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MASTER'S THESIS

How do strategic decisions regarding fleet structure and fleet innovation in the shipping industry create value and lead to sustainable competitive advantage?

"A comparative study of Denmark, Greece and Norway"

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Abstract

There is no other industry that can play such an important dual and vital role in the global economy, as shipping does. Socioeconomic and political events affect the trading activity and the way it takes place. Simultaneously, advancements in shipping have brought changes in the world as we know it and continue to alter and formulate it, as the history of ships goes back many centuries.

Historically shipping has been characterized as one of the most competitive industries internationally and throughout the years rise and fall of great shipping nations has been observed. The scope of this paper is to identify what has been the key to success for the ones that have survived until now. For this purpose we examined, from after the Second World War onwards, three leading shipping nations; namely Denmark, Greece and Norway. All of them have leading positions in some of the sectors they operate.

Our investigation was intended to be as thorough as possible targeting to analyze all the components many famous theories claim to be the basis of the creation and maintenance of competitive advantage. We took into consideration the international environment and the threats or opportunities that it poses, the national context of each country and the specific resources and capabilities of the firms in the micro level. Through case studies and analysis of current and historic statistics regarding fleet innovation and development we attempted to diagnose the major paths pursued by three leading shipping nations.

What can be argued eventually is that the success and business strategies are not simply a function of the individual company's past history and investments. Success is also determined by the conditions of resource supply within a firm's national and international environment. The competitive advantage derives from a favourable combination of historically evolved capabilities, natural resources, institutional incentives that are country-specific, present opportunities and the ability to seize them.

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1 INTRODUCTION

"The fundamental basis of above average performance in the long run is sustainable competitive advantage". This is how Michael Porter describes the nature of company success in a competitive market. Competitive advantage has become a major area within strategic management ever since Porter released *The Competitive Advantage: Creating and Sustaining Superior Performance* in 1985 and scholars are continuing to analyze this topic. Our aim is to examine the resources and capabilities existing in the internal environment of the firms and are the source of their strengths and weaknesses, in the international context taking of course into consideration the national context with which the macro is interacting.

The scope of this paper is to investigate and analyze organizational fleet structure and fleet innovation strategies that create value, and the competencies of the individual players that can lead to sustainable competitive advantage in the shipping industry. In an increasingly dynamic world, innovation has become an important factor to sustaining profitability and competitive advantage in the market and therefore receives constant attention among scholars and company owners. Innovation leads to changes in the market, industry as well as the company itself. This will lead to changes in the company structure to handle the new challenges that come hand in hand with innovation. Thus, the company's current competitive advantages may no longer be favorable (Barney, 1991). Therefore, the paper aims to find generalizing strategic decisions for the shipping industry, which can create sustainable competitive advantage for companies in constant change.

1.1 TOPIC DELIMITATION

We have considered four factors in order to decide which is the most suitable industry that reflects the values we need in order to serve the main objective of the paper. These factors are 1) a global industry, 2) leading countries, 3) demand/supply of the industry, 4) industry specific characteristics.

1) Due to technological developments, shifts in the customer demand as well as transformations of the institutional and political frameworks, shipping became a 'footloose' industry. There is no longer clear definition of the concept of 'Danish', 'Greek' or 'Norwegian' shipping. The industry is not tied to a particular country any more, since everything, including vessels, capital and labor, can

be acquired in international markets taking into consideration the changing economic conditions, such as cheap labor or favorable tax treatment. The shipping is globalized and strongly linked to the cyclical movements of economic activity and world trade. Whether the companies decide to employ a strategy for adaptive or creative response to cope with the changing environment, innovation will always be among the 'tools' they can use. Therefore, the shipping industry is an appropriate industry to investigate how innovation is used in global markets to achieve competitive advantage.

2) As the industry is globalized it has prominent leading countries, which makes it easy to find suitable countries for our paper. All of the chosen countries are leading within an area of the industry and have different innovation strategies and competitive advantages. In Porter's book "The competitive advantage of nations" it is explained that to create competitive advantage it is important to understand how firms operate in their national market. Therefore, the choice of leading countries will have an effect on our results. To explore different strategies, different challenges and create a thorough analysis we needed to find leading countries, which have different approaches to competitive advantage as well as operating in different sectors within the industry. There are several leading countries in the shipping industry, but our choice narrowed it down to Denmark, Greece and Norway. Greece has always had a major role in the industry, while Denmark and Norway have grown to become leading countries in the last century. They operate in different sectors and are subject to different challenges and changes, which creates different fleet innovations and structures. These are reflected in the national dominance each of the countries has in the different sectors, Greece with bulk shipping, Norway in tanker and specialized ships and Denmark in the container ship sector.

