteria of a developmental state²⁷.

A key first step for these East Asian Tigers in the 1960s, 1970s and for China the 1980s were the early conversion of a rural workforce into an industrial one by prioritizing textile production, with the next phase being the development of strong private shipbuilding industries. Japan, South Korea, Taiwan & and the People's Republic of China were very successful at leveraging shipbuilding to not just develop real industrial workforces capable of moving onto to even more sophisticated technologies but also to use it to develop national steel and chemical industries. Vietnam tried to follow this path too but with limited success.

Just like shipping, shipbuilding has traditionally been a fragmented industry with many smaller players and therefore suffering from an absence of real investment in developing ground-breaking new designs and little if any research into for example new and lighter materials.

Today the global commercial shipbuilding capacity is concentrated in China, South Korea and Japan with occasional niche designs being built at smaller European yards. According to UNCTAD 93.4% of the world's shipbuilding capacity is concentrated in China, South Korea and Japan. Consolidation is taking place in all these three countries.

²⁵ <https://transportgeography.org/contents/chapter1/emergence-of-mechanized-transportation-systems/steam-sail-breakeven/>

²⁶ Johnson, Chalmers. 1982. *MITI and the Japanese Miracle*. Stanford, Calif.: Stanford University Press

²⁷ See also Barwick, Panle Jia, Myrto Kalouptsidi and Nahim Zahur. *Forthcoming. Industrial Policy Implementation: Empirical Evidence from China's Shipbuilding Industry*. *Review of Economic Studies*, where the authors argue that economic theory suggests a number of different motives for subsidizing an industry (e.g. shipbuilding) incl. 1) *The Infant Industry explanation: The theory goes that the more you produce the more you learn and eventually you can produce a competitive quality at a competitive price.* 2) *The Spill over Theory: Building up an industry can help supporting other industries, in this context a steel industry and possibly also other heavy industries;* and 3) *In China's case an ample supply of cheap cargo ships to provide competitive freight for China's exports.* See also the podcast “Trade Talks – Episode 194”, 5 November 2023, by Chad P. Bown.

Exhibit 2.3: Global Shipbuilding Capacity & Market Share (Source: BIMCO and Clarkson)

Commercial shipbuilding capacity for all but niche and smaller vessels, had left Europe by the 1980s. Bigger and better planned yards in South Korea and later China were far superior in productivity and costs structure compared to the old shipyards of Europe who often were placed on the waterfronts of rapidly encroaching cities and hence without any room to expand or redesign themselves. The Jones Act and Canadian “grandfather clause” requirements left North America irrelevant and marginalized in commercial shipbuilding.

For some twenty years from the mid 1990s until the mid 2010s, Japan maintained a strong presence in certain segments due to the efficiency of their production planning and a focus on a few segments, most notably bulk carriers, where the Japanese designs were technologically behind, but superior in terms of commercial income generating capacity. The Korean yards focused on and excelled at large containerships, LNG and the offshore oil sector.

Increasingly however Chinese yards have consolidated and improved the quality of their products and are now taking the Korean yards head on in LNG and large containerships.

Geopolitically this is a concern to the US and its allies. Just as the construction of commercial ships in the US is vastly more expensive than in the Far east as evidence by the order of 3 x 3,600 TEU containerships at USD 1 billion by Matson at Philadelphia Shipyard in 2022²⁸.

Similarly, the construction of the top-of-the-range US Arleigh Burke destroyers has been licensed to allies in Japan and Korea and is being constructed at USD 1.2 billion in for example Korea whereas the cost incurred by the US navy when building in North America is USD 2.2 billion²⁹.

Shipbuilding capacity is very price elastic.

The pricing of shipping assets starts with understanding the newbuilding market. Changes in demand drivers, in relative pricing amongst the three dominant countries. Historically supply (yard capacity) has been very elastic and can be expanded quickly if the buyers are willing to pay more – as we experienced during the commodities super cycle in the 2000s where China’s massive increase in the import of minerals in general and iron ore in particular drove newbuilding prices and freight levels on an exponential scale.

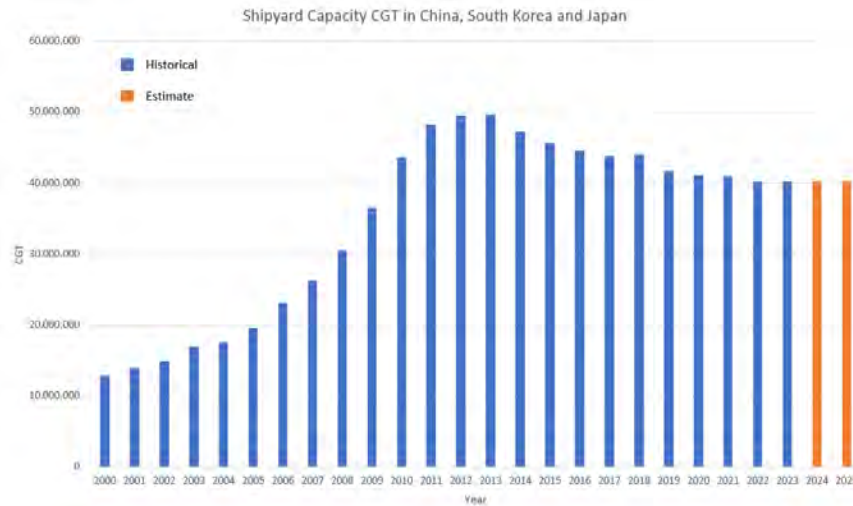
²⁸ Various sources incl.: <https://www.marinelog.com/shipbuilding/shipyards/shipyard-news/matson-places-1-billion-order-for-3-lng-fueled-box-ships-at-philly-shipyard/>

²⁹ <https://edition.cnn.com/2023/06/02/asia/japan-south-korea-naval-shipbuilding-intl-hnk-ml-dst/index.html>

The most used measure of shipbuilding capacity is Compensated Gross Tonnage (CGT) which considers that the complexity of building a cruise ship, and LNG carrier or a container ship is far higher than the construction of crude or bulk carriers for example. A higher CGT reflects many more man hours invested and more time in the dock.

Shipbuilding capacity in 2000 was assessed at some 38-40 million CGT, reached a peak in 2010 at appr. 58 m. CGT and was back 47-48 mill. CGT in 2012. All reflecting price levels at the time.

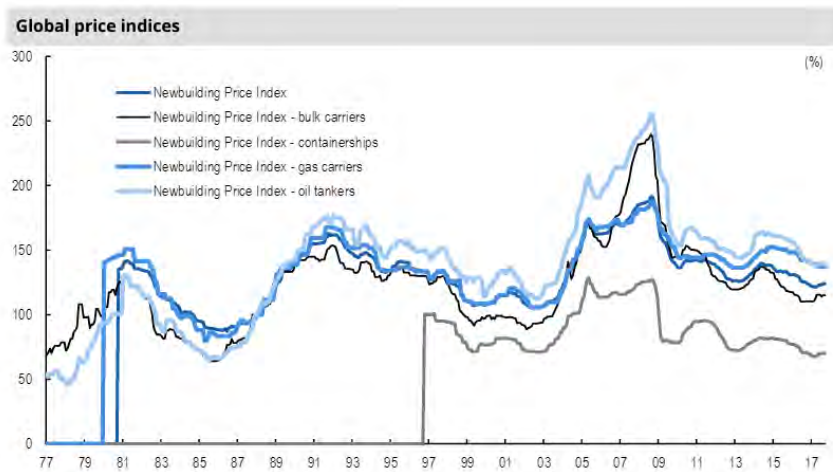
EXHIBIT 2.4: Development in Shipyard Capacity (in CGT) 2000-2025³⁰



Demand side drivers

An important characteristic of shipbuilding is the complexity of the process and the relatively long lead times from the signing of the newbuilding contract to the delivery of the vessel.

EXHIBIT 2.5: Historic Newbuilding prices by segment³¹



³⁰ Maersk Broker Research

³¹ Source: Danmarks Skibskredit Annual Reports 2004-2017 (Clarksons)

Different shipping segments tends to experience high demand at different times (with some notable exceptions), hence leading to different types of newbuilding being in demand at different times. To understand the potential availability of new ship supply into a given segment, it is therefore insufficient to only understand that market.

Industrial or speculative demand in other shipping segments can have a strong impact on dock availability. Hence demand for new tonnage will have been driven by different types of buyers and in recent years it has been fuelled by the availability of new sources of financing.

Industrial owners who are investing to rejuvenate or increase their fleets (?). Industrial demand could also come from end-users, such as trading houses or extraction companies (mining companies or oil majors) who at times have wanted to hedge their shipping costs by acquiring their own tonnage, either by owning outright or chartering for the medium or long term.

Speculative demand has traditionally been centred around the large bulk and tanker segments where traditional players – typically Greek or North Europeans investing countercyclically in the most liquid vessel classes. As the major liner companies have changed their tonnage strategies from owning their tonnage outright to sourcing large portions of their fleets from the chartering markets, a new class of more speculative investments in standardized container ship sizes have taken off. This tonnage market used to be the domain of the German KG owners but have increasingly come to be dominated by Greek investors and Canada-based Seaspan who has developed a business supplying tonnage to major Chinese liner companies.

A subspecies of the speculative demand has come about in the 2010s where new sources of finance have led to rather large bets on certain vessel classes such as from private equity and IPO driven investments in bulk and tank (Scorpio) or Oaktree's investments in product tank (e.g. Torm) where the pitch was to drive consolidation in a segment with a strong tonnes-miles story to justify the belief in future growth.

On top of this we have bouts of government induced demand. The Chinese government made tax incentives available in 2012 to get existing Chinese owners to divest from their older tonnage against competitive financing for reinvesting in new Chinese built tonnage. Similarly, the Japanese tonnage suppliers, from small family-owned businesses to rather sizable ship owning groups, are incentivized by tax breaks if tonnage sales are replaced with new ordering.³²

Pricing of newbuilds

Supply and demand are obviously the key determinants of pricing but changes to currency rates of exchanges have a significant influence on which of the three countries have the more competitive pricing measured in USD – the virtually universal currency of shipping and global trade.

Cost of ownership is another factor. Going from a low interest rate environment to an inflationary one as we have seen in 2022-23 will increase the cost of financing vessel acquisitions and hence the cost of ownership.

But also, the pricing of key input factors plays a role – steel especially, where global shipbuilding accounts for just about 2% of the global steel production. Pricing of the steel plates required by shipbuilding is therefore much more susceptible to demand changes in other industries – not least from the automotive industry. Steel plate supplies tend to be local because of the need for just in time supplies and for controlling shipping costs. However, steel plate prices have proven to be volatile – in the 2000's ship steel plate prices fluctuated from appr USD 250 per metric tonne to prices more than USD 1,500 pmt.

See also Exhibit 2.6

³² If a Japanese owner sells a ship and it is not replaced by another (typically a Japanese built newbuilding), the owner will be liable for *income taxes over the lifetime of the vessel sold*.

EXHIBIT 2.6: Chinese steel plate prices 2011-2023³³**And why is this important?**

A major shipping company's newbuilding analysis in 2012 concluded with following:

QUOTE:

- *We have a broad window of opportunity.*
- *We must identify the right – fuel efficient – designs.*
- *We should buy only from absolute top-tier yards.*
- *The volatility in second hand markets will offer us opportunities to divest along the cycle – regardless of the limited upside in the newbuilding markets.*

END QUOTE

In other words, the company's detailed analysis of the state of the newbuilding market, and its demand and supply factors, offered the company a platform from which to make asset decisions on the size and composition of its fleet. The value of these insights also extends to the second-hand markets and for other means of controlling fleet capacity, whether short or long-term time charters – or with or without purchase options.

³³ Bloomberg 2024

The supply of tonnage is relatively stable but long-term by nature – delivery times have historically ranged from 14 to 40 months depending on the market and the ship type. The average has been around 20-22 months.

The supply of commercial ships has become dominated by the three major shipbuilding nations of the Far East: China, South Korea and Japan with China clearly in the ascendancy.

Demand for tonnage can be characterized as industrial if it is driven by a requirement to replace or rejuvenate an existing fleet. Or driven by end-users who see additional volumes coming online.

Speculative demand is often driven by arbitrage seekers who are investing 1) countercyclically; 2) into liquid asset classes, e.g. Greeks investing into Panamax bulk carriers or VLCCs; and/or 3) standard designs from reputable yards and design groups.

Demand can be further fuelled by new and advantageous sources of finance. Examples are legion: Chinese leasing companies entering the market in 2009 onwards, private equity in the 2000s and 2010s. A subspecies of this type of demand could be the Japanese structured deals, that are to some extent driven by smaller Japanese owners who must replace older ships that they have disposed of with new ones in order not to incur taxes on the earnings of the older units. This has been a major driver behind deals to first class western signatories who have chartered ships for 5 plus 1 plus 1 plus 1 years at attractive rates while also securing American Call options on purchasing the underlying assets. The attraction of the option rich deals hence fuelling high demand for such deals and their underlying assets.

Demand for transport capacity is affected by global economic growth and global trade (not the same thing) and in particular the dry cargo markets is affected by several exogenous factors:

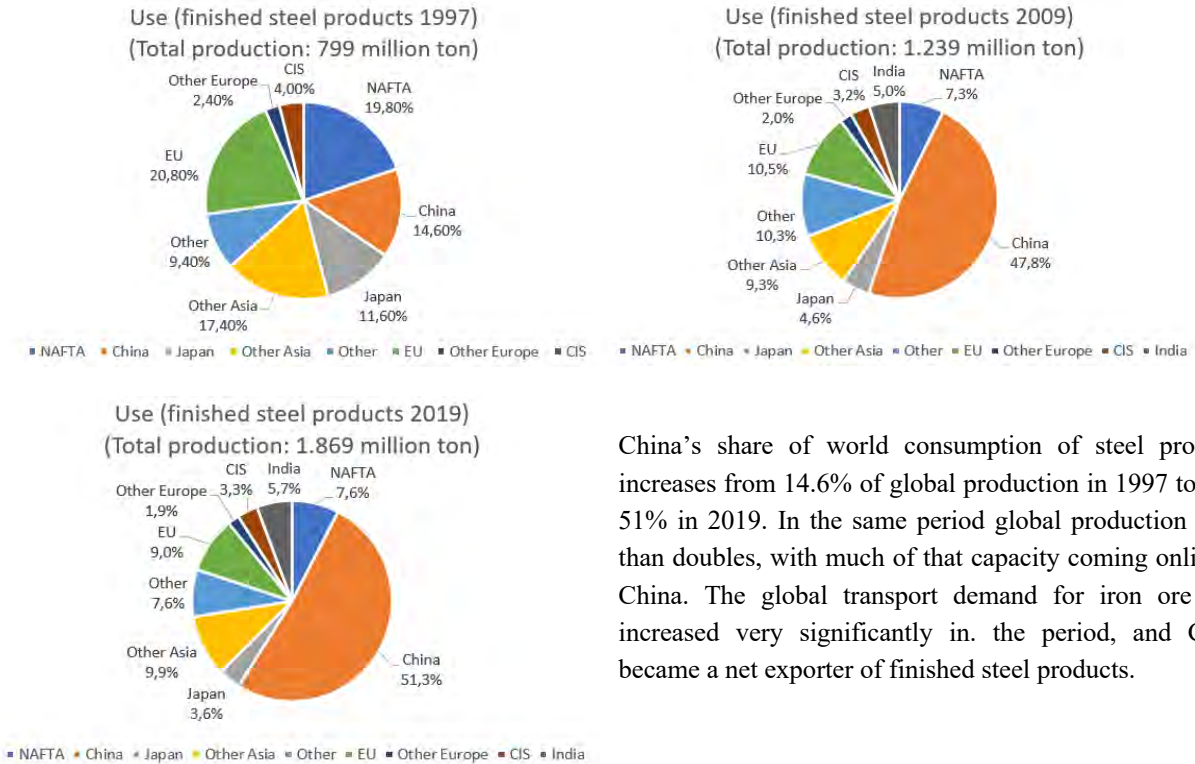
- Urbanisation, which requires the import and / or production of large volumes of iron ore, steel, cement, and logs, and typically accompanied by significant increases in energy consumption that often will also be provided for by global shipping fleets.
- Business cycles, where downturns are followed by increases in construction (new housing starts in the US), increased employment and salary levels as well as increased manufacturing. This all leads to increased trade in commodities and steel products. Longer business cycles have involved increasing levels of specialisation, where commodities are often mined, refined and processed at different locations, depending on where it can be done most efficiently, i.e. where there is a comparative advantage.³⁴ This leads to changes in trading patterns – and often more tonnes-miles.
- Trade policies matters greatly. The adoption of the World Trade Organisation rules by China in 2001 was a seminal moment. A rule-based trading system with binding conflict handling mechanisms and involving the world's major economies created an environment in which global trade flourished. – Adversely, a global order where countries are seeking protection in regional trade blocks or strictly protectionist policies within one large economy, obviously hinders global trade.
- Geopolitics is another important factor. Armed conflicts or the threat of same around the world can reduce trade but more often the resilience of the shipping industry merely leads to more tonnes-miles and hence conflicts tend to lead to higher freight rates across shipping segments, essentially a risk premium. When it spills over into trade wars, the effect is generally detrimental, particularly to the shipping segments carrying finished goods.
- Technology obviously plays a key role too, as innovation and application affect where best to produce a given product. The high growth in electrical vehicles in the late 2010s and early 2020s have led to rapid increase in certain commodities such as nickel, cobalt and others that are essential to meeting the high and growing demand for yet better batteries.

The dry cargo and crude oil segments first and foremost serve the demand of primary industries: Carrying coal, iron ore, different mineral ores, agricultural products and building materials such as cement and steels as well as crude oil for the refineries of the world.

The dominant commodities in dry cargo are iron ore and coal, whereas the fluctuating production levels in agricultural products and frequent changes to the sourcing of cement can provide dramatic changes in demand for some of the smaller and medium sized bulk carriers due to changes in trading patterns and hence in tonnes-miles from year to year. There are several ways to slice the market, depending which ship size we are examining, the smaller dry trades would look at agricultural products, construction materials and energy related commodities. The large sizes will distinguish more between steel and energy related cargoes.

The changes in the consumption of steel are a good illustration of the significant changes in trades and volumes that affect the dry cargo markets.

³⁴ First described by Adam Smith in “The Wealth of Nations”.

Exhibit 2.7: World Steel Production, 2008 (2nd edition) and 2020. World Steel Association³⁶

China's share of world consumption of steel products increases from 14.6% of global production in 1997 to over 51% in 2019. In the same period global production more than doubles, with much of that capacity coming online in China. The global transport demand for iron ore thus increased very significantly in the period, and China became a net exporter of finished steel products.

Product carriers moves refined products to end users or other manufacturers. Many US and European refineries are unable to expand or renew their facilities as cities have encroached on them and environmentalists and Nimbyists (Not in My Back Yard) makes it hard to adjust capacity and quality to the current demand profile. This has become a main demand driver as products will have to be transported from refineries in the Middle East, India, China etc. to meet the demand of US and Europe.

Container lines serves the whole range but is primarily associated with semi-finished and finished products for final assembly or for the end-users and is beyond the scope of this book.

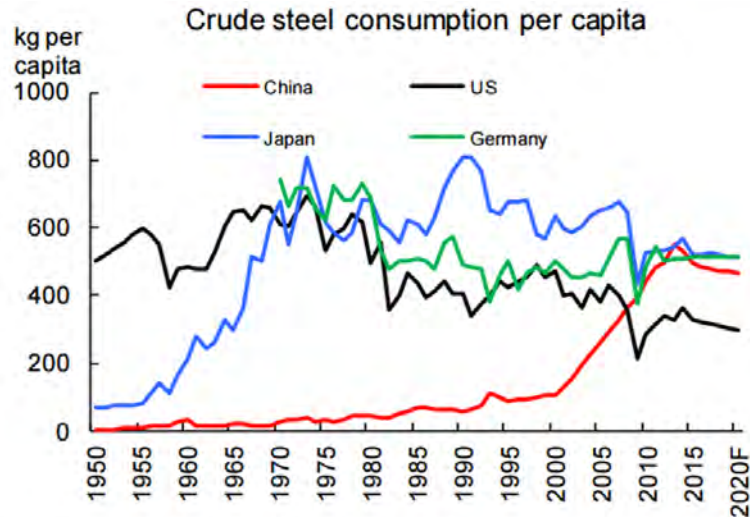
In the following we will provide a few examples from the dry cargo sector of groups of commodities carried and how they affect demand for shipping capacity, and we include a few proxies that can be used to predict and explain changes in demand.

Industrial commodities

The two dominant industrial commodities in dry cargo shipping are iron ore and coal. The main driver of iron ore exports over the past 30 years have been China (again) and is a derivative of a strong wave of urbanisation and need to build up a strong steel infra structure.

Other economies that industrialized generations ago already has plenty of steel for recycling in their economies – the US is a good example where the electric arc furnace has taken over from blast arc furnaces in national steel production, reflecting that steel from existing infrastructure (buildings, cars) is being recycled to a high extent.

³⁶ <https://worldsteel.org/steel-topics/statistics/world-steel-in-figures-2020/>

EXHIBIT 2.8: Steel intensity in select economies, consumption per capita 1950-2020

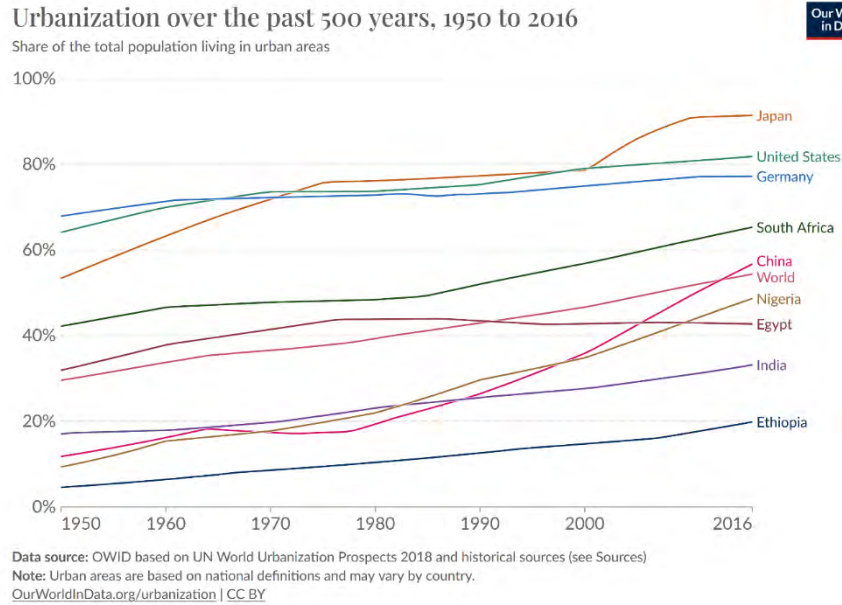
Source: worldsteel, Macquarie Research, February 2016

Coal is a key commodity for the supramax to Panamax segments and while this commodity is facing strong environmental headwinds, and rightfully so, it will take a long time to replace the existing coal fired generating capacity with cleaner sources. Particularly in industrializing or newly industrialized economies. The demand for electricity is directly proportional to GDP growth – i.e., population size and industrialization.

Demography therefore remains one of the more reliable proxies for forecasting where dry cargo shipping will move next. Young populations have historically led to binary outcomes over the course of a generation: High economic growth or strong political unrest. – In 2023 the young generations are in India, the Middle East and Africa.

Urbanisation

Another important driver of the dry cargo trades is urbanisation. The industrialisation that lifted China from abject poverty to becoming the world's second largest economy by the time of writing, was mirrored in high rates of urbanisation, crossing 50% of the population living in an urban environment in China in 2011.

Exhibit 2.9: Urbanisation in select countries 1950-2016

This required large imports of all commodities required in steel making, not limited to iron ore, and a rapidly growing demand for energy. Such large urbanisation trends drive bulk demand.

In the last 30 years China, Nigeria and to a lesser extent India and Ethiopia have experienced some of the steepest increases in urbanisation amongst large populations. Japan and South Africa have also seen steep increase in urbanisation but from a much higher level.

Countries with a high installed steel capacity such as Japan and South Africa are to a much lower degree reliant on iron ore to produce the steel required for their urbanisations. Scrap metal from their already installed steel based will be recycled as scrap metal in electric arc furnaces to produce new steel for construction.

Agricultural products

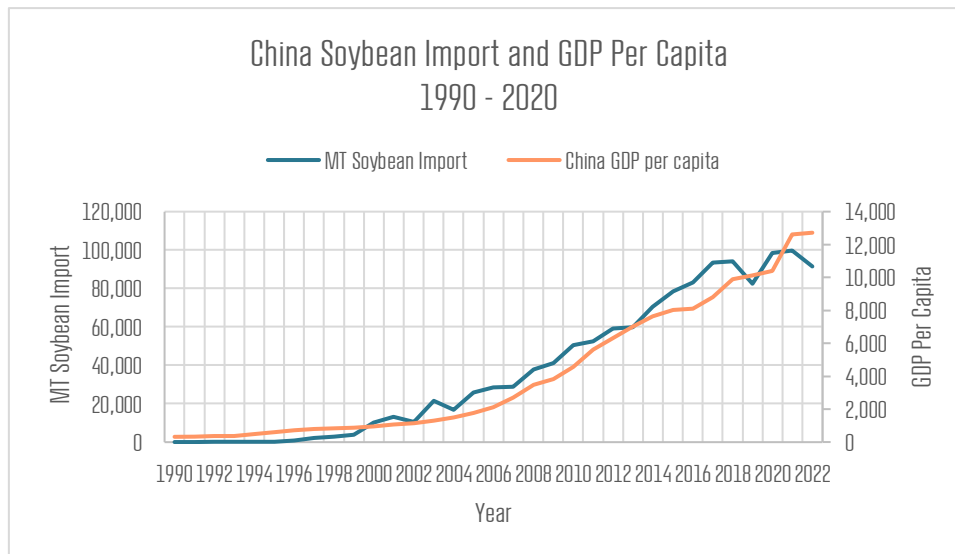
Food accounts for 12% of global GDP (compared to the US where food accounts for 5.4% of US GDP) and 40% of all jobs³⁷. Demand for shipping of agricultural products such as fertilizers, grains, rice, soybeans etc is partly driven by population size and GDP levels.

For low-income countries, GDP increase is accompanied by changes towards food consumption patterns with large gaps between supply and actual consumption. Total supply differs by a factor of two between low- and high-income countries. People in low-income countries derive nutritional energy mainly from carbohydrates³⁸.

Rising GDP levels leads to a transition in primary food sources – from basics such as rice, pasta, and bread to protein in increasing intensity as GDP grows. First a change to chicken, then to pork and finally to beef. The higher protein food sources require even more input in terms of feedstuff, and hence generates even more shipping demand.

³⁷ World Economic Forum 2022: <https://www.weforum.org/agenda/2022/05/protect-food-systems-against-global-shocks/#:~:text=Food%20systems%20are%20essential%20to,protect%20our%20agri%2Dfood%20systems.>

³⁸ NIH National Library of Medicine, P W Gerbens-Leenes & S Nonhebel & M S Krol, "Food Consumption Patterns and Economic Growth. Increasing Affluence and the use of Natural Resources", December 2010



China's astonishing growth since Deng Xiaoping's liberalisation first led to significant increases in local agricultural productivity and since to strong increases in imports of other important agricultural products to feed a much wealthier population.

Formation of rates - when supply and demand meet

The demand for shipping is not just driven by the volume demanded of key commodities but also by the distance they must be carried from the source to the end user. Hence a traditional measure of demand has been "tonnes-miles", typically per year.

Another factor in explaining the rate level in each tramp market has traditionally been the utilization of the available fleet. Up to appr. 90% utilization of the fleet capacity the freight rates would increase in direct ("linear") proportion to the increase in utilization. Above 90% utilization the relationship between tonnes-miles increases and freight levels would become exponential and hence lead to some of the very high freight levels experienced in 2006-08 and again in 2021-2022. Utilization reflects the size and number of ships in each segment, its average speed over the period and is affected by waiting times at ports, canals and other major transit points.

Fleet capacity broadly speaking reflects the carrying capacity of the available fleet and its average speed. Many operators would decrease speeds to save fuel and hence increase profitability or competitiveness – this would furthermore decrease the fleet available on an annual basis, and therefore increase the utilisation of this fleet – everything else being equal.

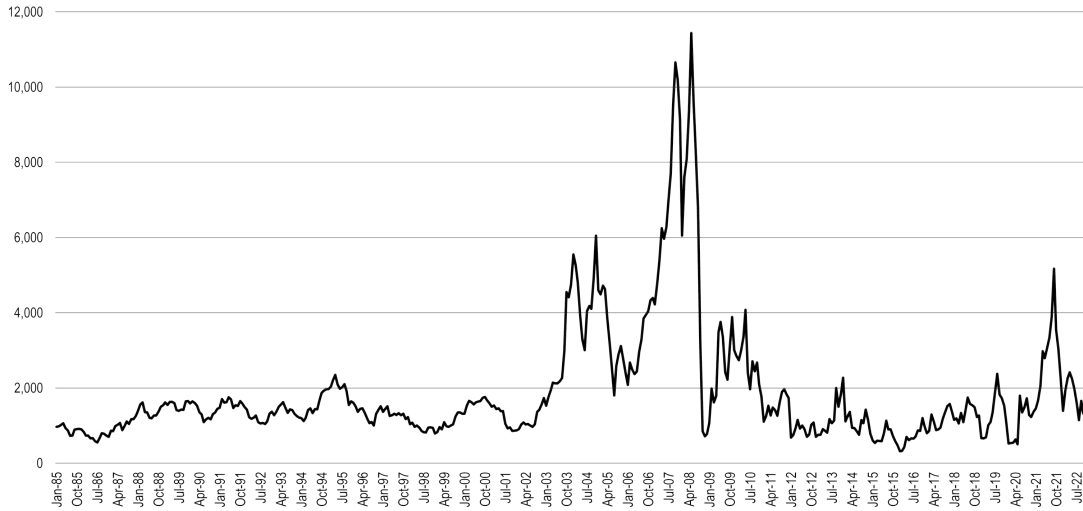
Demand in shipping markets is best described by the requirement for tonnes-miles in any given period. Global economic growth, global trade and urbanisation in major economies are amongst the most important factors driving the tonnes-miles demand.

Global uncertainty, wars and conflicts tends to increase shipping rates. Piracy and armed conflicts off main shipping lanes not only increases uncertainty but inevitably leads to deviation in existing trading patterns and hence to more tonnes-miles.

³⁹ Source: Bloomberg October 2023

In a “steady-state”, shipping markets are complicated but in a dynamic world there is no ‘steady-state’ and the many factors that can affect sourcing and trading patterns makes shipping markets very volatile. None more so than the larger dry cargo markets as can be seen from the following exhibits illustrating historic volatility in select shipping segments.

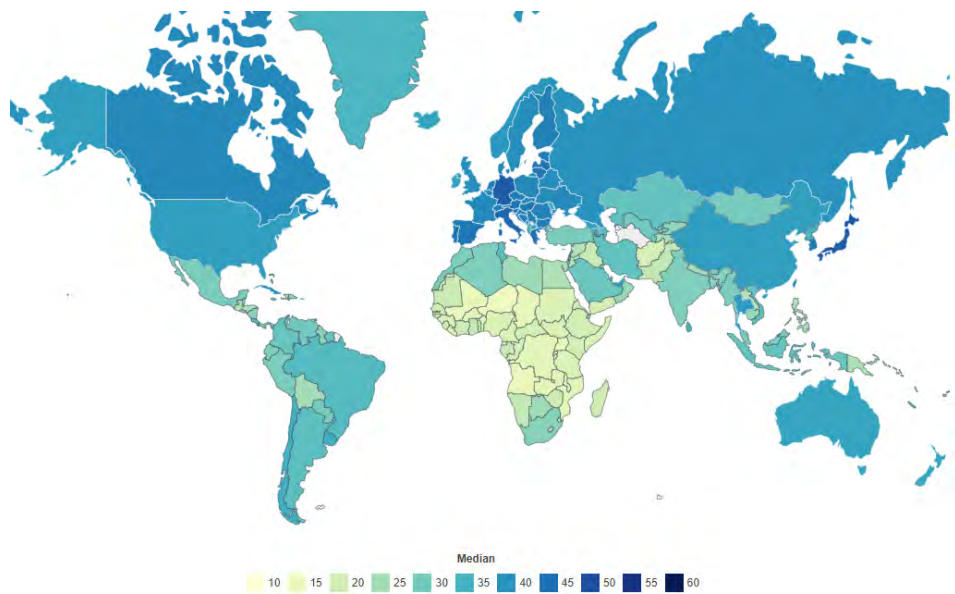
Exhibits 2.11 Baltic Exchange Dry Index 1995-2022 ⁴⁰



Where are the next major dry cargo markets.

Based on the assumption that demography is a key predictor of future outcomes, discuss the implications of the trends depicted in the urbanisation exhibit above and in below exhibit showing major populations with a large share of young people. And describe different plausible scenarios over the next 25 years – a generation – for stability and economic growth.

Exhibit 2.12: Snapshot of median age by country 2021 ⁴¹



⁴⁰ Bloomberg; BDIY: IND. Value as of the last business day of the month

⁴¹ CIA World Factbook (<https://www.cia.gov/the-world-factbook/field/median-age/>) and World population prospects 2019 - United Nations (<https://population.un.org/wpp/>)

Exhibit 2.13 outlines the top 10 youngest countries in three snapshots from 1980, 2000 and 2020 and reflects a remarkable stability in the top-10 members. Unfortunately, this stability seems to reflect an absence of strong institutions and of ingrained conflicts.

In the 2020 Top-10 probably only Tanzania, Mozambique, Nigeria and Ethiopia would be deemed to have a chance to build somewhat credible institutions that can also provide the political stability to navigate periods of strong growth and likely re-distributions of wealth and power in these societies. And that is even a somewhat uncertain and optimistic assessment.

Exhibit 2.13: Youngest Countries 1980 - 2000 - 2020 With Population Over 35 million

	1980	2000	2020
1. <i>Youngest</i>	Uganda	Uganda	DR Congo
<i>Age Median</i>	14,80	13,80	15,60
2.	Yemen	Afghanistan	Uganda
	14,90	14,10	15,70
3.	Sudan	Yemen	Angola
	15,30	14,20	16,10
4.	Tanzania	Ethiopia	Afghanistan
	15,50	15,10	16,60
5.	Angola	Angola	Tanzania
	15,80	15,60	16,70
6.	Afghanistan	DR Congo	Mozambique
	15,90	15,80	16,70
7.	Ethiopia	Sudan	Nigeria
	16,00	16,00	16,90
8.	Mozambique	Tanzania	Sudan
	16,30	16,30	18,30
9.	DR Congo	Mozambique	Ethiopia
	16,80	16,60	18,30
10. <i>Oldest</i>	Nigeria	Nigeria	Yemen
<i>Age Median</i>	17,00	17,00	18,50

Summary

In this chapter on Demand, we looked at the following factors:

- Urbanization & demography
- Business Cycles
- Trade policies
- Geopolitical conflicts
- Technological advances

The chapter uses China's economic growth since the 1980s as an example of the effects on shipping of high growth and increasing urbanisation, and how a rapidly increasing consumption of steel products affects the demand for a major commodity within the dry bulk segment. A similar increase in steel consumption per capita is a trend that can be shown to have happened generations ago in other industrializing countries. Examples in point are Germany, the US and a bit later, Japan.

Similarly for agricultural products, there are clear patterns that can be detected when GDP incomes per capita are increasing. Rising incomes are reflected in diets going from being based on rice as the stable food to chicken over pork to beef. This is illustrated for China where an increase in soybean consumption reflects the increasing consumption of soy as fodder for the country's pork production.

Demand is usually measured in ton-miles, that reflect the world merchant fleets carrying capacity, waiting times at ports/canals and its speed. In a "steady state" market, shipowners would be able to predict somewhat where future

tonnage would have to go, and utilise their vessels accordingly, but with geopolitical events, trade policies, etc, a non-“steady state” market is the reality.

Freight rate levels can usually be explained by the utilisation of the world fleet: There is a linear relationship between utilisation and rates up to 90% vessel utility, whereas the relationship becomes exponential when utilization exceeds 90%.

This can be seen in the Baltic dry index, where most notably, during 2008 and 2021, freight rates were incredibly volatile.

If demography is indeed a key predictor of future political and economic outcomes, it is evident that focus must be paid to Africa, where young populations combine with high rates of urbanisation. Countries such as Tanzania, Mozambique, Nigeria and Ethiopia all hold significant potential.

Barwick, P. J., Kalouptsidi, M., & Zahur, N. B. (2019). China's Industrial Policy: An Empirical Evaluation. *National Bureau of Economic Research*. <https://doi.org/10.3386/w26075>

Blenkey, N. (2022, November 2). *Matson places \$1 billion order for 3 LNG-fueled box ships at Philly Shipyard*. MarineLog. Retrieved July 3, 2024, from <https://www.marinelog.com/shipbuilding/shipyards/shipyard-news/matson-places-1-billion-order-for-3-lng-fueled-box-ships-at-philly-shipyard/>

Bown, C. P. (2023, November 5). *Industrial policy detectives: China's subsidies for shipbuilding*. Trade Talks. Retrieved July 3, 2024, from <https://tradetalkspodcast.com/podcast/194-industrial-policy-detectives-chinas-subsidies-for-shipbuilding/>

Break-Even Distance between Sail and Steam, 1850-1890. The Geography of Transport Systems. Retrieved July 3, 2024, from <https://transportgeography.org/contents/chapter1/emergence-of-mechanized-transportation-systems/steam-sail-breakeven/>

Chen, D., & Duffie, D. (2021). Market Fragmentation. *American Economic Review*, 111(7), 2247-74. <https://doi.org/10.1257/aer.20200829>

Epstein, G. A. (2005). *Financialization and the World Economy* (pp. 3-16). Edward Elgar Publishing Ltd.

Gerbens-Leenes, P. W., Nonhebel, S., & Krol, M. S. (2010). Food consumption patterns and economic growth. Increasing affluence and the use of natural resources. *Appetite*, 55(3), 597-608. <https://doi.org/10.1016/j.appet.2010.09.013>

Irwin, D. A. (2022, October 28). *Globalization is in retreat for the first time since the Second World War*. PIIE. Retrieved July 3, 2024, from <https://www.piie.com/research/piie-charts/globalization-retreat-first-time-second-world-war>

Johnson, C. (1982). *MITI and the Japanese miracle: The growth of industrial policy, 1925-1975*. Stanford, Calif.: Stanford University Press.

Median Age. The World Factbook. Retrieved July 3, 2024, from <https://www.cia.gov/the-world-factbook/field/median-age/>

Ramachandran, J., Manikandan, K. S., & Pant, A. (2013, December). *Why Conglomerates Thrive (Outside the U.S.)*. Harvard Business Review. Retrieved July 3, 2024, from <https://hbr.org/2013/12/why-conglomerates-thrive-outside-the-us>

Smith, A. (2007). *An Inquiry into the Nature and Causes of the Wealth of Nations* (4th ed.). MetaLibri.

Stopford, M. (2009). *Maritime Economics Third Edition* (pp. 688-89). Routledge.

Strauss, T. (2022, May 24). *How can we protect food systems against global shocks? Here's what business leaders say*. World Economic Forum. Retrieved July 3, 2024, from <https://www.weforum.org/agenda/2022/05/protect-food-systems-against-global-shocks/#:~:text=Food%20systems%20are%20essential%20to,protect%20our%20agri%2Dfood%20systems.>

Van Leeuwen, J. (2015). The regionalization of maritime governance: Towards a polycentric governance system for sustainable shipping in the European Union. *Ocean & Coastal Management*, 117, 23-31.
<https://doi.org/10.1016/j.ocecoaman.2015.05.013>

Wright, P. G. (2012). *Shipping Regulatory Institutions and Regulations* (pp. 281-303). Blackwell Publishing Ltd.
<https://doi.org/10.1002/9781444345667.ch14>

World Population Prospects 2022. United Nations. Retrieved July 3, 2024, from <https://population.un.org/wpp>

World Steel in figures 2020. World Steel Association. Retrieved July 3, 2024, from <https://worldsteel.org/steel-topics/statistics/world-steel-in-figures-2020/>

CONCEPTUAL BLOCK 2



54 BUSINESS MODELS IN INTERNATIONAL BULK

By Peter Borup

Like other interdisciplinary topics, business models are frequently mentioned but rarely analysed: therefore, they are often poorly understood.

Teece, 2010, p. 192

American best-selling author Michael Lewis describes a business model as a “work of art”.⁴² And like art itself, it’s one of those things many people feel they can recognize when they see it (especially a particularly clever or terrible one) but can’t quite define. Whenever an enterprise is established, it either explicitly or implicitly employs a particular business model that describes the design or architecture of the value creation, delivery, and capture mechanisms it employs. The essence of a business model is in defining how the enterprise delivers value to customers, convinces customers to pay for value, and converts those payments to profit. It therefore reflects management’s hypothesis about what customers want, how they want it, and how the company can organize to best meet those needs, get remunerated for doing so, and make a profit. Three factors explain why a successful business model is hard to imitate⁴³:

1. Implementing a business model may require systems, processes and assets that are hard to replicate.
2. There may be a level of opacity to the business model, where a certain lack of transparency makes it difficult for outsiders (and even some insiders) to determine in sufficient detail exactly how a given business model works.
3. Even if sufficiently transparent, it may turn out counterproductive for a competitor to try to copy the business model as that would cannibalize its own client base.

The fact that a business model is interdisciplinary by its very definition and hence hard to define precisely has led to it being understudied by academics. Nevertheless, there are many business model stories to be told – successful and eventually unsuccessful ones alike.

In shipping, companies also compete on different business models which will be structured and staffed differently, depending on how they intend to compete.

Very few shipping companies enjoys any intellectual property (IP) protection. Successful business models are however difficult to imitate. Most of what a business model contains are generic organisational structures, hiring practices, management styles and segmentation of the clients and how they are served. For this book, we will use the term as meaning how a company intends on delivering on its strategy, how to make profits, given its organisation, corporate culture, ownership structure, risk appetite and the assets and resources it possesses. And it’s systems and processes.

Organisation

Shipping is dynamic and managers will have to identify the key strategic challenges for the coming years. But in many cases, they realize that the organisation is facing a competence gap that it cannot easily fill or perhaps not afford to fill.

One choice can be to use non-executive board position to attract some of the competencies at a high level and then insert some of these insights through working groups containing the appropriate staff member sand the non-executive board member overseeing the activities. This could be in terms of data management or mapping out and adopting new technologies.

⁴² Harvard Business Review, January 23, 2015, “What is a business Model” by Andrea Ovans

⁴³ Teece, D (2010) page 182

Knowledge sharing

Knowledge sharing requires that members of the organisation are comfortable offering their own views. This can be complex in an organisation of different cultures with different cultural norms about how you address authority. It is however important to be mindful that for the organisation to excel you need to hire people who will find a way to get heard and who is sufficiently committed to do so. Sometimes and in some cultural settings this means that some team members might convince a manager that a proposal for improvement was, in fact, inspired by her. What matters for the organisation is to understand the cultural norms of its team members and ensure there are ways for each culture to participate actively even they sometimes prefer to do so without taking public credit. Or vice versa.

Many companies are using variations over the Myers-Briggs personality profiles to ensure that they have the right team composition, or at least is aware of any possible groupthink due to the similarity of the personality profiles in a specific part of the organisation.

Teams perform better if the team members have diverse background – whether by gender, nationality, or ethnicity. It is worth noting however that such diversity must be meaningful: One token woman on a team of six or seven is more likely to reduce performance – whereas a bigger minority of 30-40% of the team members tend to produce much better outcomes.

Other traditional means of furthering knowledge sharing are to setup informal meeting places (when in the same physical location) – the coffee corner approach, or to set up virtual teams streaming video and sound from teams in different locations to enable all team members to overhear conversations and hence offer insights when meaningful.