3) The demand-supply conditions of the industry will affect the fluctuations of the industry and have to be monitored at all times. Major fluctuations in the demand-supply curve need observation and analysis to be able to cope with the situation. Such dramatic changes can often be a factor for finding innovational strategies, which could be considered a competitive advantage. The tanker sector, in which Norwegian companies dominate, is highly dependent on oil production. Changes in oil production demand and supply tend to have major fluctuations, a factor that influences innovation and therefore a compatible industry to explore.

4) The shipping industry is characterized by cyclical investment decisions that are unlike many other industries. This means that the industry is very dependent on world trade and economic activity (Tenold, Iversen, & Lange, 2012). In such an industry it is likely that the companies must be innovative to maximize their value in all periods during the year.

Combining our existing knowledge about these countries to analyze their ability to create sustainable competitive advantage has led us to the following research question:

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- What are the trends in the industry right now regarding fleet innovation and structure?
- How have the countries and the companies handled these trends previously? What kind of strategies have they developed?
- Greece usually handles everything by cost leadership and networking, Norway and Denmark with differentiation, does the study suggest that this will continue in the future for sustaining competitive advantage?
- What kind of strategies have/will they develop for handling the trends in the future?
- Are these strategies country, company or resource specific?
- How does their strategy for innovation lead to their competitive advantage or are their resources the reasons for their competitive advantage?

1.2 OUTLINE

In order to analyze the research question, the first part of the paper will explain the applicable theory that will be used to investigate the strategies for creating value and lead to competitive advantage. Additionally, we will explore existing research done in this area before commencing our analysis. The second part of the paper, starting at chapter 6, will analyze the international (macroeconomic) environment. The 7th chapter includes the analyses of each country in the national and microeconomic level. In the following chapters we implement the findings of the interviews

conducted and the connection to the industry' strategic decisions. In the end we will make our concluding remarks and evaluate our results.

1.3 LIMITATIONS

Firstly, we have narrowed down the timeline of historical background information and statistical numbers. As we are doing a comparative analysis it is logical to look at a timeframe for the components we are studying. The timeframe we have researched stretches from after the Second World War until today. This gives us a reasonable period of time to be able to look at transitions and reactions to the macroeconomic environment. Additionally, this period has been researched thoroughly by academics.

Secondly, we have limited the number of factors we study. An industry consists of an almost uncountable numbers of factors, thus making it impossible to cover all. We have narrowed it down to those endogenous and exogenous factors that we found to most typical for the industries in question.

Thirdly, it is important to highlight that establishing statistics regarding shipping, which include determining ownership nationality not linked to the flag, requires subjective judgment; the identification of true ownership is difficult.

2 METHODOLOGY

In this chapter we are going to outline the methods that will be employed in the paper in order to generate reliable and valid findings.

2.1 RESEARCH PHILOSOPHY

Method is a tool to give a description of the so-called reality. The philosophy relates to the development of knowledge and the nature of that knowledge (Saunders, Saunders, Lewis, & Thornhill, 2011). Our choice of philosophy is a result of how we view the world and forces us to make certain assumptions. The study of how the reality looks is labeled ontology from the Greek meaning of "how things really are" (Jacobsen, 2005). Epistemology explains to which degree we have the ability to obtain knowledge about the reality. Our paper will be based on a social constructionism, due to the importance of interactions through several parties in this paper. As a result our methods will mainly consist of comprehensive qualitative research to base our analysis and interpretation of the data we collect.

2.2 RESEARCH APPROACH

We distinguish between two research approaches, namely qualitative and quantitative research, both with its positive and negative effects on the research result. Quantitative is the research approach associated with the use of numbers and statistics in order to prove results, while qualitative research is the use of words and analytical interpretations of other people's understanding of the object in question. This paper will mainly use qualitative research as a method to analyze our question, by conducting semi-structured interviews and studying already available documents. This approach naturally coincides with an inductive research view and interprets findings openly based on theory building (Jacobsen, 2005).

2.3 RESEARCH STRATEGY

The figure below outlines the research strategy for this paper:

Figure 1- The research strategy

Below we will have a small discussion of each stage of the process explaining all the methods used. This is done to gain a deeper understanding of our choice of methods and how it affects the results of the paper.

2.3.1 Development of research question

During our process of developing the research question we used recent published articles within management and strategy to lead us to our final questions. Our question is based on an intention to use specific countries that we had some knowledge and understanding of (our countries of origin and country of residence). The fact that this approach was used during the early stages of the paper makes us more aware that we have to be critical to the result of the paper, seeing as our existing knowledge might cloud our interpretation and analysis. With this in mind we set out to find the similarities of the countries and how they can learn from each other in order to obtain sustainable competitive advantage based on their available capabilities.