When knowledge sharing is about learning from mistakes or accidents it is critical that all players that could possibly have had an impact on the incident is in the same meeting when the root cause investigation is conducted. Organisations tend to assign disproportionate blame to the absent team member.

Many shipping organisations in the tramp space looks to diversity in its workforce to make better decisions, to avoid silo thinking and to ensure as much variety as possible in perspectives on how external factors affect the business. Companies that have added women to traditionally male teams, or English speakers to an otherwise entirely local (or non-English speaking) team will have experienced how performance drops over the awkwardness of having to accommodate one outsider in an already established team. But also, how much performance improves when the minority (be it by gender, nationality or otherwise) reaches some 30-35%.

Black Rock research⁴⁶ on gender-based diversity backs this up: (is this relevant in shipping – can you find some investigations of shipping?)

“There is an intermediate ‘sweet spot’ on the women’s representation spectrum that matters for performance. In other words, it is diversity that counts, rather than the dominance of women or men. Neither under-representation nor over-representation of women – or men, for that matter – is optimal.

- Companies with the most diverse workforces outperformed their country and industry group peers with the least-diverse workforces in terms of return on assets (ROA) by 1.6 p.p. (29%) per year, on average, over the 2013-2022 period.
- Companies closest to parity across key roles, including revenue-producing, engineering, and top-paying roles, have outperformed the companies that are furthest away from parity in these roles in terms of ROA over recent years.”

⁴⁶ Black Rock, November 2023: “Lifting financial performance by investing in women.” *Long-term capitalism at BlackRock*

The challenge of adapting to new conditions in your competitive environment, whether new technologies, competitors or market conditions more generally is a business classic.

Several of the bigger industrial players have moved on from higher generalists to employing specialists to ensure that they can continue to match competitive forces from outside shipping, whether driven by new technology or proximity to traditional clients. Large industrial shipping companies such as Maersk has responded by setting up independent consultancies, innovation hubs etc to be able to protect innovators and in-house entrepreneurs from the hierarchy also present in large companies.

On a more micro-scale many companies, most pertinently in tramp shipping, are leaving value on the table in their negotiations simply by not considering enough variables in their daily negotiations. And in most departments outside chartering employees generally are not aware that they negotiate every day and by not considering objectives and all the variables of such interactions they are in fact leaving value on the table.

Chartering departments will very often describe their negotiations as being about freight level only. This at a time where most of the US S&P500 listed companies are now employing chief negotiations officers to ensure that these companies have well defined negotiations strategies exactly to ensure that they do not leave value on the table.

Composition of board

It is well documented that best practices of successful boards include setting expectations around board tenure, appointing independent directors, regularly evaluate board performance, assess current member skills and match against identified needs, provide annual feedback on participation and performance to each director and have succession plans in place.

Composition of senior management

Increasingly shipping companies are expanding their senior management groups to contain the senior manager in each of their functional departments, often the CFO will have overall responsibility of several back-office functions, including IT and legal, whereas the senior HR manager is increasingly promoted to these senior management groups, reflecting the perceived increasing importance of many HR competencies.

These much broader and more function-determined management groups tend to have more diversified agendas but will often be much less business focused.

Commercial decisions are therefore pushed back into each profit centre. If the organisational structure has shared asset management and technical teams there is a risk that some of the market information generated daily in chartering and operations departments are only shared with the profit centre and not sufficiently with the sale and purchase or newbuilding team. Hence possibly jeopardizing commercial sharpness on the asset sale and purchase departments.

There is a potential trade-off between information sharing at a senior level and commercial agility and resoluteness. This can obviously be managed but will require extra attention from the involved managers.

Hierarchy

Generally, the more focus on industrial shipping, the more hierarchical the company. This reflects a systematic approach to achieve higher utilisation of the company's assets and drive out cost efficiencies. The large liner companies have been at the forefront of adapting technology and perpetual change processes.

Process departments

The justification for process departments in recent years have been a focus on identifying and eliminating bottlenecks and corporate “fat”. Specialists offer management support in how to streamline, re-design and standardizes work routines to seek out efficiencies. An important goal is to understand precisely “how we do things around here”, without which any change will not deliver predictable outcomes.

Maersk have been particularly adept at improving processes and seeing it as an ongoing project, but also tramp owners such as Norden set up standard operating procedures (SOP) already around 2000.

For Norden this initiative was not always welcomed internally: The classical retorts about a given job being an artistic endeavour and only doable with decades of experience and a personal touch, that it would be too bureaucratic to offer real support to new and older employees alike, and that it would take too much effort to keep up-to-date, reflected valid and oft repeated concerns about such a project at a relatively small operator (at the time). Yet it standardized procedures and mapped out how the company did thing in different teams and functions. This knowledge made it much easier to streamline and therefore to improve processes in the face of new learnings or changed circumstances. From a strategy perspective it enabled Norden to scale up (and down) very quickly, hence offering the company an essential capability.

Today such standard operating procedures and maps of “how we do things around here” would be a prerequisite for any attempt at digitalisation.

Corporate Culture

A corporate culture centred around a clear vision, mission and values statement is a strong asset. It does however require a lot of work to develop and keep alive in the organisation, and particularly the values must be made actionable and examples of good and exemplary behaviour for each value must be discussed and described in each department. Whereas “flexibility” might be an intuitively good value in a business department facing and helping clients, it probably requires a bit more context in an accounting department.

Corporate culture is a living thing and changes constantly. Every time a senior manager does not walk the talk, it affects how the organisation perceives how we go about the business. Corporate culture will be different from office to office, but rarely will the difference be greater than between a business facing function and support function.

It is critical that senior management is alert discussing and calibrating the company’s culture as defined through its vision, mission, and values statement on a regular basis.

Such focus can be supported by making strategy knowledge and values part of the appraisal process. There are obviously several ways by which senior management can keep tabs on the corporate culture and make sure it continues to generate value throughout the company.

As also mentioned in the above section on “Innovation & Adaptability”, negotiation training is a great tool to raise awareness of the many variables in the negotiations of each department. The more complex the negotiation, the more value can be derived from being open minded about your counterparty’s position on the different variables – often the way two parties value the same variable is asymmetric, but you will only find out if you have planned your negotiation well and are willing to spend the time on asking these questions.

Risk Appetite

Risk comes in many forms, from geopolitical to currency or oil price risks, to shipping market risk and the very basic operational risks such as adverse weather, counterparty risk, FFA hedges with less than adequate correlation.

The adage is that if you have not lost on some deals, you have simply not taken enough risk on your balance sheet. Equally, you must be willing to take bets that you lose, but never take bets that can bring the future of the company in peril.

The conventional operator model will take only shipping market risk. Currency risk can at times be managed through currency hedges, but these rarely exceed a five-year duration. At times a shipping company might incur long term costs in a given currency (GBP for instance) and can hence have a de facto hedge through their cashflow if they were to accept to be paid in GBP for a contract.

Ultimately any company risk appetite comes down to the guidance from senior management, the board of directors and the shareholders themselves. We will discuss risk management in a later chapter in this book.

Summary

This block looked at business models in the dry cargo segment for small to medium and larger sized companies. Business models are hard to imitate, given these three major reasons:

1. Systems, process and assets are hard to replicate.
2. Lack of transparency, even for insiders in the company, may make the business model hard to imitate, simply because it's not clear how the model works.
3. Even if it was transparent, copying a competitor's model, may lead to the opposite hoped effect, and cannibalize your own client base.

Although business models differ from company to company, there are some generic structures that most companies would have in common. We therefore focus on how these models differ regarding how profits are generated, through differences in organisation, corporate culture, ownership structure, risk appetite and the assets & systems available to that company.

For smaller companies, deep knowledge of market conditions is essential for operations, and therefore a knowledge sharing system must therefore also be in place for best performance.

The larger sizes in bulk (cape-size and to some extent Panamax), companies cannot easily diversify the underlying risks away, and these markets are hence best described as beta markets. These markets are characterised by high liquidity, high transparency of information, vessel availability, standard vessel design and same term agreements.

No matter the size of the company, five characteristics are to be considered carefully, to make sure the business model lines up with both your segment and strategy:

1. Human Resources
2. Organisation
3. Minimum Fleet Size
4. Risk Management
5. Cash Flow

A strong culture is a great asset for a company, but it must be nurtured and maintained.

Many ship owners and operators in the dry cargo segments are in effect trading platforms. As such a main risk is the development of group think. A strong focus on diversity in terms of gender, education, and ethnic background leads to increased performance.

BlackRock (2023, November). *Lifting financial performance by investing in women Long-term capitalism at BlackRock*. Retrieved July 4, 2024, from www.blackrock.com/corporate/literature/whitepaper/lifting-financial-performance-by-investing-in-women.pdf

Ovans, A. (2015, January 23). *What is a Business Model?* Harvard Business Review. Retrieved July 4, 2024, from <https://hbr.org/2015/01/what-is-a-business-model>

Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2-3), 172-194. <https://doi.org/10.1016/j.lrp.2009.07.003>

CONCEPTUAL BLOCK 3



By Martin Jes Iversen

Digitalization constitutes technological transformation – it is different in nature, but equal in impact to previous techno-economic paradigms in international shipping such as the transfer from sail to steam and from steam to motorization (Freeman & Louca, 2001). Besides the direct benefits of continuous or even radical optimizations throughout the shipping process, the digital transformation of shipping implies ‘changed customer relationships, internal processes, and value propositions’ (McAfee et al., 2011). It is exactly this dynamic and potential of digital technology to transform organizations, their operational processes and business models, that lies at the core of this chapter. More specifically, we will investigate and understand how digitalization impact international shipping tramp markets and what might be the potential consequences to corporate strategies. The chapter attempts to provide an understanding of the consequences, positive and negative, as well as the empowerments and fragilities from the digital transformation of the maritime industry.

The premise of the chapter is that digital transformation directly or indirectly will affect any aspect of global tramp shipping in the future. From the systematic optimization of existing processes to the strategic development of new business opportunities. With the chapter we aim to understand and analyze the strategic *consequences* and *opportunities* of digitalization rather than high-tech features of novel technologies. This is in other words a study of *corporate strategy* with strategy defined as “the determination of the basic long-term goals of an enterprise and adoption of courses of action and the allocation of resources necessary for carrying out these goals” (Chandler 1962). The point is that corporate strategies are embedded in their context. It is consequently necessary to understand the fundamental logics of relevant technological transformations to unveil corporate challenges and opportunities.

Shifts in Costs: Why digitalization matters to maritime economics

Digital technology is the representation of information in bits. This technology has reduced the cost of storage, computation, and transmission of data. Research on digital economics examines whether and how digital technology changes economic activity (Goldfarb & Tucker, 2019)

Regarded from a social science perspective digitalization should be regarded as imperative because of *economic, social and political consequences* rather than *technological features*. But how do we understand social science consequences of digitalization? We have decided to take point of departure in the concept of Shifts in Cost (SIC). The point of departure is that digital technology concerns the representation of *information* in bits rather than through traditional analogue methods (Goldfarb & Tucker, 2019). The transition from analogue to digital representation caused dramatic shifts in costs with pivotal consequences at all three analytical levels: at the macro level for economies and societies, at the meson level for industries and companies and at the micro level for individuals and workplaces. The important point is that the novel mechanism is not the handling of information. Information always mattered and handling information has been expensive and prioritized not least in tramp shipping. A profound example was the shipping company Norden, which already in the 1870s managed its steam vessels at the Chinese west coast via the newfangled telegraph connection linking Northern Europe to the Far East. According to the annual reports of the time Norden spent more on telegraph communication in 1876 (DKK 1877) than on salaries and HQs functions (DKK 1520) (Iversen, 2021, p. 19). In international tramp shipping it has always been highly prioritized to send orders and receive market information across long distances.

To systematize the complexity of the digital transformation Goldfarb & Tucker have suggested five archetypes of SICs: Shifts in search, replication, transportation, tracking and certification costs. In addition to the SICs identified by Goldfarb & Tucker (2019), we also identified another SIC strongly related to the maritime industry, the Shift in computing costs, coming from the use of AI and BDA to convert data and information into knowledge, intelligence and, finally, competence and significantly decrease – in this way - the costs associated with decision-making processes (Bergmann, 2012). Below we will present the six SICs illustrated with examples from the maritime sector.

Figure 3.1. Types of SICs from digital transformation

Source: Own elaboration based on Goldfarb & Tucker (2019)

- 1) *Shifts in Search costs* are defined as the radical shifts in the costs of searching information. The search engines are already an integrated part of modern life and artificial intelligence (AI) is rapidly accelerating both the content and the quality of searched information while the costs of the search decrease down to close to zero.

An example of shifts in search costs in shipping is the employment of digital platforms that provide real-time information on shipping routes, schedules, and prices can significantly reduce the time and resources spent on searching for the best chartering options and, at the same time, facilitate direct communication between shippers and carriers, reducing the need for intermediaries and further lowering search costs (Wang & Sarkis, 2021). These digital platforms facilitate the negotiations and freight agreements minimizing the need for manual communication (searches, phone calls) and negotiations increasing the efficiency of the chartering processes through quicker and more accurate operations.

- 2) *Shifts in replication costs* concerns the dramatic (close to zero) decrease in costs when replicating information. The important point is that digital information – in contrast to analogue methods does not decrease in quality through replication.

Digitalization can lead to reduced replication costs in shipping by eliminating the need for paper-based documentation and manual data entry, which can be time-consuming and error-prone. By using digital systems for tasks such as invoicing, documentation, and inventory management, shipping companies can streamline their operations and reduce administrative costs (Aiello et al., 2020). An example of electronic documents that can eliminate replication costs in shipping is the digitalization of standardized agreements between shipper and transportation company. The electronic Bills of Lading (e-B/L) enable the digital exchange of information and do not require multiple paper copies reducing, at the same time, the risk of errors. In February 2023 DCSA announced a multi-carrier agreement to get from five percent to 100 percent e-B/L in 2030 which accordingly would save the industry for 6,5 billion USD (Porto, 2023).

- 3) *Shifts in transportation costs* concerns the dramatic shifts in the costs related to distance. With digitalization information can be distributed and shared across any distance with low or even zero additional costs.

It is straight forward to provide examples from the shipping industry concerning shifts in transportation costs. It has always been important to transfer information from headquarters to vessels or customers abroad. With digitalization the costs of this information decreased dramatically down to close to zero. Even more important the amount of information which can be transferred with low costs increases with digitalization meaning that it is possible to transfer substantial information in real time across long distance. It is thus feasible to connect vessels and other assets over long distance with smart solutions e.g., internet of things (IoT) linked to engines and other critical parts, virtual reality (VR) meetings and training with seafarer, etc.

- 4) *Shifts in Tracking costs* concerns the decreasing costs of tracking present and past data-users. The decreasing costs have led to increasing transparency and trust among the producers and customers but also within the

production process due to the option of always and with low costs being able to track present and past data-users.

The direct benefits from the use of digital tracking technologies in shipping in terms of reducing tracking costs are apparent. Digital tracking systems can enable real-time information and visibility into the location and status of the shipments allowing shipping companies to achieve greater accuracy and improve reliability in their tracking operations reducing the need for manual data entry and updates. A major advantage is the potential for the shippers to track their shipments in real-time along the transport chain. As underlined by Christodoulou and Kappelin (2020), shippers already demand the integration of information and communications technology (ICT) systems, and more specifically, electronic data interchange (EDI) technology or other forms of tracking systems that can significantly increase information transparency and improve proactivity on potential delays through real time information sharing (Christodoulou & Kappelin, 2020). An information portal with real time information on the status of shipments would create added value for the shipper that would save time and resources (unnecessary emails back and forth with status reports) and, at the same time, enhance the competitiveness of the shipping company that will meet and respond to customers' needs.

- 5) *Verification costs* concern the option of being able to verify the origin of the information with low or close to zero costs often using blockchain technology.

Substantial shifts of shipping verification costs can be achieved through the automated verification processes that reduce the need for manual inspections and increase the accuracy and reliability of the verification. Using digital tools for the verification of compliance with regulatory requirements and safety/environmental standards can lead to reduced manual compliance checks and associated costs. Blockchain technology can also be used to improve the accuracy and reliability of verification with regards to tracking shipments along the supply chain (Savrul & Incekara, 2015; Sikorski et al., 2017).

- 6) *Computing costs* refer to the ability to convert data and information into knowledge, intelligence and, finally, competence via the use of AI and BDA reducing – in this way – the costs associated with the decision-making processes.

AI has the potential to bring significant changes in computing costs in shipping through the move upwards from plain data to competence following the pyramid introduced by Bergmann (2012). Firstly, AI can be used to process data and information and transform them into knowledge that can be useful and meaningful further improving their situational understanding. By collecting and analyzing knowledge from past and current situations, AI algorithms can assess future situations and increase competence through correct decisions and successful reactions that are based on situational awareness and experience. In this way, the cost of decision-making processes can significantly decrease along with substantial improvements of the safety and energy efficiency of the vessels.

How is digitalization important to shipping strategy

Although both maritime information systems and digital technologies are essential for the digital transformation of shipping, it is these significant declines in costs that consist of the basic economic logic that lies behind and stimulates the introduction of digitalization and the redefinition of processes and business models. But how do we translate SICs to the shipping strategy in a coherent and overarching way?

We suggest regarding SICs as *engines of integration*. SICs integrate maritime headquarters with distant vessels in a way and in a density which the maritime sector has never experienced before. We argue that SICs also makes it possible to integrate the public authorities with private companies in a profound and dramatic way, as can be done in relation to customers and data to support decision processes.

To reduce complexity and difficulty in considering global shipping in the digital era we systematize the analysis by identifying four distinct *dimensions of integration*, which are essential to strategy in international tramp shipping:

1. The *operational integration* between sea and shore.

The impact of digitalization on the operational integration between land and sea can be illustrated through an examination of the traditional relation between shore (HQs, technical and commercial operations) and sea (the bridge and the functions) and then also consider some of the most advanced digital solutions (e.g. Smartvessel.io). Such a

comparison could lead to significant findings with regards to the changes in relations and information exchange between shore and sea, and, most importantly, the impact of such changes on the financial, environmental, safety performance of vessels, but also the welfare of seafarers.

2. The *institutional integration* between public and private sector.

Starting from the changing relation between global, regional, national, local authorities and private companies (shipowners/operators) over the years, digitalization can significantly influence the institutional integration between public and private shipping organizations. Nowadays several authorities (IMO, EU, national maritime administrations, port authorities) have become increasingly active in regulating safety and environmental issues related to maritime activities and digitalization can play a key role in regulation compliance through accurate and digital monitoring and reporting processes. A recent example is the use of digital solutions for the calculation of vessels' Carbon Intensity Indicator (CII) to achieve compliance with the IMO MARPOL CII regulation. The operational and financial consequences from the employment of digitalization for compliance with environmental and safety regulations is another dimension that needs to be further analyzed.

3. The *commercial integration* between company and customer.



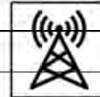
Besides the operational and institutional integration that can be deeply influenced from digitalization in shipping, the commercial integration between company and customer should also be analyzed. Digital tools and platforms – and, most importantly, advanced information flows and data exchange – can create new relations to customers through customer-based value propositions. A redefinition of existing business models to capture the created value of digital solutions and better meet customers' needs will, at the same time, increase the competitive advantage of the company under vibrant and dynamic market conditions.

4. The *organizational integration* between past experiences and present decisions.

The impact of the use of AI and big data analytics in decision-making processes within the shipping company is probably an obvious dimension that merits further exploring. The digital decision-making processes create new opportunities for optimization of organizational and strategic processes such as route planning, HR processes, chartering and bunkering. We can simply compare a typical day in the chartering department of a dry bulk company around year 2000 – flow of information via telephone calls, faxes – and how digitalization has changed these processes at the time being and even go one step forward and consider how they will look like around year 2030.

The separation in these dimensions, though, is quite abstract and, some or all these four dimensions work together in what can be called the ecosystem integration. Each of the four dimensions will be presented, analyzed and discussed in separate case-chapters. Firstly, we aim to understand how the shipping sector organized flows of information in the relevant dimension prior to the digitalization era. Then follows an analysis of the present situation marked by digitalization, and finally we will try analyzing which strategic directions the sectors are heading in, with respect to the specific dimension of integration.

If we were to capture the essence of this chapter in one graph, this would combine the fundamental role of digital technologies for the optimization of processes that enables the SICs and leads to redefined business models that encompass the four dimensions of digital integration.