2.3.2 Theory and literature review

The literature review is based on numerous articles and books covering the process of innovation and fleet strategies in the shipping industry in the post war period for a pool of countries that included our sample. This was done in order to identify a common pattern in strategies. The theoretical background section is based on the same method, using the already existing theories and comparing them. This was done in order to see the connection between all the theories and how we have exploited them in the paper. Some of the journals most used throughout the paper are *the International Journal of Maritime History*, *Strategic Management journal* and *Maritime Policy and Management.*

2.3.3 Data collection

The main collection of data is second hand information obtained from published articles and books. At least one other person and normally several people have already interpreted the data. They understood the data in a certain way and processed it to fit to their own research. It is important to be aware that this collection method can create biases in our interpretation, and it is important to remember that the data is already been customized to that specific research topic (Jacobsen, 2005).

Additionally, we will conduct three semi-structured interviews with informants in the industry in their respective countries. The interview subjects are randomly picked and work in different parts of the industry creating a broad and detailed perspective of the industry in the different countries. The interview is conducted with a semi-structured design. This means that the questions are fairly open, but with guidance throughout the interview and during the questions. This allows the subject to freely share knowledge even on topics the interviewer had not considered. We have to be aware that the way we interview, either by phone, Skype or another method, will influence the interview subject.

Lastly we will conduct case studies of companies in the industry based solely on secondary data. This information will come directly from the company, through annual reports, which are revised by the company before being published. It is important to be aware that we do not receive an objective opinion through this data collection and that we have to be critical to this type of information when basing our analysis on this.

2.3.4 Interpretation and analysis

As we have adopted an inductive reasoning approach, our interpretation takes a broad perspective and limits the analysis by going from empiric to theory and as such finding a theory that is applicable for our findings. We use existing theory, the literature review and the data we have collected to support our findings. Our conclusion chapter delivers a summary of the main findings and uses the insight gained from the analysis to draw conclusion and provide advice for further endurance in the industry, as well as shed light upon further research opportunities.

2.4 GENERALIZATION

As our method is a combination of case studies, secondary data and interviews with the use of many variables with a small number of units, the possibility of generalization is low (Jacobsen, 2005).

The intensive research design is often detailed which gives room for a theoretical generalization, which means that our findings might support the research question in the chosen cases, but our ability to say something about the likelihood of other contexts are limited. However, it can provide useful insight for further research and can be considered as the start of generalizing the research question.

3 THEORY

This chapter contains an expansive overview of the theoretical tools of strategic management used in the analysis and the discussion of the material. There is a wide variety of frameworks and models that can be used as guidelines to understand the environment surrounding a firm, the firm specific characteristics and advantages as well as the concepts behind the strategies employed.

The purpose of this part is to present the theories describing the national competitiveness at the country level, the firm specific advantages of the multinational enterprises (MNEs) and the strategies utilized for growth, competitiveness and innovation, and the most important of all, value creation. The theories will help us examine how the country factors interact with MNE activity as a channel for their absorption at the micro-level in the home country and consequent exploitation and dispersal internationally.

According to Alan M. Rugman, MNEs are companies that are headquartered in one country but have operations in one or more other countries. The MNE has affiliated firms that are linked to it by ties of common ownership and have to react to large number of environmental forces, including customers, suppliers, competitors, financial institutions and government. They have a common pool of resources, such as patents, trademarks, information and human resources, and the strategic vision that the MNE and the affiliates follow is held in common.

Further, basic concepts and the review of the theories follow. The popularity of the theories and the limited scope of this paper render a very extensive presentation unnecessary. We will instead focus on how these theories interact in order to result in a framework that can support our research and draw relevant conclusions.

3.1 THE COUNTRY SPECIFIC ADVANTAGES- FIRM SPECIFIC ADVANTAGES MATRIX: A FRAMEWORK FOR GLOBAL STRATEGIES

With the term firm-specific advantages (FSAs) we refer to the unique capabilities that a company owns exclusively. They are the factors that determine the competitive advantage of an organization and they can be built on product or process technology, marketing, networking or distributional skills. On the other hand, the country-specific advantages (CSAs) are country factors that are unique to an international business course. The CSAs can be based on natural resource

endowments, such as mineral, energy, forests etc., or on labor force and associated cultural factors. In order to be positioned in a unique strategic space the MNEs build their management strategies on the interactions of CSAs and FSAs.

According to (Porter, 1990) the CSAs establish the basis of the global platform from which the multinational company derives a home-base 'diamond' advantage in global competition. Such advantages include national production functions, low political risk, cultural values and government controls. Government regulation, the country's competitive environment as well as tariff and non-tariff barriers to trade influence CSAs. Based on these CSAs, a company plans its strategy and makes decisions about the potentially most efficient arrangement and coordination between the segments of its value chain (operations, marketing, R&D and logistics). The skill in making such decisions regarding optimization illustrates a strong managerial FSA. The FSAs the firm owns are based ultimately on its internalization of an asset, such as managerial and marketing capabilities, financial skills, risk diversification, product differentiation ability, production knowledge, superior distributional skills, trademarks or brand names, access to raw materials, economies of scale, access to capital, intangible assets such as proprietary technology, patents or ability to achieve vertical and horizontal integration.

Taking the above into consideration a matrix that shows the interaction between them would be a very useful tool for reaching executive decisions. The competitive advantage matrix (Rugman, Collinson, & Hodgetts, 2006) helps to identify the relative strengths and weaknesses of the FSAs and CSAs possess. For instance, a strong FSA combined with the identical CSA can potentially lead to competitive advantage over the firm's rivals.

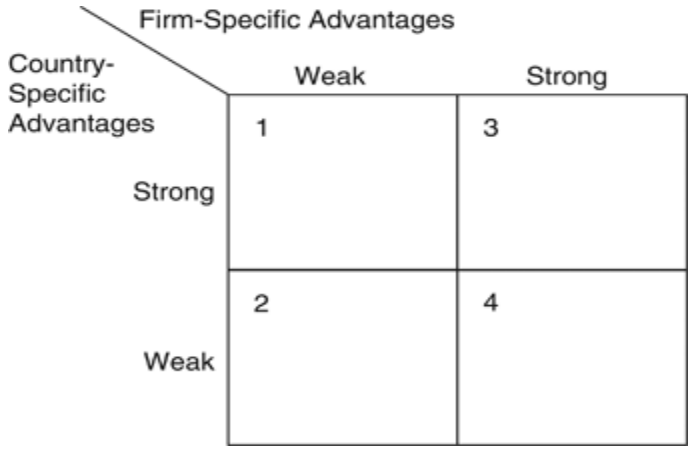

Figure 2- The CSA-FSA matrix

Source: Adapted from Chapter 8 in Rugman, Inside the Multinationals, New York: Columbia University Press, 1981; 25th anniversary edition, Basingstoke, UK and New York: Palgrave Macmillan, 2006

Here the importance of the firm factors is depicted on the horizontal axis ranging from a weak to a strong impact. Conversely, the significance of country factors is illustrated on the vertical axis, ranging also from weak to strong. Quadrants 1,2 and 3 correspond broadly to the three generic strategies: cost leadership, differentiation and focus. These three strategies will be further discussed later in the paper.

Firms in the 1st quadrant are usually resource-based companies with global orientation and likely already in their maturity stage. Given their late stage in the product lifecycle, CSAs of location and energy costs constitute the main sources of a company's competitive advantage, as the FSAs from intangible skills are less valuable any more. Quadrant 2 firms display inefficient companies with no focus on a specific strategy or any inherent CSAs or FSAs. They are generally domestically based small or medium-sized companies with little or no global exposure. Given the strength that companies at quadrant 3 can derive from both their FSAs and CSAs, they are capable of following any of the generic strategies. Quadrant 4 firms are commonly following a differentiation strategy and they have FSAs in marketing and customization. The FSAs prevail so in world markets the home-country advantages have no long-term importance. For this reason, quadrant 4 companies usually follow low-cost and price competition strategies.

It is also likely that according to a company's strategy the CSAs are not so relevant and therefore do not affect the firm much. Although all quadrants 1, 3 and 4 constitute credible strategic positions for

some firms there is an asymmetry between 4 and 1. A strategic choice for position 4 can be stable for some companies as soon as they have developed strong FSAs and thus they are not reliant on home-market or host nation CSAs. On the other hand, a company in quadrant 1 should always try to improve potential FSAs in product innovation, marketing or increase value via vertical integration, so it can move to quadrant 3. This asymmetry is explained by the fact that CSAs are mainly exogenous to a firm and vulnerable to government protection while FSAs are not.

One thing that should be taken into consideration is that if a company has a conglomerate structure it would be more useful for the analysis to situate each product line or unit separately. The reason is that for every division a firm can employ a different generic strategy.