Dimensions of digital integration					
Operational	Institutional	Commercial		Organizational	
SICs					
Search Costs	Replication Costs	Transportation Costs	Trucking Costs	Verification Costs	Computing Costs
Digital Technologies					
					

References CONCEPTUAL BLOCK 3

- Acciaro, M., & Sys, C. (2020). Innovation in the maritime sector: Aligning strategy with outcomes. *Maritime Policy & Management*, 47(8), 1045–1063. <https://doi.org/10.1080/03088839.2020.1737335>
- Ahn, Y.-G., Kim, T., Kim, B.-R., & Lee, M.-K. (2022). A Study on the Development Priority of Smart Shipping Items—Focusing on the Expert Survey. *Sustainability*, 14(11), Article 11. <https://doi.org/10.3390/su14116892>
- Aiello, G., Giallanza, A., & Mascarella, G. (2020). Towards Shipping 4.0. A preliminary gap analysis. *Procedia Manufacturing*, 42, 24–29. <https://doi.org/10.1016/j.promfg.2020.02.019>
- Balci, G. (2021). Digitalization in container shipping: Do perception and satisfaction regarding digital products in a non-technology industry affect overall customer loyalty? *Technological Forecasting and Social Change*, 172, 121016. <https://doi.org/10.1016/j.techfore.2021.121016>
- Bergmann, M. (2012). Public-private-cooperation models. e-Maritime Conference. Brussels, November, 22-23.
- Bergmann, M., Primor, O., & Chrysostomou, A. (2021). Digital Data Sharing for Enhanced Decision-Making. *Progress in IS*, 155–165.
- Christodoulou, A. (2021). *Linking Digitalization to Sustainable Development: The Case of the Port of Gothenburg*.
- Christodoulou, A., & Kappelin, H. (2020). Determinant factors for the development of maritime supply chains: The case of the Swedish forest industry. *Case Studies on Transport Policy*, 8(3), 711–720. <https://doi.org/10.1016/j.cstp.2020.07.008>
- Chun, D.-H., Roh, M.-I., Lee, H.-W., Ha, J., & Yu, D. (2021). Deep reinforcement learning-based collision avoidance for an autonomous ship. *Ocean Engineering*, 234, 109216. <https://doi.org/10.1016/j.oceaneng.2021.109216>
- Data-Driven Innovation: Why the Data-Driven Model Will Be Key to Future Success*. (n.d.). Routledge & CRC Press. Retrieved January 10, 2023, from <https://www.routledge.com/Data-Driven-Innovation-Why-the-Data-Driven-Model-Will-Be-Key-to-Future/Andersen-Pedersen/p/book/9780367485771>
- de la Peña Zarzuelo, I., Freire Soeane, M. J., & López Bermúdez, B. (2020). Industry 4.0 in the port and maritime industry: A literature review. *Journal of Industrial Information Integration*, 20, 100173. <https://doi.org/10.1016/j.jii.2020.100173>
- Ellingsen, O., & Aasland, K. E. (2019). Digitalizing the maritime industry: A case study of technology acquisition and enabling advanced manufacturing technology. *Journal of Engineering and Technology Management*, 54, 12–27. <https://doi.org/10.1016/j.jengtecman.2019.06.001>
- Fonseca, Í. A., & Gaspar, H. M. (2021). Challenges when creating a cohesive digital twin ship: A data modelling perspective. *Ship Technology Research*, 68(2), 70–83. <https://doi.org/10.1080/09377255.2020.1815140>
- Goldfarb, A., & Tucker, C. (2019). Digital Economics. *Journal of Economic Literature*, 57(1), 3–43. <https://doi.org/10.1257/jel.20171452>
- Han, H., Liu, Z., Wang, X., & Li, S. (2021). Research of the Relations Among Cloud Computing, Internet of Things, Big Data, Artificial Intelligence, Block Chain and Their Application in Maritime Field. *Journal of Physics: Conference Series*, 1927(1), 012026. <https://doi.org/10.1088/1742-6596/1927/1/012026>
- Ichimura, Y., Dalaklis, D., Kitada, M., & Christodoulou, A. (2022). Shipping in the era of digitalization: Mapping the future strategic plans of major maritime commercial actors. *Digital Business*, 2(1), 100022. <https://doi.org/10.1016/j.digbus.2022.100022>
- Iversen, M.J. (2021). *The Norden Voyage*, Lindhardt & Ringhof.
- Kuhn, K., Bicakci, S., & Shaikh, S. A. (2021). COVID-19 digitization in maritime: Understanding cyber risks. *WMU Journal of Maritime Affairs*, 20(2), 193–214. <https://doi.org/10.1007/s13437-021-00235-1>
- Lafourcade, P., & Lombard-Platet, M. (2020). About blockchain interoperability. *Information Processing Letters*, 161, 105976. <https://doi.org/10.1016/j.ipl.2020.105976>
-

- Lam, J. S. L., & Zhang, X. (2019). Innovative solutions for enhancing customer value in liner shipping. *Transport Policy*, 82, 88–95. <https://doi.org/10.1016/j.tranpol.2018.09.001>
- Lambrou, M., Watanabe, D., & Iida, J. (2019). Shipping digitalization management: Conceptualization, typology and antecedents. *Journal of Shipping and Trade*, 4(1), 11. <https://doi.org/10.1186/s41072-019-0052-7>
- Mallam, S. C., Nazir, S., & Renganayagalu, S. K. (2019). Rethinking Maritime Education, Training, and Operations in the Digital Era: Applications for Emerging Immersive Technologies. *Journal of Marine Science and Engineering*, 7(12), Article 12. <https://doi.org/10.3390/jmse7120428>
- Müller, L., & Ojala, J. (2007). *Information Flows: New Approaches in the Historical Study of Business Information*. Suomalaisen Kirjallisuuden Seura. <http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-12647>
- Sanchez-Gonzalez, P.-L., Díaz-Gutiérrez, D., Leo, T. J., & Núñez-Rivas, L. R. (2019). Toward Digitalization of Maritime Transport? *Sensors*, 19(4), Article 4. <https://doi.org/10.3390/s19040926>
- Savrul, M., & Incekara, A. (2015). The Effect of R&D Intensity on Innovation Performance: A Country Level Evaluation. *Procedia - Social and Behavioral Sciences*, 210, 388–396. <https://doi.org/10.1016/j.sbspro.2015.11.386>
- Sharma, A., Kim, T.-E., & Nazir, S. (2021). Implications of Automation and Digitalization for Maritime Education and Training. In A. Carpenter, T. M. Johansson, & J. A. Skinner (Eds.), *Sustainability in the Maritime Domain: Towards Ocean Governance and Beyond* (pp. 223–233). Springer International Publishing. https://doi.org/10.1007/978-3-030-69325-1_11
- Sikorski, J. J., Houghton, J., & Kraft, M. (2017). Blockchain technology in the chemical industry: Machine-to-machine electricity market. *Applied Energy*, 195, 234–246. <https://doi.org/10.1016/j.apenergy.2017.03.039>
- Stopford, M. (2009). *Maritime Economics 3e*. Taylor and Francis. <http://ebookcentral.proquest.com/lib/gu/detail.action?docID=371028>
- Sullivan, B. P., Desai, S., Sole, J., Rossi, M., Ramundo, L., & Terzi, S. (2020). Maritime 4.0 – Opportunities in Digitalization and Advanced Manufacturing for Vessel Development. *Procedia Manufacturing*, 42, 246–253. <https://doi.org/10.1016/j.promfg.2020.02.078>
- Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2), 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Tijan, E., Jović, M., Aksentijević, S., & Pucihar, A. (2021). Digital transformation in the maritime transport sector. *Technological Forecasting and Social Change*, 170, 120879. <https://doi.org/10.1016/j.techfore.2021.120879>
- Verdin, P., & Tackx, K. (n.d.). *Are you creating or capturing value?*
- Wang, Y., & Sarkis, J. (2021). Emerging digitalisation technologies in freight transport and logistics: Current trends and future directions. *Transportation Research Part E: Logistics and Transportation Review*, 148, 102291. <https://doi.org/10.1016/j.tre.2021.102291>
- Xue, C. T. S., & Xin, F. T. W. (2016). Benefits and Challenges of the Adoption of Cloud Computing in Business. *International Journal on Cloud Computing: Services and Architecture*, 6(6), 01–15. <https://doi.org/10.5121/ijccsa.2016.6601>

CONCEPTUAL BLOCK 4



By Peter Borup

Introduction

A study of short sea shipping companies in Greece, Fafaliou (2006), found three approaches towards Corporate Social Responsibility (CSR). Firstly, there was the 'adverse' approach where companies who operated at the lowest cost often avoided complying with international legislation (Froholdt et al., 2015).

The second approach was 'typical', where companies complied by the law whilst focusing on financial benefits. Lastly, there was the 'supportive' approach, where companies went beyond compliance, either by complying with soft-law initiatives or self-regulation. The study concluded that size of company does matter in relation to which of the three approaches will be relevant. In the study by Sampson (2015) it is argued that the maritime industry has a CSR approach, but this approach is not value-driven, and is more prone to focus on the environment, than on issues that involve health and the welfare of sea-based employees.

A similar pattern can be detected amongst leading ESG consultants who, on an anecdotal basis, reports that out of 60 shipping clients 50+ are primarily buying assistance in connection with the annual reporting on ESG related issues. Only 8 clients (13%) are using ESG efforts as key drivers or focal points of their strategic efforts.

In 2024 CSR has become Environmental, Social and Governance (ESG), and regulation, particularly in the European Union, has become an important driver of companies' work with ESG.

The EU requires EU financial institutions to assess and disclose how ESG aspects are considered in their credit decisions for all clients. This leads to existing and new clients being compelled to conduct thorough ESG reporting. It probably also influences non-EU entities who want to retain the option of seeking financing or exiting an investment in the EU, for example US based private equity investments who would be severely limited in the exits if not being compliant with EU rules.

The reporting standards and requirements

Some key concepts in the reporting on ESG for maritime companies are CSRD, TFCO and SASB.

The European Union's Corporate Sustainability Reporting Directive (CSRD) requires companies of a certain size to report on up to 1,200-1,300 data points and meet 80 specific requirements. Each industry will need to comply with industry-specific reporting requirements, the so-called European Sustainability Reporting Standards (ESRS). These are all covered by the Non-Financial Reporting Directive (NFRD).

The following exhibit show the requirement under CSRD and examples of scope 1,2 and 3 emissions.

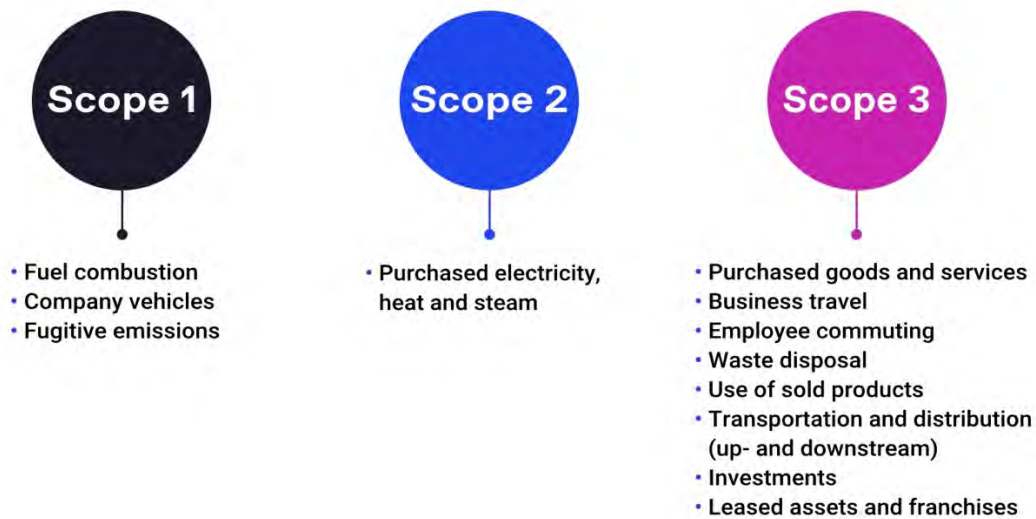
Exhibit 4.1: Key Changes under the CSRD (Source: KPMG⁴⁷)

Key changes under the CSRD

- 1
 Many more companies will have to report on ESG information, including listed small and medium-sized businesses and organizations headquartered outside the EU.
- 2
 The sustainability report must be disclosed as part of the management report.
- 3
 The principle of double materiality (impact and financial materiality) applies.
- 4
 Significant extension to the scope and number of disclosure requirements, including topics such as biodiversity, resource use, treatment of your own and suppliers' workforce, and business conduct.
- 5
 Full integration of the EU taxonomy.
- 6
 Limited assurance of ESG reporting is mandatory.

Source: KPMG (2023)

⁴⁷ <https://assets.kpmg.com/content/dam/kpmg/dk/pdf/dk-2023/dk-csrd-thought-leadership.pdf>

Exhibit 4.2: Scope 1, 2 and 3 sources (Source: KPMG)

Source: KPMG (2023)

Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the purchase and use of electricity, steam, heating, and cooling. By using the energy, an organization is indirectly responsible for the release of these greenhouse gas (GHG) emissions. Scope 3 includes all other indirect emissions that occur in the upstream and downstream activities of an organization.

The Task Force on Climate Related Financial Disclosures (TCFD) provides information to investors what companies do to mitigate the risks of climate change. TCFD was formed as a reaction to the failings of the 2015 Paris Agreement about nationally determined contributions to tackle climate change. TCFD provides governance, metrics, transparency, risk management and targets.⁴⁸

SASB Standards (now part of IFRS Foundation) can be actively used to report on information about sustainability related risks and opportunities that could reasonably be expected to affect a company's cashflow or access to finance or cost of capital over the short, medium, or long term.⁴⁹

⁴⁸ <https://www.fsb-tcf.org/about/>

⁴⁹ IFRS Sustainability: Marine Transportation Sustainability Accounting Standard. <https://sasb.org/standards/materiality-finder/find/?industry%5B0%5D=TR-MT>

How do shipping companies use ESG to drive strategy?

Any tramp shipping company will take part in any number of value chains: Many bulk companies form an important part of agro-industrial value chains by transporting fertilizers and grains across the globe. Sometimes the same shipment can form part of more than one such value chain.

Shipping companies in the oil and gas value chain can analyze the risks they are facing through above mentioned SASB and TCFD frameworks. A major benefit of using these frameworks is that it focuses the strategic discussion on much longer-term challenges.

Instead of planning from quarter to quarter or financial year to financial year, the discussions are now much longer term. It is perhaps characteristic that companies integrating these concepts in their work also tend to work with scenario planning to prepare for different possible futures.

A hypothetical example of identified longer-term risks for a tanker company could be:

- Main question: What is the risk of **not** exiting the oil & gas value chain (for a tanker owner)?
- Long term difficulties in attracting the right expertise to the company – the risk of a lower quality organization and higher payroll costs.
- Legislation arbitrage – it is conceivable that the US, China, and EU will take different regulatory approaches – how do you navigate that in your daily operations but also in where you are domiciled and perhaps listed?
- Access to funding, possible higher financing costs by not meeting certain standards.
- Banks's exclusion lists – certain industries relying primarily on coal are already experiencing that they cannot secure financing.
- Competitive advantages or disadvantages depending on your ESG performance.
- Taxes depending on your emissions (The European Emissions Trading Scheme is but one example).

It is obvious that as you identify such risks you can mitigate many of them and already now start acting or merely preparing for a given outcome. Some owners have already started spinning out oil and gas entities as stand-alone listed companies to prepare for a change of ownership in case the reputational or funding risk to the rest of the group becomes too large from being associated with an oil and gas company.

The European Union has early on identified the access to financial markets as an important lever for driving change and implementing sustainability across industries. This includes the maritime sector where any European financial institution needs to report in significant detail on the ESG status and objectives of any potential lender. In the case of NORDEA, the initial ESG form is appr. 50 pages that needs to be filled out when applying for ship financing at the bank.

ESG compliance is often described as a “license to operate”. This is also reflected in some of the potential risks of non-compliance outlined in the paragraph above, i.e. vis-à-vis regulators, financial markets, and banks. Compliance – and perhaps compliance under a variety of statutory regimes (EU, UK, USA and / or China etcetera)- might also offer a competitive edge. Compliance with the ESG standards of several financial markets obviously expands the options to exit a given investment, and non-compliance, in turn, narrows these opportunities to divest. Standards have been designed to provide transparency and accountability out of very complex value chains. The financialization that has taken place in tramp shipping since the late 1990s has led to a simplification of operations and a de-risking of what used be rather complex ship-owning enterprises, into companies that are very selective about the risks being taken. Does this suggest that tramp shipping is well prepared for the ESG reporting that will encompass the industry over the coming years?

How does ESG affect the business models of shipping companies?

ESG offers a broader and more conceptual framework to assess risks to a certain company’s business, over the short-, medium- and long term.

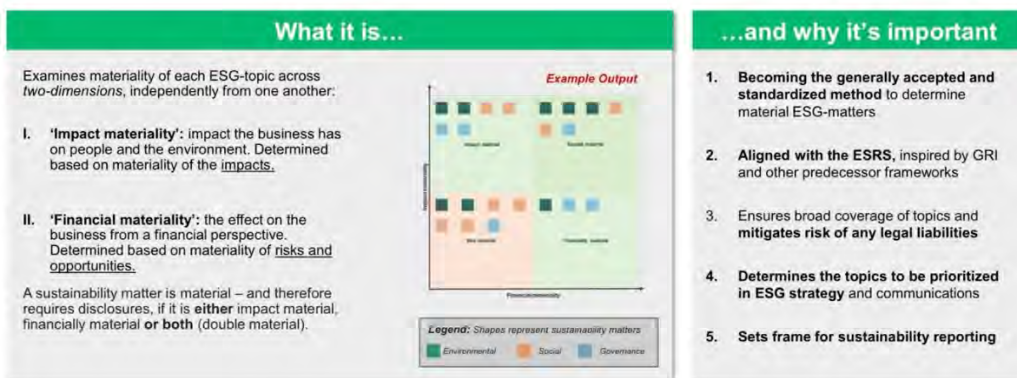
Predecessor frameworks, Corporate Social Responsibility initiatives for example, offered an approach to start measuring and reporting on how the activities of a given company impacted its environment and its stakeholders. Similarly, the traditional risk management frameworks tended to classify risks in various classification – and then assess the likelihood of such an event occurring and the significance in case it did. A classical approach would include risk identification, risk measurement, risk mitigation, risk reporting & monitoring, and risk governance. Often such risk management systems suffer from too general classifications and several more specific risks inspired by recent events (air travel affected by an Icelandic volcano for example).

One framework offers a broad approach to ESG and risk management. The Double Materiality Assessment (DMA) offers a systematic approach to assess the significance of impacts risks and opportunities for their financial impact and materiality. Materiality being a function of severity (scale, scope and irremediability) and likelihood of impact.

Exhibit 4.3: The Double Materiality Assessment

The double materiality assessment

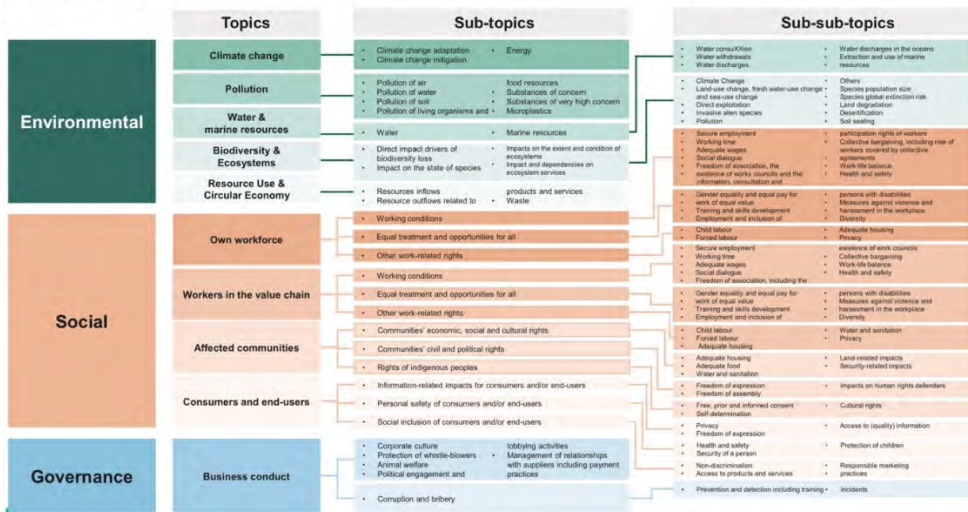
Definitions based on the ESRS



Source: Position Green (n.d.)

Exhibit 4.4: The ESRS Framework

The ESRS provides a comprehensive set of sustainability matters to be considered

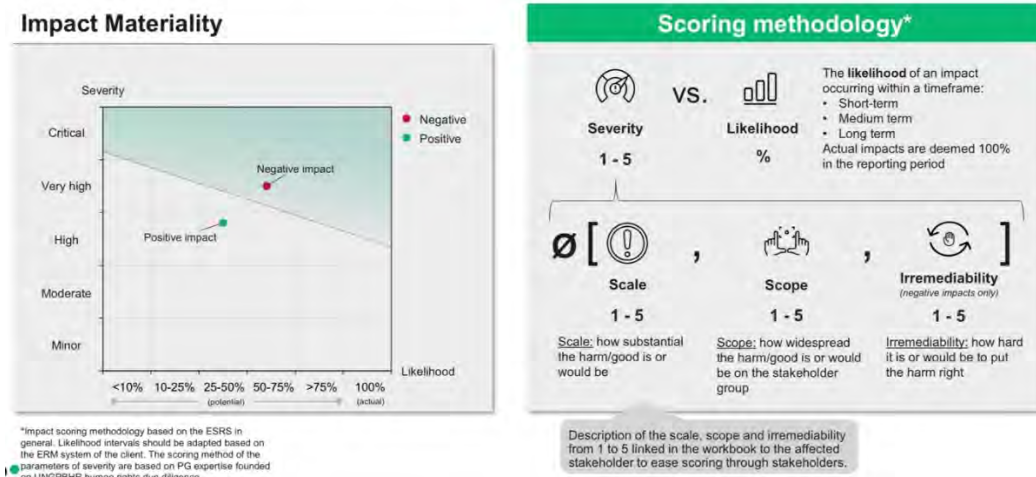


Source: Position Green (n.d.)

The actual assessment of a possible or actual event is done by assessing the likelihood of the event occurring and by evaluating its severity on Scale (how substantial the harm or the good is), its scope, i.e. how widespread the harm or good would be and irremediability, i.e. how hard it would be to right the harm. See also Exhibit 1.9 below.

Exhibit 4.5: Impact Scoring

Impact scoring and terminology

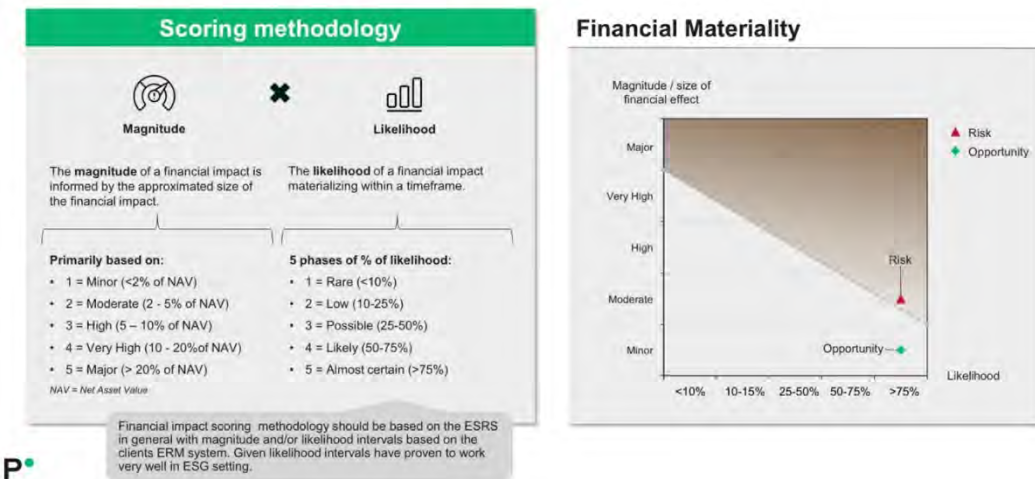


Source: Position Green (n.d.)

In a similar vein (see Exhibit 1.10) we assess the financial impact of an event by measuring the potential impact relative to the Net Asset Value (NAV) of the entity and the likelihood of it occurring.

Exhibit 4.6: Financial Impact Scoring

Financial impact scoring and terminology



Source: Position Green (n.d.)

A small number of shipping companies have embraced ESG as prism through which they assess and mitigate risks, from which they derive long and medium-term strategies and develop investment strategies that support not just their longer-term strategies but are making transparent how they promote and further their ESG activities.

There is another and larger group of shipping companies that report comprehensively under a mostly EU inspired format. Many more will be compelled to do so as the European Union's Corporate Sustainability Reporting Directive (CSRD) takes effect.

The Double Materiality Assessment and the European Sustainability Reporting Standards (ESRS) tend to encourage a longer-term view on the risk assessment of companies and offers advantages compared to more common approaches.

Fafaliou, I., Lekakou, M., & Theotokas, I. (2006). Is the European shipping industry aware of corporate social responsibility? The case of the Greek-owned short sea shipping companies. *Marine Policy*, 30(4), 412-419. <https://doi.org/10.1016/j.marpol.2005.03.003>

Froholdt, L. L., Progoulaki, M., Baldauf, M., & Pawlik, T. (2015). *IAMU capacity building report. Corporate Social Responsibility (CSR) in Shipping; A CSR awareness program to enhance capacity building in good governance of multicultural employees and safe operations – Good Governance of Multi-cultural Safety (PGMS)*.

IFRS (n.d.). *IFRS Sustainability: Marine Transportation Sustainability Accounting*. Retrieved July 4, 2024, from <https://sasb.org/standards/materiality-finder/find/?industry%5B0%5D=TR-MT>

KPMG (2023). *Get ready for the next wave of ESG reporting - helping you tackle the Corporate Sustainability Report Directive*. Retrieved July 4, 2024, from <https://assets.kpmg.com/content/dam/kpmg/dk/pdf/dk-2023/dk-csrd-thought-leadership.pdf>

Position Green. *ESRS double materiality assessment*. From <https://www.positiongreen.com/>

Sampson, H. (2015). Seabirds matter more than us! Understanding the complex exercise of CSR in the global shipping industry. *Journal of Sustainable Mobility*, 3(2), 101-119. <https://doi.org/10.9774/GLEAF.2350.2016.de.00007>

TCFD (n.d.). *Task Force on Climate-Related Financial Disclosures*. Retrieved July 4, 2024, from <https://www.fsb-tcfd.org/about>

CASE STUDIES



By Peter Borup

Introduction

Dampskibsselskabet Norden A/S (commonly abbreviated D/S Norden or NORDEN) is one of Denmark's oldest shipping companies, founded in 1871 by Mads Christian Holm. The company was named after its first vessel, a Glasgow-built steamship, the S.S. NORDEN. Over its long history, NORDEN has undergone several transformations in response to the changing world of global trade.

The SS NORDEN was the first Danish steamship to operate in the Far East. This was made possible by the advent of the telegraph and hence the ability to communicate with the vessel at regular intervals. The company came through two world wars and a cold war with a relatively small fleet of general cargo vessels.

In the early 1970s Norden only had 4 old general cargo vessels left, and the board considered either to liquidate the company or to invest in new modern and larger dry bulk vessels. Due to a very conservative policy since the 1950s the company was well consolidated, and it was decided to invest in a fleet of modern Japanese built dry cargo vessels of app. 35.000 DWT. That was to become the core of the modern Norden's strategy. In the mid-1980s dry bulk was supplemented by product tank. The dual strategy was followed by a coherent ownership structure which clarified Norden as the operating company and Orient as the important but not controlling owner.

Various joint ventures were used to build up a presence in product tank whereas the presence in the bulk segment was increased through newbuilding orders for two capes (at Hyundai) and two 48,000tdw supramax vessels at Danish shipyard, Frederikshavn. These vessels formed the basis for the dry cargo department as Carsten Mortensen was appointed its new head in 1997.

At the time NORDEN had just celebrated its 125th anniversary, the company enjoyed a reputation for somewhat stale solidity, was listed on the Copenhagen Stock Exchange but not very liquid. Mortensen set out to develop the company's first strategy for the dry cargo activities, knowing that any expansion needed to be off balance sheet.

Part of the strategy became to add the necessary staff to pursue an operating strategy and expand the fleet through shorter or longer time charters.

A couple of key features stands out:

A disciplined approach to pricing time charter deals, including what must have been one of the first applications of the Black-Scholes options pricing model in shipping, as well as repeatedly running Monte Carlo simulations to be able to accurately compare the value of the longer-term deals being offered. For example, a deal from a Japanese yard and trading house offering a supramax or a Panamax bulk carrier on a 5-year firm time charter with options to extend for 1 plus 1 plus 1 year at predetermined time charter levels. On top of that an American call option on buying the vessel, typically active 36 months after taking delivery of the vessel ex yard.

The Panamax segment had a much higher volatility which would suggest a higher value of the options. But Panamax also traded much lower than supramax. Supramax was furthermore clearly an alpha market, i.e. a market where skill and experience could help you mitigate a bad call or improve an already favorable position.

Such deals were known as structured deals, and they had no accounting implication at the time, so the cash flow impact was the 2 weeks of time charter hire paid to the Japanese owner in advance. Obviously nowadays the firm commitment

must be accounted for on the balance sheet, but it was not the case in the 1990s and 2000s and these deals were hence the perfect answer to NORDEN's desire to expand and enjoy some of the possible asset upside. And at the same time enjoy access, albeit indirectly, to some of the cheapest finance available anywhere in the world. Low interest rates, JPY financing for the NORDEN counterparts offered financing at implied rates of return at less than 1% over the duration of the time charter. This was not achievable anywhere else to NORDEN at the time. (Nor at any time).

Based on these rigid calculations and comparisons, NORDEN decided to expand into the supramax segment by predominantly taking structured deals for supramax. Yet the company also took the occasional Panamax and Capesize deal, initially testing whether there would be synergies in also including geared Panamax vessels in the fleet.

Already in 1999-2000 did the dry cargo department start developing standard operating procedures (SOP). This was met with considerable skepticism by the experienced operators who found the project to be bureaucratic and burdensome and it did not allow for the differences in approach in different geographies or by different operators. And who would have to maintain the SOP anyway?

That was however the exact point of the exercise – it meant that NORDEN understood how it did things, and it became a cornerstone of the scalability that was such an important part of the NORDEN business model.

It became a guiding tenet for NORDEN that the company must be able to turn the dry cargo book in no more than 3 months, i.e. going from being long on ship days to being short (or long on cargo commitments), and vice versa.

A couple of other features of the 2000s NORDEN business model were important in the longer-term management and development of the company.

The organization and the remuneration

NORDEN preferred to hire driven, ambitious, and smart staff, and valued intelligence and drive over experience and network. The latter could always be gained.

Remuneration was aligned clearly with the objectives of the company. Good financial performance benefited all employees and key employees were retained and rewarded through a combination of discretionary bonuses, retention bonuses, share option programs as well as share gifts. Also, employees in administration and back-up would enjoy generous bonuses when the company's financial performance warranted same – often in multiples of monthly salaries. This rewarded high performance, retained high performers, and still made everybody feel they were part of the company's success.

Strong values

NORDEN invested in several Vision – Mission – Values (VMV) processes. The most defining one was in 2006-08 where a companywide process led to a Vision and Mission⁵⁰ as follows:

VISION

The preferred partner in global tramp shipping. Unique people. Open minded team spirit. Number one.

MISSION

Our business is global tramp shipping. We seek excellence through a dedicated team effort from competent and motivated people. With ambition, reliability, flexibility, and empathy, we

- focus on customers who benefit from our constant commitment to being an independent long-term partner
- continue our long history of building valued relationships with shipowners and shipyards.

⁵⁰ Dampskibsselskabet NORDEN A/S, Annual Report 2010

We will maintain a large modern fleet of owned and chartered tonnage, and – in a volatile market – we manage risks to constantly be able to develop our business and create shareholder value.

The same process also sharpened up NORDEN's values to consist of Empathy, Flexibility, Reliability and Ambition. I.e. three descriptive values and one very action oriented that would always help drive the other ones.

Significant management effort was invested in discussing what each of these values meant in the context of each function and each geography that the company was active in. Flexibility means different things on a chartering desk in Annapolis and in an accounting team in Singapore. Once a baseline good behavior under each value had been established, it was much easier to define what would then be considered outstanding performance.

The performance appraisal system was amended to reflect these values and managers were furthermore assessed on how they lived out these values as managers.

All this developed on a backdrop of a hostile takeover attempt by compatriot TORM. The offer was made to all shareholders in June 2002. The defense against this takeover attempt forced NORDEN to make its inherent value more transparent, it communicated about the value of its purchase and period options, the value of its organization and asset-light and very scalable business model.

Where was the value created: Much was created by the high activity level and the spot trading against existing positions. But the core of NORDEN's profitability was its long positions, newbuilds and structured deals⁵¹, where the financial strength to wait for asset values to reach peaks and offer attractive returns was where most of the profits were made.

Discuss:

1. Research NORDEN in the time after 2015. Discuss the changes to the business model compared to that of the 2000s, described above.
2. How would you describe the risk management approach of the post 2015 business model with that of the 2000s?

⁵¹ Interview with former CEO, Carsten Mortensen, November 2023.

Dampskibsselskabet NORDEN A/S (2011). *Annual Report 2010*. Retrieved July 4, 2024, from https://www.annualreports.com/HostedData/AnnualReportArchive/d/ds-norden-as_2010.pdf

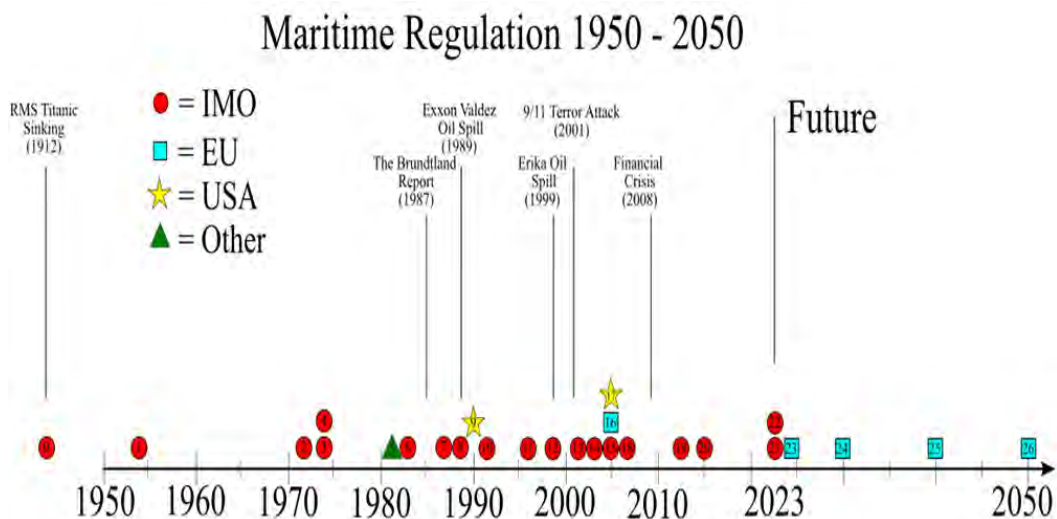
By Peter Borup

Based on interview with Director General, Andreas Nordseth conducted on 30 October 2023

Introduction

Regulation in shipping has often followed significant global events. From the Safety of Life at Sea (SOLAS) convention following the demise of the TITANIC to the Oil Pollution Act 1990 (OPA90) in the United States following the EXXON VALDEZ oil spill to stricter regulations on international USD remittances to counter international terrorism but inadvertently also affecting many shipping companies operating behind a corporate veil.

EXHIBIT 1: Maritime Regulation 1950-2050



IMO Regulatory Achievements Timeline⁵²:

Nr.	Year	Achievements	Notes
1	1954	OILPOL	The international Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) was an international treaty with the goal of stopping ships polluting the ocean with oily-water mixture produced when cleaning oil tankers.
2	1973	MARPOL	The International Convention for the Prevention of Pollution from Ships (MARPOL) is an international convention developed by the IMO to stop the pollution of the oceans via dumping, oil and air pollution produced by ships.

⁵² IMO: <https://www.imo.org/> (1,2,3,4,6,7,8,10,11,12,13,14,15,16,18,19,20,21,22,23,24,25,26)

EPA/OPA: <https://www.epa.gov/laws-regulations/summary-oil-pollution-act> (9)

The Paris MoU: <https://parimou.org/> (5)

The Patriot Act: https://www.justice.gov/archive/opa/pr/2006/March/06_opa_113.html (17)

				MARPOL consists of Annex's (See below) that focus on specific fields within maritime pollution. As of writing, there are six Annexes in total.
3 (0)	1974	SOLAS (Started 1914)		The International Convention for the Safety of Life at Sea (SOLAS) is a maritime treaty that sets the minimum safety standards in construction, equipment and operation of merchant ships.
4	1974	IMDG Code in SOLAS		International Maritime Dangerous Goods Code (IMDG) is an international guideline that helps prevent accidents with the transport of dangerous goods, via guidelines about packaging, labelling, documentation, stowage and handling.
5	1982	The Paris MOU (Port state control)		The Paris Memorandum of Understanding on Port State Control is an international agreement between 27 maritime authorities, consisting of 12 annexes, where maritime authorities agree on different aspects of Port State Control, such as inspections, exchange of inspection information and the selection processes of inspection.
6	1983	MARPOL Annex I (Oil)		An incorporation of OILPOL's focus on oil pollution. The annex is divided into two sections, where the first part involves the engine room bilge water cleaning regulation with the use of oily water separator (OWS) and monitoring with oil content meters (OCM), and the second part involves the cleaning of the ship and tankers via use of Oil discharge monitoring equipment (ODME). The Oil record book was also adapted to help crew members log and track oil wastewater.
7	1987	MARPOL	Annex II	Focuses on noxious liquid substances carried in large quantities. Discharge of these substances must be at specific concentrations and no discharge of residuals may be carried out within 12 nautical miles of the nearest landmass. Absolutely no discharge of residuals in "special areas" - zones specified in the annex as extra pollutant sensitive.
8	1988	MARPOL	Annex V	Deals with garbage disposal at sea. Specifies types of garbage and what distances from nearest landmass they may be discharged from. Introduced a complete ban of dumping plastic into the ocean by any type or distance from nearest landmass.
9	1990	OPA		The "Oil Pollution Act" is an amendment to the 1973 Clean water act, that sets regulations, requirements and preparedness for oil discharges at specific non-transport-related facilities. The OPA requires some oil storage facilities to prepare Facility Response Plans (FRP), in case of accidental oil discharges. A trust fund financed by tax on oil is in place, to clean up oil, if the responsible party is unwilling or unable to do themselves.

10	1992	MARPOL Annex III (harmful material)	General requirements for the labelling, packaging, marking, documentation and stowage of harmful substances. The annex follows the procedures detailed in the International Maritime Dangerous Goods (IMDG) code.
11	1996	Double hull Tankers	An addendum to MARPOL Annex 1 that required tankers over 5000 DWT to have a double hull design to reduce the likelihood of oil spillage if hull damage accrues.
12	1998	ISM Code	The International Safety Management Code (ISM). A chapter of SOLAS that aims to ensure the safety of ships at sea, via auditing and certifying ships.
13	2003	MARPOL Annex IV (Sewage)	The discharge of sewage produced by the ship. If no treatment or disinfectant of the sewage has taken place, the ship may not discharge less than 12 nautical miles from the nearest landmass. If treatment or disinfectant has taken place, discharge may take place 3 miles from nearest landmass.
14	2004	Ballast Water-Convention (BWM)	An international treaty to ensure that ships may not discharge ballast water that could harm the environment via spreading sediments and organisms across the seas.
15	2005	MARPOL Annex VI (Air)	Requirements to regulate the emission of pollutant gasses, including ozone-depleting substances, Nitric Oxides (NOx), Sulphur Oxides (Sox) and Volatile Organic Compounds (VOCs). A chapter adopted in 2011 also includes mandatory technical and operational energy efficiency measure to reduce greenhouse gas emission from ships.
16	2005	ETS	An ambitious system set by the EU to reduce greenhouse gas emissions via a 'cap and trade' principle. A cap on CO2 emissions is set, and an allowance for one ton CO2 emission is given. These allowances depend on a multiple of factors, but their most important trait is that they can be traded between firms or bought on the EU carbon market. Revenue from this market is then used to fund the production and research of green and renewable energy sources, thus lowering the CO2 emissions further. The ETS is under constant reconstruction and reevaluation regarding current climate data and estimations.
17	2005	The Patriot Act	The Patriot Act of 2005 is improvement and reauthorization of the original 2001 Patriot Act, following the 9/11 terror attack on the US. The act gives federal law enforcers the tools to fight terrorism, though the allowance for the coast guard to stop and search ship vessels, for potential dangers that could be used in terrorism.
18	2006	SECA Baltic/North Sea	Sulphur Emission Control Areas (SECA) are areas where structure sulphur emission limits are in place primarily in the Baltic/North Sea, the US coastline, the Mediterranean and Japan's coastline.

19	2013	EEDI			The Energy Efficiency Design Index (EEDI) is an amendment to MARPOL VI, to mandate technical and operational energy efficiency measures to reduce CO2 emissions. The Index is a measure of ship type, size and transported goods regarding what CO2 emissions is acceptable. A minimum energy efficiency level per tonne miles is required, to ensure lesser CO2 emissions.
20	2015	0,1 sulphur Sea	Baltic/North		An amendment for MARPOL annex VI that requires ships that operate in the Baltic or North Sea to reduce their Sulphur Oxide emissions by producing no more than 0.10% regarding mass.
21	2023	EEXI			The Energy Efficiency Existing Ship Index (EEXI) is an index that indicates the energy efficiency of a ship. All ships above 400 GT are required to calculate their EEXI score and measure it against the index. The ships that fall under the index then must make improvements to their energy efficiency thus creating a level-playing field among the world fleet.
22	2023	CII			Carbon Intensity indicator (CII) is a rating system from A - E, where A is major superior, and E is inferior performance level. The rating is an indicator to the Carbon intensity of a given ship, based on the ship's deadweight, annual fuel consumption, distance sailed and a fuel convergence factor. If a ship is deemed at an E level for 3 consecutive years, a plan of corrective actions.
23	2024	ETS Including Shipping			Shipping is meant to be included in the ETS system, where a gradual phase in between 2024-2028 is meant to take place. The phase in includes, what ship sizes and types are included in the ETS, as well as how much emission must be reported.
24	2030	ETS Target			A 20-30% emission reduction
25	2040	ETS Target			A 70-80% emission reduction
26	2050	Net Zero Emission			An ambitious goal set by IMO to reach net zero emission of greenhouse gasses by 2050. The roadmap includes intervals of lower emissions by 20-30% by 2030 and 70-80% by 2040, culminating in net neutral in 2050.

*Dates stated in time of entry into force

The increase of new maritime regulations is raising new challenges as to how to best implement and enforce these new rules with global reach. In many cases there is a concern as to securing even and equal implementation, in others that the rules have taken effect, but no budget has been allocated to enforce same.

On top of that the pace of technological change is accelerating, and in the words of Andreas Nordseth, this changes how the flag states must operate: 'We used to make sure that technology complied with our rules and regulations. Now our job is to make sure that our rules and regulations can accommodate the new technologies'.

'I am firmly in the camp that believes in the work of the International Maritime Organisation (IMO). The organisation has over the past decades brought us much closer to a level playing field in shipping that it is given credit for'. The Paris MoU and the Port State Control (PSC) allowed all port states to inspect ships calling its ports and assess

conditions for the crew and the state of the vessel itself – opening for flags inspecting each other and hence providing a convergence and augmentation of standards.

When Nordseth took over as Director General in 2009 the Danish International Ship Register (DIS) had already enjoyed success, offering a tonnage tax scheme to DIS registered ships that also allowed for long term structure deals to count as core tonnage and short-term tonnage to be included in the tonnage tax system up to a factor 5 of the core tonnage.

But Danish shipowners and operators had expanded to Singapore and been met with similar if not better terms, and a flag state keen to remain competitive and always looking for new ways to develop its services to the shipping community.

Singapore's MPA had a reputation for being very well informed and paid frequent visits to ship owners that already had a presence in Singapore or ones that the MPA would like to see joining the local scene. Such delegations were often headed by a Singapore Cabinet Minister and regularly ended with the minister asking what Singapore could possibly do to improve.

Singapore's early work to develop a resident international maritime centre started under the auspices of the Trade Development Board in the 1990s. The early focus was on attracting shipowners by providing certain tax incentives. Early results clearly showed a move of tonnage to the Singapore registry but mostly the overseas owners moved medium level accounting staff to Singapore and hired accounting staff locally. Singapore wanted a much stronger strategic presence in the republic and started promoting the AIS, Approved International Ship operator scheme, where the approved company would be tax exempt for a period of 10 years, with the option to extend such period by additional 2 10-year periods. In exchange the shipping company must place staff in Singapore capable of driving a strategy, the company must have a Singapore business spending of minimum SGD 4 mill per annum over the planning period. Moreover, the initiative moved to the Maritime and Port Authority of Singapore (MPA) and was renamed the International Maritime Centre (IMC) of Singapore and was very selective in which companies they sought to attract to apply from each shipping nation and from each shipping segment. These were the standout companies, and it was a reasonable assumption that if they moved part of their business to Singapore, more of their compatriots and peers would follow.

This led to a strong local shipping community, initially with a predominance of operators but many soon added owned fleets as the commodities boom of the early 2000s boosted their bank accounts. Singapore followed by looking to add maritime insurance (first with a Lloyds of London in Singapore), then attempting to convince large global Shipbroking houses to set up research teams in Singapore and by seeking to carve out a presence for Singapore in the futures markets.

A study into developing Singapore into a leading shipping capital market was somewhat set back by the collapse of Lehman Brothers and the Global Financial Crisis.

Throughout Singapore put forward innovative ideas that were tested in the marketplace and if not meeting with the hoped-for success were recalibrated or replaced. Always in close co-operation with the industry itself.

One example would be how Singapore went about turning “shipping tourists”, companies who would only stay for as long as the regulatory regime was favourable, into long term residents:

Singapore suffered from not being able to attract the right skills to these new shipping companies. Traditionally the shipping industry in Singapore had been seen. As a bit of a sunset industry and graduates with strong financial or trading skills would look towards the financial industry to pursue their careers, whereas shipping was seen as an onshore resting place for former seafarers and some engineers.

To sustain the many new corporate entities, many of whom needed strong risk management and trading skills, Singapore set up an undergraduate program in shipping at Nanyang Technical University and incorporated a semester studying overseas. Later a more financially focused program was set up at Singapore Management University – this time exchanging students with Copenhagen Business School for a semester.

So, globalisation in shipping had moved from setting up single purpose (and single ship) companies, often behind an impenetrable corporate veil, in a tax efficient jurisdiction somewhere, to now becoming an exchange of ideas on how to provide the best, the most transparent and most efficient service to shipping companies. And in the process of creating modern shipping hubs, also creating new knowledge and new networks.

Denmark and DMA faced several similar challenges. Singapore and Denmark are both small and open economies. Both countries had strong and thriving maritime sectors and flags in good standing.

And instead of competing in a race to the bottom the two maritime authorities sought to collaborate on how best to meet the challenges facing the industry, including how to implement strong initiatives reducing emissions and making the maritime industry greener and cleaner.

Questions:

1. As a dry cargo shipowner how would you describe the different advantages / disadvantages of the two locations if you were to either (a) set up a commercial office? or (b) register a fleet of vessels under the local flag?
 2. How could the DMA distinguish itself and make itself more attractive compared to Singapore?
 3. Could there be upsides to DMA in the competition from Singapore? What are its strategic options apart from competing on taxes and fees?
-

To the IMO and flag states around the world, the major challenge of this generation is how to agree on efficient and meaningful initiatives making the maritime industry emission neutral and clean as soon as possible while still adhering to the principle of a level playing field and reasonably consistent and effective enforcement of rules around the world.

The IMO has an, undeserved according to Nordseth, reputation for slow responses to such major challenges. Part of the work is however also for major IMO players to build trust and understanding of each other's positions amongst each other.

This has only become more critical as geopolitical tensions are again on the rise.

Andreas Nordseth sought to build strong personal relations with major maritime nations early on in his tenure and have since sought to engage key players and authorities in discussions on themes such as future means of propulsion, Artificial Intelligence onboard ships, etc. Often the objective is in developing perspectives rather than rushing to agreement immediately.

The Danish registry has doubled in size since 2012. – Some of the key factors in making the Danish flag more attractive – according to Nordseth himself, has been:

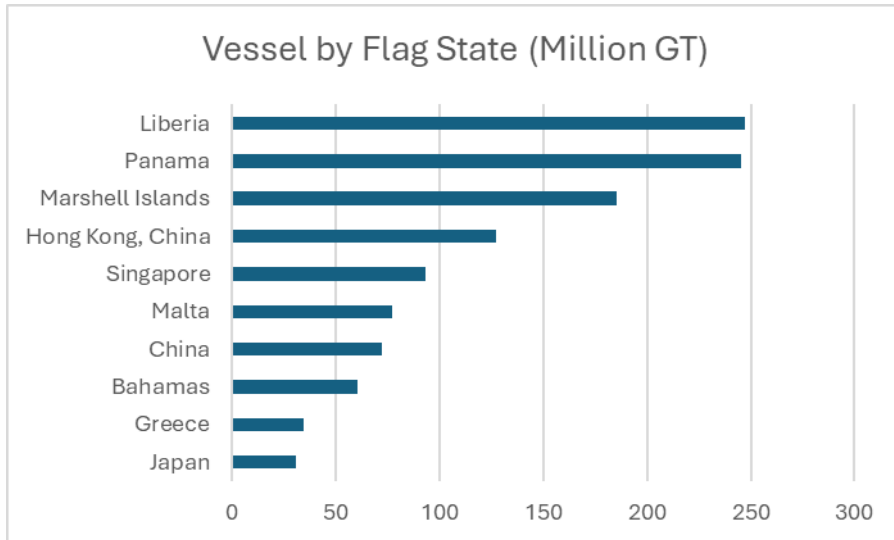
Perhaps different from most other authorities, the Danish Maritime Authority sees itself not just as a control or regulatory function but very much sees itself as part of the value chain of shipping.

The lure of Singapore and the MPA to many Danish shipping companies was an early “burning platform” to Nordseth and his colleagues and gave added focus to being service minded and looking for solutions to challenges rather than which rules to comply with. This also required delegating decisions and investing in the skills required to offer answers to even very technical questions from the ship owning community.

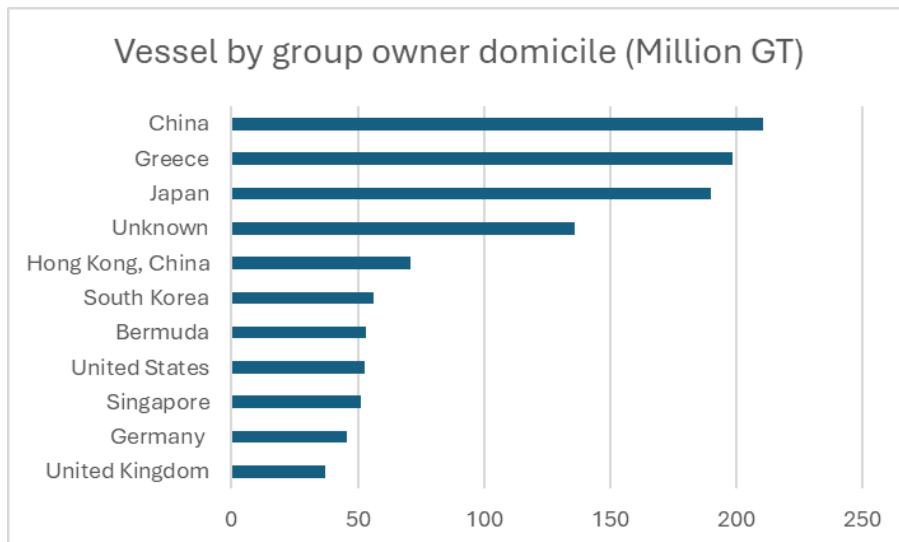
Nordseth very much sees his and DMA's task as how to further safety of life at sea while implementing new sources of propulsion and using technology, including artificial intelligence to improve quality in the decisions onboard the vessels.

In describing the top maritime nations in the world, it is important to keep in mind the difference between the top registries, the top ship-owning and the top ship controlling nations of the world.

Exhibits 8.3 through to 8.5 lists the top-10 maritime nations of the world on these three dimensions.

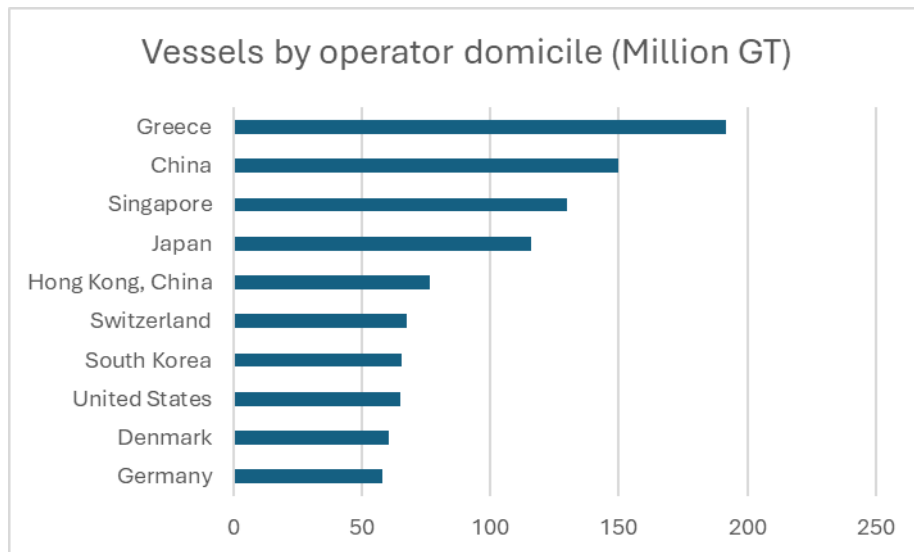
Exhibit 2: Top 10 Flag states (GT). Source: Danish Shipping - Facts and Figures⁵³

Source: Danish Shipping

Exhibit 3: Top 10 Ship owner states (GT). Source: Danish Shipping - Facts and Figures⁵⁴

Source: Danish Shipping

⁵³ Source: Danish Shipping - Facts and Figures | October 2023 (S&P Maritime Portal)<https://danishshipping.dk/det-mener-vi/tal-analyse/>⁵⁴ Source: Danish Shipping - Facts and Figures | October 2023 (S&P Maritime Portal)<https://danishshipping.dk/det-mener-vi/tal-analyse/>



Source: Danish Shipping

It is noteworthy that even in 2023 the nationality of the ultimate owners is unknown for 140 million GT, enough to rank as the fourth largest on the Top-10 list.

It is also evident from comparing Exhibits 8.4 and 8.5 that amongst the three largest ship owning nations (China, Japan and Greece) Japan is a significant long-term suppliers of tonnage to companies from other nations.

⁵⁵ Source: Danish Shipping - Facts and Figures | October 2023 (S&P Maritime Portal)

<https://danishshipping.dk/det-mener-vi/tal-analyse/>

Danish Shipping (n.d.). *Facts & Figures*. Retrieved July 4, 2024, from <https://danishshipping.dk/det-mener-vi/tal-analyse/>

International Maritime Organization (n.d.) *Listing of current IMO publications*. IMO. Retrieved July 4, 2024, from <https://www.imo.org/en/>

United States Environmental Protection Agency (2023). *Summary of the Oil Pollution Act*. EPA. Retrieved July 4, 2024, from <https://www.imhttps://www.epa.gov/laws-regulations/summary-oil-pollution-act.org/en/>

The United States Department of Justice (n.d.). *The Patriot Act*. Retrieved July 4, 2024, from https://www.justice.gov/archive/opa/pr/2006/March/06_opa_113.html

The Paris MoU (n.d.). Retrieved July 4, 2024, from <https://parismou.org/>

CASE STUDY 3: MODERN STRATEGY IN SHIP MANAGEMENT, INTERVIEW WITH BJORN HOJGAARD, CEO, ANGLO-EASTERN UNIVAN GROUP (AEUG)⁵⁶

By Peter Borup

Introduction

The ship management industry manages 20% of the global merchant fleet and has traditionally been made up by small and medium sized founder-led companies with family like team spirit, and where the founder would know everything going on to service his principals best possible.

Competition would primarily be price driven, and big parts of the industry enjoyed a (deserved) reputation for a lack of transparency and for not always passing through the rebates obtained on procurement by way of economies of scale.

The maritime industry has been a technology laggard for a long time. Partly because of the cost of transmitting data between ship and shore, but also because of the structure of ownership, particularly in the tramp markets. Shipowners are unwilling to invest in more than the most necessary, as they are rarely the end users of the ship. Charterers are equally reluctant to make sizable investments in the installation of sensors and technology as they do not own the underlying asset.

The critical player has thus become the ship managers in between who are often in charge of the operations and maintenance of these assets and will stand to benefit from the installation of such technology and even more so by careful collection and analysis of the data from the ships.

Anglo-Eastern Univan Group

Univan and Anglo-Eastern merged in 2015. The group's current CEO, Bjorn Hojgaard, joined Univan in 2012.

These were prominent members of the ship management community in Hong Kong but with very different backgrounds.

Univan had been founded by Capt. Vanderperre in 1973 and was considered a high quality but niche ship manager. It described itself as the "father of all 3rd party ship managers"⁵⁷. Anglo-Eastern on the other hand was a larger player with strong roots in India and good access to quality sea farers from the subcontinent.

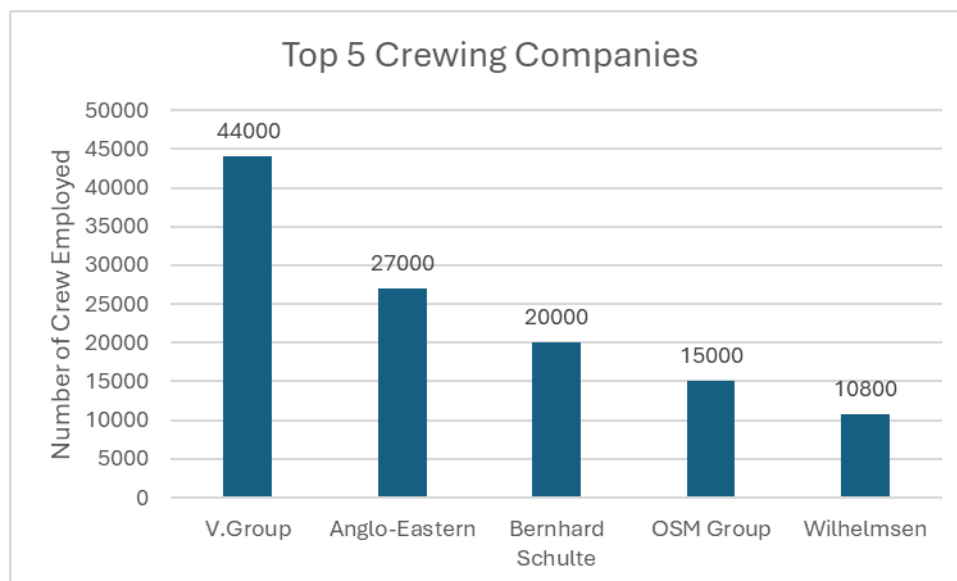
Once merged in 2015 the two companies had 5 different planned maintenance systems (PMS) across the merged company and different corporate cultures.

Today Anglo-Eastern Univan Group (AEUG) manages more than 660 ships, predominantly bulk carriers, tankers, and container ships, but also gas carriers and more specialized ships, and employs some 39,000 employees whereof 2,200 are ashore.

The company ranks as the second largest of the top 5 3rd party ship managers.

⁵⁶ This case study is based on an interview conducted with CEO Bjorn Hojgaard on 13 November 2023 and an Anglo-Eastern Univan Group PowerPoint presentation dated November 2023.

⁵⁷ (http://www.univan.com/company_message.htm internal company article)



Source: Maritime Zone (2021)

The company assesses its performance on safety, i.e., injury and damage frequency rates: on operational parameters such as fleet availability and number of detentions and deficiencies per inspection in port state controls (PSC); and DOC safety score under Rightship.

The company enjoys a strong safety and environmental record with consistent improvements from year to year. It has furthermore achieved a year on year 96% retention of its seafarers.

A changing landscape for technical managers

When pirates threatened the sea lanes of the Gulf of Aden from 2000-2017, peaking in 2011 with fatal attacks on the crews of several commercial vessels, the industry developed a standard for the safe passage through the area.

This was named Best Management Practices (BMP) and was issued by the leading maritime insurance companies to its members as guidance before passage through the area. BMP3 was published in November 2010 and was to be recognised as being an effective counter to piracy with no successful attack on any vessel complying with the main recommendations⁵⁹: Installation of razor wire, bridge protection / citadel, advance notification of allied forces in the area, proceeding at full speed etc. These measures were important and not excessively costly. Yet only 40% of ship owners with ships passing through the area confirmed their compliance in a 2013 survey.

Bjorn Hojgaard observes that the top 40% of shipowners have improved the quality of their operations significantly over the past 25 years whereas the above mentioned 60% have not really changed much over this period.

20% of the global merchant fleet is managed by third party managers, with the top 5 managers by number of ships in the fleets under their management now all operated more than 400 ships each, whereas the vast majority manages much smaller numbers.

⁵⁸ Source: <https://maritime-zone.com/en/news/view/top-crewing-companies-in-the-world-2021>

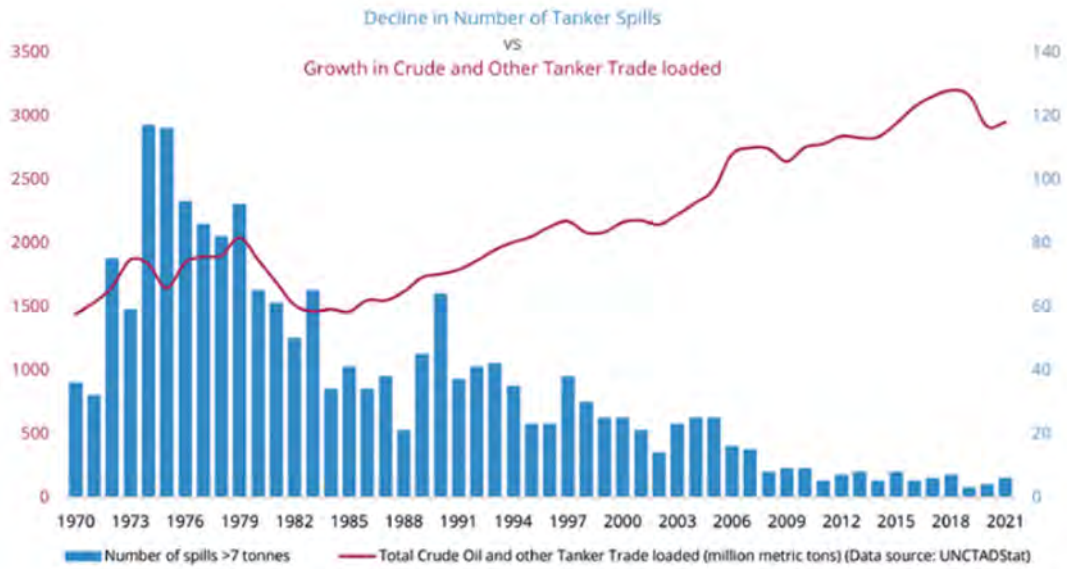
⁵⁹ In this case from Gard.no: The article "Piracy - Best Management Practices for shipowners and operators are revised" in Gard News issue No. 196 provided details about Best Management Practices (BMP) to deter piracy in the Gulf of Aden and off the coast of Somalia developed by various international industry representatives, including Intertanko, the IMB, the International Group of P&I Clubs, BIMCO and IUMI. BMP cover the adoption of ship security plans, protection measures, evading tactics and defensive measures.

The article in Gard News issue No. 196 also provided details of a second version of the BMP, issued in August 2009, which incorporated revisions based on experience gained by shipowners and naval forces since the original version of the BMP was issued.

The overall observation that the quality of ship management, whether outsourced or in house, seems to be borne out by the following statistics.

International Tanker Owners Pollution Federation (ITOPF) is a not-for-profit organisation funded by the maritime insurer and tanker owners who provide scientific and objective advice on clean-up measures, environmental and economic effects, and compensation.

EXHIBIT 2: Oil Tanker Spills 1970-2022⁶⁰



Source: ITOPF (2023)

⁶⁰ https://www.itopf.org/fileadmin/uploads/itopf/data/Photos/Statistics/Oil_Spill_Stats_brochure_2022.pdf

Position	Shipname	Year	Location	Spill size (tonnes)
1	ATLANTIC EMPRESS	1979	Off Tobago, West Indies	287,000
2	ABT SUMMER	1991	700 nautical miles off Angola	260,000
3	CASTILLO DE BELLVER	1983	Off Saldanha Bay, South Africa	252,000
4	AMOCO CADIZ	1978	Off Brittany, France	223,000
5	HAVEN	1991	Genoa, Italy	144,000
6	ODYSSEY	1988	700 nautical miles off Nova Scotia, Canada	132,000
7	TORREY CANYON	1967	Scilly Isles, UK	119,000
8	SEA STAR	1972	Gulf of Oman	115,000
9	SANCHI*	2018	Off Shanghai, China	113,000
10	IRENES SERENADE	1980	Navarino Bay, Greece	100,000
11	URQUIOLA	1976	La Coruna, Spain	100,000
12	HAWAIIAN PATRIOT	1977	300 nautical miles off Honolulu	95,000
13	INDEPENDENTA	1979	Bosphorus, Turkey	95,000
14	JAKOB MAERSK	1975	Oporto, Portugal	88,000
15	BRAER	1993	Shetland Islands, UK	85,000
16	AEGEAN SEA	1992	La Coruna, Spain	74,000
17	SEA EMPRESS	1996	Milford Haven, UK	72,000
18	KHARK 5	1989	120 nautical miles off Atlantic coast of Morocco	70,000
19	NOVA	1985	Off Kharg Island, Gulf of Iran	70,000
20	KATINA P	1992	Off Maputo, Mozambique	67,000
21	PRESTIGE ⁺	2002	Off Galicia, Spain	63,000
36	EXXON VALDEZ ⁺	1989	Prince William Sound, Alaska, USA	37,000
132	HEBEI SPIRIT ⁺	2007	South Korea	11,000

Table 1: Major tanker spills since 1967

* The only spill of non-persistent oil
⁺ Included for comparison

Source: ITOPF (2023)

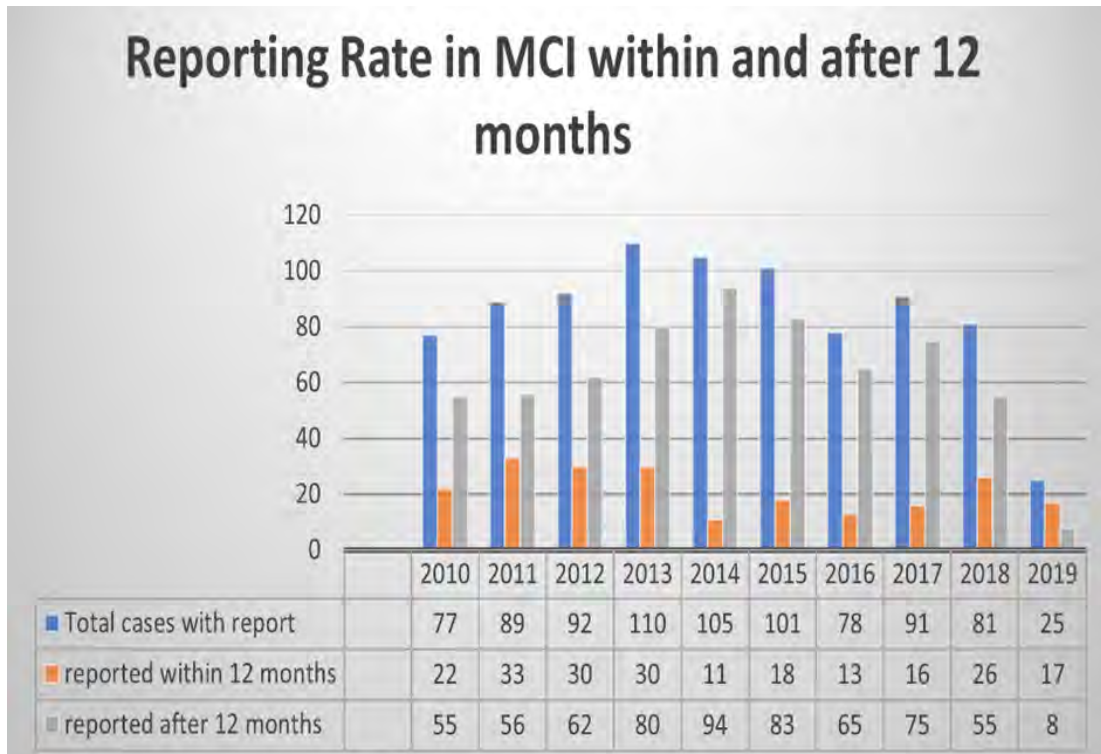
With regards to the safety of life at sea, the international Maritime Organisation (IMO) publishes the Maritime Casualties and Incidents (MCI) report, which is a reporting system that includes the death of a person at sea, the loss of a person at sea, the loss, presumed loss or abandonment of a ship, material damage to the ship and severe damage to the environment.

The below graph does not include deliberate acts or omissions with the intent to cause harm to the safety of the ship, an individual or the environment.

The report distinguishes between incidents reported within the first 12 months after the occurrence, and ones that are only collated after the first 12 months.

⁶¹ https://www.itopf.org/fileadmin/uploads/itopf/data/Photos/Statistics/Oil_Spill_Stats_brochure_2022.pdf

EXHIBIT 4: Maritime Casualties and Incidents⁶²



Source: International Maritime Organization

Economies of scale

Scale has always been important in 3rd party ship management. In 2000 critical mass would be around 60-80 vessels, and the manager would be organised in pyramids: 4-5 ship managers would look after 4-6 ships each and report to a fleet manager. 4-5 fleet managers would in turn report to a fleet director, and all issues and knowledge gained would stay in the silos where it was acquired.

In 2023, critical mass has increased to 3-400 ships, and the organisation is structured by specialty and based on transparency from vessel to vessel with a high focus on knowledge sharing and utilizing knowledge and data efficiently. Much of the maintenance expertise previously “ordered” from the original equipment makers has now been internalized to secure best possible handling of maintenance challenges.

Some of the challenges remaining for the largest of ship management companies remains how to utilize the data collected across their fleets best possible, primarily by designing and implementing more efficient processes to deliver predictable outcomes across the fleet.

Ownership

Private equity capital has also found its way into ship management. The new influx of capital has no doubt led to increased investments in software and in the collection and utilisation of data. In many ship management companies, there was a clear development potential in processes, the use of capital and seeking out more economies of scale.

⁶² IMO <https://www.imo.org/en/OurWork/IIS/Pages/Statistics.aspx>

One of the main investments made by ship management companies is in the training and nurturing of manpower, and hence the establishment of academies and the building of credibility in key recruitment geographies. These are typically locations where the best of each generation will see a career at sea as attractive, often in comparison to the domestic job market. The Philippines, India, Ukraine, Russia are amongst the preferred sources of maritime manpower – and China is also a sizable supplier of crews.

This is critical investment for the entire industry – the “production” of a captain takes some 12 years from cadet to full master – which is a time horizon that exceeds the typical private equity exit.

Data

When the first so called smart ships were launched around 2015, the cost of transmitting data from some 1,500 sensors onboard exceeded the daily time charter hire of the vessels. Since then, the cost of data via satellites have come down dramatically.

Initially the improvement in communication with the ships and for the crew back home was seen as an undiluted blessing, but the easy contact back home was soon blamed on a wave of loneliness and increase in suicides amongst young cadets. The theory was that the easy access to calling home amplified their homesickness and a sense of loneliness for the young cadets.

Leading ship managers have since developed app’s for the crews mobile phones providing everything from monthly salary breakdowns to social and professional chat rooms, as well as regular surveys giving employers a temperature on the motivation onboard individual ships. It also provides a feedback platform to encourage and reward initiatives improving the operational efficiency.

More uniform processes and better access to consistent data also allows shore-based teams to drill down and drive performance improvements. For example, fuel efficiencies by minimizing the usage of energy intensive equipment when not needed: AEUG’s 15-person performance team cut fuel by 0.9% in 2022 saving USD 32 million fleetwide.

Safety and environmental footprint

The most important driver of steadily increasing safety standards and decreasing accident and damage ratios is retention of crews and continuous training. – Similarly for environmental improvements, consistent training and knowledge sharing is key to smaller but continued improvements.

Conclusion

Ship management companies who used to go “hat-in-hand” selling on lower budgeted daily running costs than the competitors are increasingly central to shipping operations: They have gone from “hat-in-hand” to becoming the principal. Some are offering not just newbuilding supervision at shipyards but have taken steps to also offer ship design through teams of dedicated naval architects that are for now focusing on new fuels and design furthering fuel efficiency. It is plausible that other design initiatives could be run by the ship management companies. The fragmentation of newbuilding yards and the shortage of resources allocated to ship design and for example materials engineering that could significantly lower the weight of ships could plausibly be driven by ship managers.

Discussion

1. What do you see as the main challenges of the ship management business model?
 2. At which point are ship owners giving up too much control to outsource execution risk on technical maintenance and crewing?
 3. Who should own and refine the data generated by AEUG and their peers?
-

References

Gard.no (n.d.). *Piracy - Best Management Practices for shipowners and operators*. Retrieved July 4, 2024, from <https://maritime-zone.com/en/news/view/top-crewing-companies-in-the-world-2021>

International Maritime Organization (n.d.). *Statistics*. IMO. Retrieved July 4, 2024, from <https://www.imo.org/en/OurWork/IIS/Pages/Statistics.aspx>

ITOPF (2023). *Oil Tanker Spill Statistics 2022*. Retrieved July 4, 2024, from https://www.itopf.org/fileadmin/uploads/itopf/data/Photos/Statistics/Oil_Spill_Stats_brochure_2022.pdf

Maritime Zone (2021). *Top 5 Crew Management Companies in the World 2021*. Retrieved July 4, 2024, from <https://maritime-zone.com/en/news/view/top-crewing-companies-in-the-world-2021>

Univan (n.d.). Retrieved July 4, 2024, from http://www.univan.com/company_message.htm%20internal%20compony%20article

98 CASE STUDY 4: BW GROUP

By Peter Borup

Based on an interview with Sebastien Brochet, Strategy- and Chief Financial Officer on 14 November 2023.

Introduction

BW Group is based in Singapore and Oslo and has become an investment and holding company with a vision of investing in liquid and scalable companies, and describes itself as follows:

BW Group is a maritime company involved in shipping, floating gas infrastructure and deep-water oil & gas production. The company has over 490 vessels managed by an international team of over 12,000 staff worldwide. The group was founded by Sir Y.K. Pao in 1955 as World-Wide Shipping. In 2003, the company acquired Bergesen d.y. ASA, Norway's largest shipping company, which was founded in 1935 by Sigval Bergesen the Younger. In 2005, the business was re-branded as BW. With its LNG and LPG fleets combined, BW Group owns and operates the world's largest gas shipping fleet of more than 200 gas vessels, including five FSRUs (floating storage and regasification units). Hafnia, a member of the BW Group, operates the world's largest fleet of oil product tankers, and BW Offshore comprises the second largest number of floating oil and gas production units (FPSOs). BW's controlled fleet of over 490 ships also includes crude oil super tankers and dry bulk carriers.

BW Group currently comprises BW LPG, BW LNG, BW Epic Kosan, DHT, Hafnia, BW Dry Cargo, BW Offshore, BW Energy Storage Systems, BW Solar, BW Solar, Cadeler, Navigator Gas, BW Water, BW Ideol, Corvus Energy, and BW Digital. At its peak in 1979, World-Wide had 204 ships totalling 20,500,000 tonnes deadweight (DWT). When the shipping downturn started in 1978, World-Wide sold tonnage while prices were still reasonable, paying off debt and building cash resources. In less than five years the fleet had halved in size, allowing World-Wide to avoid the crises suffered by many shipping companies.

Whereas BW Group 10 years ago was involved in chartering and operations of several different ship types, the company now acts as an active investor looking for almost anything related to water in the words of Chief Strategy Officer, Sebastien Brochet.

EXHIBIT 1: The BW Group^{63 64}

Name of Subsidiary / Affiliate	BW Group Ownership Share	Listed on Stock Exchange	Business Area	Ships	Company Value (\$)
BW LNG	N/A	No	LNG	32	408 M (EBITDA)
BW LPG	40%	Yes (Oslo Stock Exchange)	LPG	46	2,12 B (Market Cap)
CADELER	32%	Yes (Oslo Stock Exchange)	Offshore Wind	N/A	622,84 M (Market Cap)

⁶³ For annual reports and BW group subsidiaries & affiliates <https://bw-group.com/our-businesses/>.

⁶⁴ Market Cap: Euronext Live Market <https://live.euronext.com/en> (1 NOK = 0,092 USD) snapshot 16Nov23.

BW EPIC KOSAN	58%	Yes (Euronext Growth Oslo)	Last mile - LPG and Petrochemicals	76	348,54 M (Market Cap)
NAVIGATOR GAS	28%	Yes (New York Stock Exchange)	Handysize LPG and Chemicals	56	1,06 B (Market Cap)
BW SOLAR	N/A	No	Solar Power and Storage	N/A	N/A
BW DRY CARGO	N/A	No	Bulk - Supramax to Cape-size	16	N/A
HAFNIA	49%	Yes (Oslo Stock Exchange)	Tanker	211	3,32 B (Market Cap)
BW WATER	N/A	No	Water and Wastewater Systems	N/A	N/A
BW Offshore	50%	Yes (Oslo Stock Exchange)	Offshore	15	383 M (Market Cap)
BW Energy	38%	Yes (Oslo Stock Exchange)	Oil and Gas, Energy	N/A	616,5 M (Market Cap)
BW IDEOL	51%	Yes (Oslo Stock Exchange)	Offshore Wind, Floating Foundations	N/A	34,18 M (Market Cap)
CORVUS ENERGY	N/A	No	Energy Storage, Maritime Industry	N/A	1 M (2020) (EBITDA)
BW DIGITAL	N/A	No	International Submarine Cables and Datacentres	N/A	N/A
BW ESS	N/A	No	Investment, Energy Storage	N/A	N/A

Sources: BW Group website, Euronext (n.d.)

The investments are made for the long-term and guided by 5 principles:

5 guiding principles

Liquidity

Liquidity is essential in any shipping investment, where timing is important to optimize returns. In most shipping markets – characterized by high volatility – liquidity is the precondition for an investor to time an exit (or an entry)

best possible. Any reduction in liquidity can affect the exit significantly. Liquidity is also about the ability to recycle capital.

The ability to manage liquidity is a key principle for BW Group.

Scalability

Scalability is equally important as size offers economies of scale. Often this is not just a question of marginal cost but also applicable technologies and the right mix of competencies in the organisation. Scalability could also be about the ability to reduce the size of the platform in case of adverse conditions.

BW Group would rather own 50% of a large platform rather than 100% of a small one exactly because of the scale inherent in the larger platform and a presumed higher liquidity. This liquidity could be in the form of capital markets, or it could be on a more operational level where the company can buy or sell ships depending on its view on the market in the medium to long term.⁶⁵

BW Group wants to add more than merely its own capital. Can the BW reputation or skills or network add to the investment beyond just investing capital?

Risk Management

Risk Management: A listing on a capital market is always for the longer term. A listing offers risk diversification.

Long term focus

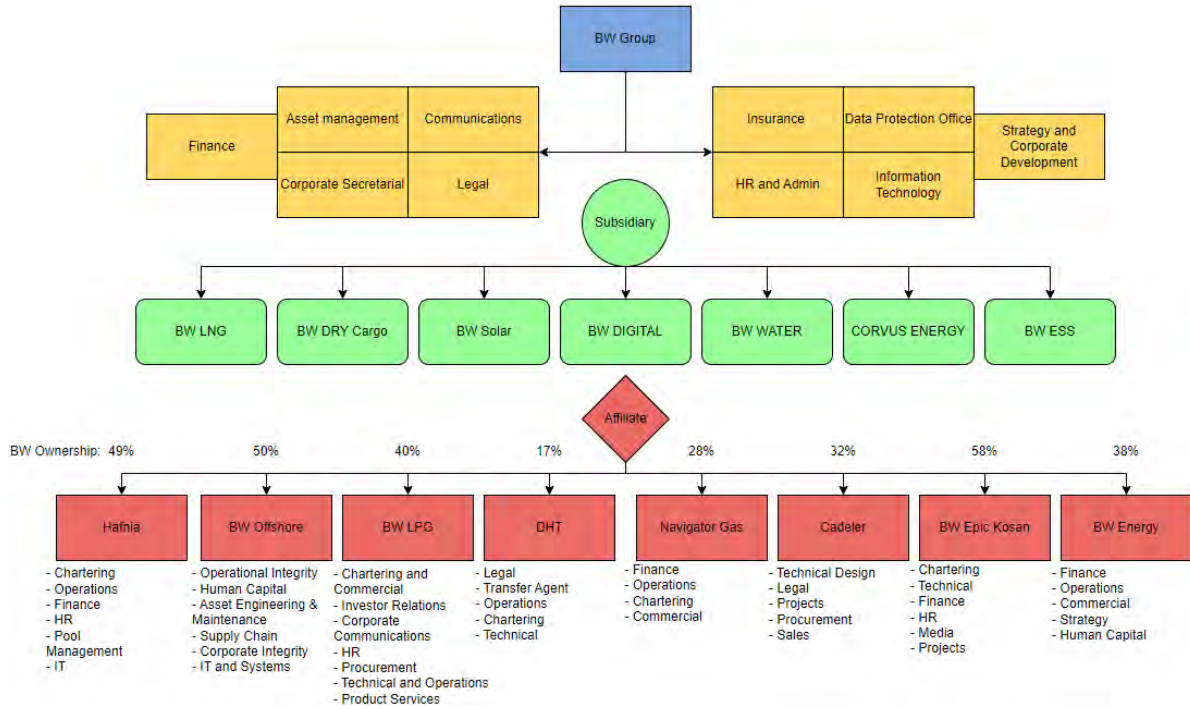
Long term focus: The investments of BW Group are made for the long term.

Low level of leverage

Furthermore, the company is disciplined about maintaining a low level of leverage at a shareholder level. This typically means that the group operates at 20-30% debt levels whereas much of the competition are comfortable at debt levels of some 60%. This is competitive disadvantage in the short term but in the longer term allows the company to act in distressed markets where others will be focused on meeting their covenants and protecting their liquidity.

⁶⁵ Interview with Sebastien Brochet, CFO BW Group on 14 November 2023.

EXHIBIT 2: Holding Company organisational structure.



Source: <https://bw-group.com/>

EXHIBIT 2: The individual affiliates and subsidiaries of the BW Group possess quite different arrays of inhouse competencies and skills, reflecting their respective industries but also their level of maturity. The parent company can provide some of these competencies if required but the “mature” affiliate operates entirely under its “own steam”.

The defining characteristic of the BW Group business model remains the competition for capital amongst its existing units and vis-a-vis potential new investment targets.

Whereas some of the key capabilities of BW Group 10-15 years ago were the ability to operate and charter vessels in several different shipping segment, it is now clearly the parent company in an active holding company structure. Its key competencies are capital allocation and investment discipline (guided by the 5 principles outlined above).

The relationship between parent and its investments is in the case of BW Group kept pragmatic. BW Group, the parent, sees itself primarily as a facilitator and an enabler. This could be in terms of access also to external capital, to certain skill sets and will also be about designing certain synergies into the investment portfolio and the companies with it. – Maximizing the synergies could be about access to crewing, IT and legal skills.

Companies of this size will often see their talent pipeline or ability to retain top talent as key characteristic and competitive advantage. Perhaps due to the pragmatism of the investing parent, the coordination amongst companies in the portfolio is best described as low intensity. The parent will organise regular meetings on a functional level: F. ex CFO’s of the relevant group companies visiting leading Japanese financiers together, or the CEO’s exchanging views on changing drivers in their respective businesses.

This reflects that there is a balance to be struck between central direction and local ownership, and as a company grows and develops this balance typically moves too.

Investment perspectives

Investment targets are obviously assessed on the five criteria outlined above but cultural fit is important too.

If the investment is outside shipping BW Group only invests “one adjacency at a time”, i.e., if investing in a new industry then the geographical location must be a well-known and well-functioning jurisdiction.

As mentioned above the BW group wants to add more than merely capital so it will be looking for investments where then BW name can make a difference (the “halo” effect in Brochet’s words) and where BW can assist in gaining access to markets, clients, or external capital.

The other parameters for assessing an investment would be the estimated internal rate of return (IRR) and the scalability of the business.

Finally, there is a limit to how many different platforms BW Group can provide oversight to. It is not merely about time; it is about managerial overstretch in terms of focus and deep insight in the different businesses.

Discussion

1. How many different business areas can management of BW Group oversee and develop without compromising on quality?
 2. Where do you see the synergies in the group as outlined in their investments above?
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BW Group. *Our Business*. BW. Retrieved July 4, 2024, from <https://bw-group.com/our-businesses/>

Euronext. *Euronext Live Market*. Retrieved November 16, 2023, from <https://live.euronext.com/en>

104 CASE STUDY 5: PACIFIC BASIN – FULL CONTROL OVER THE ENTIRE BUSINESS

By Peter Borup

Introduction

Pacific Basin was founded in Hong Kong in 1987 by Chris Buttery and Paul Overy. Actually, it was founded twice as it was sold in 1996 but Buttery retained the naming rights and re-established Pacific Basin Shipping Limited in 1998.

The Company has had a reputation for having one of the most competent boards in tramp shipping, reading like a list of Who's Who from the top Hong Kong companies, and with a very fragmented ownership, leaving significant influence with the chairman and the board.

In the 2000s, the company's focus on the smaller alpha markets where experience and hands-on operations can have a significant impact on the outcome of voyages, made for comparisons with Danish NORDEN. Where NORDEN built a very significant presence in Panamax as well, Pacific Basin expanded from its very strong position in Handysize into Supra/ Ultramax vessels, with a shorter lived albeit costly adventure into ro-ro and offshore supply vessels towards the end of the commodities boom.

Another significant difference to NORDEN's business model in the 2000s was a much larger number of overseas offices, reflecting a desire to be very close to its clients, and perhaps also a much more dispersed client base in the Handysize segment from which Pacific Basin was created (where NORDEN was more grounded in the Supra/Ultramax segment).

After the Global Financial Crisis, the company cleaned up and focused on Handysize and Supramax. At a time where most of its peers held out for the lowest possible prices for newbuilds, Pacific Basin chose to buy Japanese built secondhand vessels, hence increasing the company's owned fleet, and utilizing its strength in terms of a comprehensive inhouse technical department and its own seafarers.

Today Pacific Basin controls approximately 300 bulk carriers in the Handysize and Ultramax segments, and with a focus on the worldwide transport of three major types of commodities, roughly one third of each: Agricultural products, infrastructure related cargoes and minerals.

Some 120 ships are owned outright, 25-30 units are controlled through structured deals with purchase and period options and 150-160 vessels are controlled on shorter term charters.

Pacific Basin – according to CEO Martin Fruergaard, sees its business model as being about being close to its' clients, the operation and maintenance of its fleet, i.e. significant control of the quality the company offers its clients, and being a global logistics company with in-depth knowledge of what happens in the supply chain before and after the part where the cargo is on a Pacific Basin ship.

This implies a conscious choice of not operating ships in the larger sizes where the company feels it would too often compete with its own clients who often also controls ships in the Panamax and capesize segments.

The company's investment philosophy is to buy countercyclically, own the assets for life with a high focus on maintenance and quality of the assets and the safety of those who sail on them. – In recent years the company has had under 1 technical off hire day per ship per year.

Crew and officers in the Pacific Basin fleet are predominantly Chinese and Philippine with some 20 vessels manned by Indian crews, and with a relatively high number of cadets per ship – 2 cadets per owned ship is a clear investment in its crews. While lower data costs and new technology enables the company to monitor and improve operations onboard in real time, the application so far has been in safety and quality of operations as well as training of the seafarers. The priorities are:

1. Good seamanship
2. No accidents
3. Operate safely
4. Training of youngsters

Motivated seafarers stay longer, and high retention rates generally translate into better training and fewer accidents.

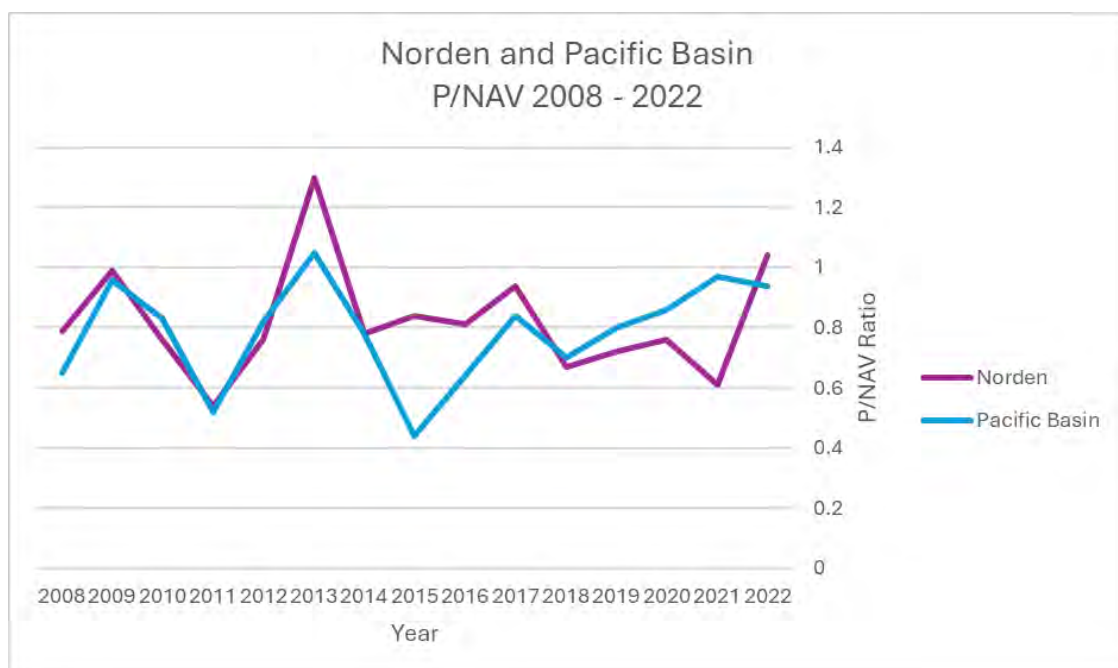
Whereas many of the company's peers have sworn allegiance to scalable and asset light business models to be able to generate profits in high and low markets alike, Pacific Basin believes its extensive control over costs provides strong advantages: The owned vessels are operated at daily running costs (before reservations for dry docking) at approximately USD 5,000 per day. IN a strong market its asset light peers will have to pay a market rate for a longer-term time charter for similar ships and will hence reap much lower earnings in these markets.

Stock market presence

Almost 45% of Pacific Basins 2023 shareholders are US based funds who are investing in a proxy for global industrial growth. The share is quite liquid and as already mentioned enjoying a fairly fragmented shareholder base without any dominant faction.

As per Exhibit 8.4 below NORDEN and Pacific Basin's Price to Net Asset Value (P/NAV) are strongly correlated. As many other shipping-related shares, the stock markets generally price them as destroyers of net asset value although they have both returned to parity in the heady markets of the pandemic and the strong bulk markets immediately after.

Exhibit 1: P/NAV Pacific Basin versus NORDEN



Source: Financial statements of D/S Norden and Pacific Basin

The stock market presence presents an obvious access to capital should it be required, but the transparency required by an exchange and the reporting and investment discipline that generally follows bestows an added credibility on the company and will give it an advantage with certain larger clients, particularly for longer term business.

The transparency also adds extra pressure to stay competitive and sharp throughout the organization – but also it times means that the company must reveal decisions that non-listed companies can keep to themselves. It also provides a pressure from shareholders to keep the capital working, and in a highly cyclical business such as tramp shipping, a key rule of thumb for survival is to always make sure you have the capital to survive a downturn – and to invest into such a downturn to secure the cheapest possible assets.

Discussion

1. Where should Pacific Basin go from here? Should they invest upstream or downstream from where it is at?
 2. Discuss Pacific Basin's use of technology – is it leaving money on the table by not using it more extensively to engage its crews in lowering fuel consumption and, hence reducing emissions?
 3. The initial listing on the Hong Kong Stock Exchange also offered China-inspired multiples. In view of geopolitical rivalries do you still think Hong Kong is the right listing for a global dry cargo owner?
-

By Peter Borup

Introduction

Based on an interview with a medium sized operator started in 2012, and who prefers to remain unnamed, but that we will refer to as Company IX in this case study.

The company was set up by a small group of friends who had worked for different European owners and operators for over 10 years, and who had found that their previous employers had become too bureaucratic and had generally forgotten to service their clients. Too many procedures and too much reporting and not enough time helping clients solve their freight needs best possible.

The aftermath of the Global Financial Crisis and the pretty brutal credit crunch that followed in the dry cargo markets as companies who controlled tonnage on long charter party chains, with some not so well know players in between themselves and head owners, and with a dramatic recalibration of spot market freights – and still some very juicy period time charter rates being paid throughout these charterparty chains, this all led to a focus on streamlining and counterparty risk assessments.

Company IX saw an opportunity in the market to set up a small operator servicing some of the minor charterers who could no longer get good freight support from the major players.

The company set up with a loan of USD 3 mill and USD 2 mill in equity and started trading servicing smaller clients in the Atlantic and US Gulf area. All business done on relatively short voyages and hence with manageable cash flow positions.

Exhibit 8.3 shows the annual activity and net result throughout the company’s trading history.

EXHIBIT 1: Company IX Historic activity (ship days) and result (USD)

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Activity (ship days)	2,000	3,500	7,000	12,000	13,500	14,000	14,500	18,000	18,000
Result (USD million)	(-0.5)	3.1	2.1	8.3	6.1	5.1	8.1	68	126

The company is focused on the supramax segment and only moved into Handysize in 2019, this segment now accounts for some 30% of the activity. A recent move into the MPP segment is perhaps less intuitive. MPP has historically not experienced the same levels of volatility as supramax bulk, but the increasing levels of standardisation in dry cargo in general and in the bigger sizes in particular has put operators’ margins under pressure. This is much less the case in the more specialised MPP market.

Company IX has maintained a strong focus on the geographic areas in which it started and only very tentatively expanded into other regions. A similar cautious approach has been taken with regards to the composition of the fleet where longer term time charters have only been taken on the accounts more recently.

Financial results in recent years have allowed the company to tap into the market for structured deals in Japan, including purchase and period options in the segments of the market where they have their main activities.

The company has kept the organisation relatively slim but is also aware that the scalability required to remain successful also means that it must invest in the necessary resources in the back office: Accountants, laytime specialists and a strong operations team. Most North European competitors will have overhead costs at USD 550-700 per ship day. Company IX have so far managed to keep its overhead expenses at USD 400 per ship day which suggests a strong team working overtime!

In terms of organisation and in footballing terms the company sees itself more as Brentford than some of its flashier rivals. A team that plays to its own strengths and achieves strong results by being very deliberate about this.

The future

The company sees its traditional markets becoming standardized partly driven by the strong derivatives markets which now accounts for a turnover about twice the size of the physical market. – Its main players are three equally large types: shipping companies, traders and hedge funds. Hence there is significant capital behind the standardisation trend.

This will make the operator business much harder and will reduce margins.

Changing weather systems also offer new challenges. There are two trends: Much better weather forecasting and technologies that allow the operator to monitor vessels in real time and with access to increasingly accurate weather forecasts also the ability to deviate or slow down to avoid such adverse weather. And, at the same time, much more severe weather events that can cause real challenges when vessels and ports are affected by them.

Increasing regulations – most of it to achieve better environmental outcomes but not always driven by deep industry understanding. Company IX sees no complications in the EU's Emissions Trading System (ETS) which is transparent and reasonably simple to manage.

EEDI on the other hand is less straightforward, particularly for the dry cargo segments where long ballast trips or extended port stays, which is part and parcel of the dry cargo markets and often very hard to predict the length of, can fundamentally impact your EEDI and therefore also the fundamental value of your ship. If sound business decisions and regulations are not in sync it will lead to many owners making poor decisions or to seek to play the formulas behind the EEDI.

And you still have the Black Swan events that makes it very difficult to predict freight levels in bulk. Even if you have a clear picture of the supply of tonnage in a given area, and an inside track on the demand for same, you cannot predict the closure of the Suez Canal or the severe restrictions on the passage of the Panama Canal in 2023 due to significantly reduced precipitation in the area and hence a shortage of the water needed to operate the locks system in Panama. This in turn extends many ocean voyages by 15-20% and hence can have a quiet strong effect on the utilisation of the fleet and thereby on freight levels.

Discussion:

1. Will volatility in the dry cargo markets remain a defining feature?
 2. What will be the impact of standardisation of trades, charter party terms, on the livelihoods of operators?
 3. What would be your response as an operator to these developments? Seek niche markets just like Company IX and others? Or go with the math and embrace the standardisation?
-

By Peter Borup

Introduction

In 2010 TORM was active in dry cargo which had contributed more to the company's profits in the 2000 that had the product carrier segments for which it was much better known.

TORM was a pool operator for LR2 vessels and had a fairly strong presence within Handysize and MR product tankers. But the company was severely in debt and had negative equity.

In the coming years the company would have to focus, and it only really had the resources to be in one segment: Product tankers. All strategy is about choice, and the discipline to say "no" to otherwise tempting other business segments or ideas. Focus was the name of the game for Torm.

Management concluded that the key parameter to succeed on was control over all parts of the value chain. Contrary to dry cargo where a ship is pretty much a ship, in product tank it is critical to your clients that you meet their quality standards, and that you pass all vetting by the oil majors with flying colors. Also, your 20 top clients typically account for 80% of your turnover, which is also a marked difference from the much more fragmented dry cargo market.

Optionality in dry is mostly about purchase or period options or occasionally about giving away freight volume options to your clients. For TORM it was about having the best possible vetting record with all its major clients. Not to get a higher freight but to have the option to choose your cargo and hence your discharge port, and thereby also controlling which market basin your fleet will operate in. In 2010 Torm's acceptance rate was at 88% - in 2023 it's at 99% for its fleet of now 90 product carriers. The company no longer operates any pools - observing that pools primarily hold value if your own fleet operates sub-scale.

This all also requires extensive control over the maintenance and operation of all aspects on shore and at sea.

Crew involvement

Contrary to most of the companies already described in this book who have outsourced many parts of their value chains to de-risk or just to focus on the one side of the business that they deem they master best, Torm's focus has been on one segment but then controlling the entire value chain.

This has included employing own officers and crews for their entire fleet, and in contrast to other shipowners who also employ their own crews, Torm has gone a step further persistently aligning the interests and incentives of sea and shore-based functions. The company does not merely hold officers' seminars in the home locations of its crew, it holds annual officers' seminars in its Copenhagen headquarters, in extending bonus programs to also include seafarers, and by providing additional incentive to crews whose vessels are outperforming the rest of the fleet on key parameters amongst others relating to fuel consumption and various emissions. – These incentive programs are discretionary, yet performance related.

The availability of cheaper data transmission at sea has further streamlined the collection of data to establish the performance of each vessel and crew and provide real-time feedback, and to establish best in class benchmarking. This includes celebrating the vessels performing best on a monthly best and identifying the vessels with "the highest development potential".

The thrust and knowledge sharing within the crews, amongst crews on different vessels and between seafarers and onshore crews is further supported by the ONE TORM app that is a platform to check performance, share insights as to what has worked and what has not, and as a conventional social media keeping the community together.

Maintenance

The extreme focus on all aspects of the operation and maintenance also means that TORM's assets are in operation longer and regularly achieves super vetting results for vessels even at the age of 18-19 years. Vetting departments at oil majors has decision dominance over chartering departments and can approve vessels also if they are older than the recommended maximum age of 15 years.

This allows Torm to trade the vessels longer and thereby also to hold the option to sell or not sell for 30-40% longer than their peers. And with the value of an option dependent on the price volatility of the underlying asset, and also the length for which you can decide to call the option, this has much more value than just the extra years of trading. It allows Torm to wait and sell into a higher market.

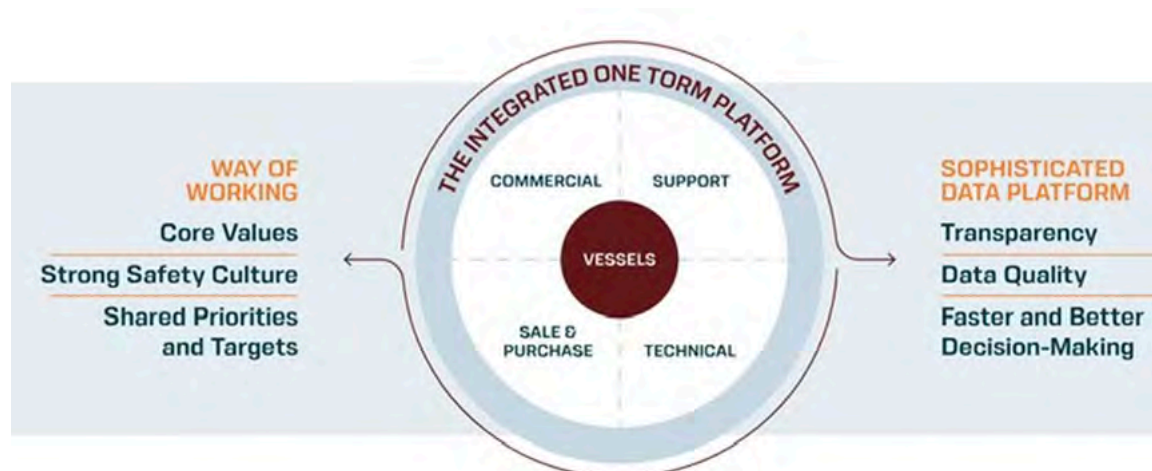
As another example, decisions to dry dock are based on an assessment of when it is cheapest on an all-in basis: I.e. cost of actual docking, the value of time lost in the market as well as estimated earnings loss. This obviously means that in low freight markets it may well make sense to dock ahead of schedule

TORM's focus on aligning the interests and incentives of crews and vessel operation also insists on getting bad news up-front, enabling the commercial departments to allocate vessels best possible. A required repair may jeopardize the approval of the ship under one vetting program but not under others and hence the vessels can be employed best possible. Similarly, poor freight markets can be utilized for repairs and maintenance.

This can only be achieved by building trust between the crews and the various office functions. TORM seeks to build and strengthen strong collaboration through officers' seminars at headquarters and at their crewing offices with participation of officers and their families but also of all office functions, i.e. technical, operations and chartering.

Similar to other shipowners TORM seeks to optimize the return on invested capital (ROIC) and is focused on achieving higher daily time charter equivalents – very much by optimizing geographical positioning (see Exhibit 3), by keeping daily running costs (DRC) at or below that of their peers and being able to extend the useful life times of their fleet they furthermore lower capital expenditure – hence increasing the company's ROIC.

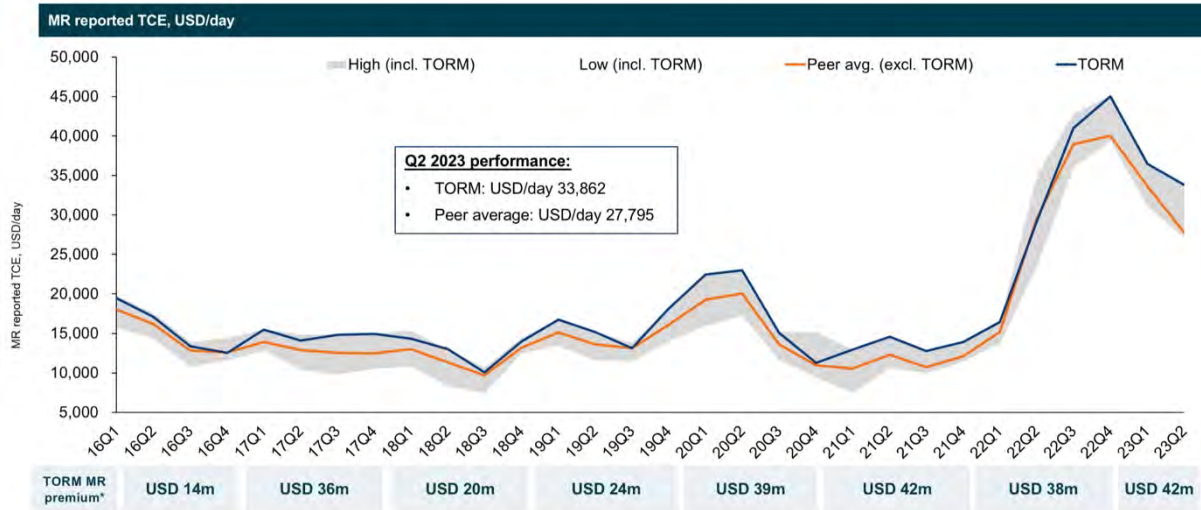
Exhibit 1: The One TORM platform (Source: TORM Presentation April 2024)



Source: TORM Annual Report (2024)

The One TORM approach seeks to align the interests of onshore staff with those of the ships' crews and thereby optimizing decisions.

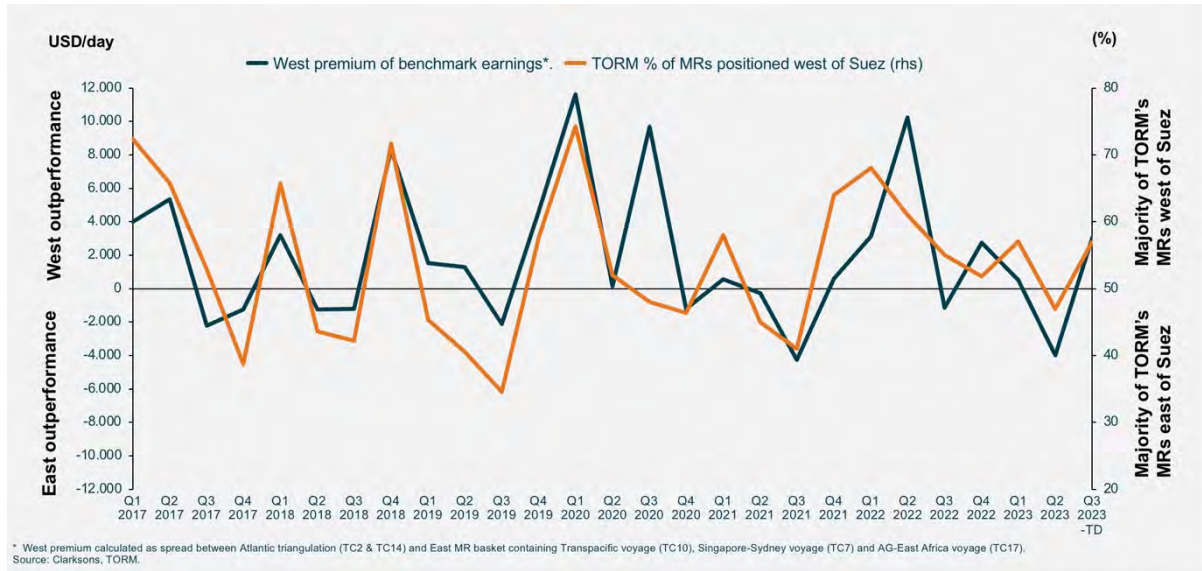
Exhibit 2: TORM has outperformed their competitors in 27 out of 30 quarters (Source: TORM 2Q2023 MR Performance)



Note: Peer group is based on Ardmore, d'Amico (composite of LR1, MR and Handy), Frontline 1212, Hafnia Tankers, NORDEN, Maersk Tankers, Scorpio and International Seaways. For Q2 2023, the peer group only consists of Scorpio, International Seaways and Ardmore
 * TORM's premium calculation is based on the individual quarters with those vessels in TORM's MR fleet earning TORM's TCE rate compared to the peer average.

Source: TORM (2023)

Exhibit 3: TORM's commercial capabilities are focused on geographical positioning of fleet (Source TORM 2Q2023 Presentation)



* West premium calculated as spread between Atlantic triangulation (TC2 & TC14) and East MR basket containing Transpacific voyage (TC10), Singapore-Sydney voyage (TC7) and AG-East Africa voyage (TC17). Source: Clarksons, TORM.

Q2 2023 Results Roadshow Presentation

Source: TORM (2023)

Torm has been ready to participate in the consolidation in the product tanker industry for some time, most recently by acquiring 8 tankers from Jebsen's SKS, in a deal including debt and shares for the ships. The deal matches Torm's objective to grow its fleet while believing it will also generate more liquidity to its share.

But Torm has also been investing in companies providing solutions that helps it improve its environmental record, by investing in joint ventures or taking larger shares in suppliers that can develop and produce technology that improves the environmental footprint of the Torm fleet.

This obviously adds to the control that the company already exercises over its fleet.

Environment

Other ship owning companies have pursued high profile campaigns contracting ships for possible alternative fuels and have tried to lead by placing big bets.

Torm has chosen to use their control over their (older) ships to make gradual and incremental improvements to their energy use, reducing emissions one step at a time.

The reductions in CO2 emissions intensity required by the IMO: 40% from 2008 levels by 2030 will have been reached by Torm already in 2025.

Some of this has been achieved by some of the technology partnerships mentioned above.

Conclusion

The ONE TORM business model is unusual in tramp shipping in it covering the whole value chain, by exerting control and transparency over all aspects of the company's operations and in meticulously aligning interests and incentives of all parts of the company, including the seafarers. On current evidence this business model and its associated corporate culture has been well received by the stock market trading at an industry high P/NAV⁶⁶, and outperforming its peers on the average time charter equivalents of their MR fleets (see exhibit 1.2 above).

⁶⁶ Price / Net Asset Value

References

TORM (2023, August 17). *Q2 2023 Results Teleconference and webcast*. Retrieved July 4, 2024, from https://www.torm.com/files/doc_financials/2023/q2/Q2-23-presentation.pdf

TORM (2023, August 17). *Appendix to Conference Call Presentation Q2 2023*. Retrieved July 4, 2024, from https://www.torm.com/files/doc_financials/2023/q2/Q2-2023-Appendix.pdf

TORM (2024). *Annual Report 2023*. Retrieved July 4, 2024, from https://www.torm.com/files/doc_financials/2023/ar/2653804.pdf

PODCASTS



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