3.2 DOES A CAPABILITY CREATE THE STRATEGY OR DOES THE STRATEGY DETERMINE THE CAPABILITIES?

There is no doubt that capabilities shape an important role in how a firm is organized, further development and future prospects in terms of strategy. The same goes for market competition, thus a number of researchers have discussed the two factors and the impact on firm's actions and outcome (Henderson & Mitchell, 1997).

3.2.1 Porter's sustainable competitive advantage versus resource based view

The classical strategy view is that capabilities shape competition is often used as the base framework for exploring strategy research questions. This is reflected in Porters framework for competitive advantage and porters five forces. On the other side we have the rather more interesting perspective that capabilities give rise to the strategy, this is explored in the resource based view framework. The two unique, but still similar perspectives on strategy will shape different inputs to a research question. The questions boils down to whether we view the strategy chosen as a result of several factors impacting or the firm's ability to choose its own strategy. This question is of course not easily answered due to the fact that the world is constantly changing and the limitations of strategy frameworks ability to investigate interactions in a changing environment. Whereas Porter views strategy as being primarily industry driven, the resource-based perspective posits that the essence of strategy is or should be defined by the firm' s unique resources and capabilities (Spanos

& Lioukas, 2001). In order to be able to answer our research question we need to find the framework that allows us to interpret interactions between several dimensions.

As already mentioned Porter view strategy to be industry driven, such suggesting that the firms strategy relay heavily on market competition and the ability to change thereafter. This has resulted in frameworks such as PESTEL, which view the macro perspective on a firms industry, and the five forces, explaining the factors that create market competition. However, most research would agree that endogenous factors would be of equal importance when exploring the firms' ability to survive, seeing as it in fact the company that shall survive not the industry. Porter also reflects upon these factors, such creating the competitive advantage theory, which is commonly associated with the expression sustainable competitive advantage. Competitive advantage can be caused either by internal or external sources. Examples of external sources can be change in prices or change in the demand and supply relationship, while company structure or innovative capabilities are examples of internal changes. Divergent effects on the companies can be caused due to the external sources activity because of the different capabilities and strategic position each company has. Internal sources to competitive advantage are depended on innovational thinking.

The five forces framework focuses on the industry perspective, while the competitive advantage strategy theory has as a focal point the internal interactions and decisions of a firm. Thus making these two frameworks complementary, which will be beneficial for a holistic industry analysis. Porter (1979) highlights how the identification of the interactions of these forces reveals and explains the critical strengths and weaknesses of the company. Resource based view elaborate on how each capability possessed by the company should be of value to it. The theory anchors its belief that the firm aspect of the strategy and capabilities are those who give rise to the firms' sustainable performance. Resource heterogeneity is the most basic condition of resource-based theory and it assumes at least some resource bundles and capabilities underlying production are heterogeneous across firms (Barney, 1991).

The framework consists of two dimensions, relative strength of the resource and strategic impact on the firm. This will be a useful tool in our analysis of the resources available in the industry and the firms. Currently scholars tend to investigate the effect of firm factors on performance variability

more than the industry effect. This research has also shown that firm specific factors tend to be more important than the industry ones (Galbreath & Galvin, 2008; Hoopes, 2003).

The interaction between the different aspects of a firm is however much more interesting in term of interpreting how to create value creation and sustainable advantage. The interaction of internal resources, strategy and the competitive environment in which the firm competes will create a framework that could lead us to discover what creates success in order to achieve high firm performance. A complementary feature of the two different views is how they explain firm performance (Spanos & Lioukas, 2001), which is an important interaction between the theories that can be exploited. The cost of acquiring strategic resources would equal their going economic value in use for implementing the strategy such not gaining any advantage, therefore is important that every resource in the firm is valuable, rare and non-imitable and non-substitutable in order to generate a sustainable strategy. Most scholars argue that these characteristics are mainly found in intangible assets (Barney, 1991; Galbreath & Galvin, 2008; Galbreath, 2005). Other scholars (Andersen & Kheam, 1998; Foss, 1997) though, suggest that broadening the scope of resources beyond just those that are intangible may be empirically beneficial to RBV research. Galbreath (2005) suggests that tangible assets may still have impact on the performance of firms, by creating barriers for competitors to duplicate them. This common characteristics of the to views show the importance of the resources in a firm to survive in any given industry. The interaction between capabilities and industry is not to forsake when talking about competitive sustainable advantage. One common shared belief amongst the two views is that an attractive strategic position is crucial in order to gain above normal returns (Spanos & Lioukas, 2001).

On the other hand Lippman & Rumelt (1982) also suggested that a firm can gain sustainable competitive advantage because it is not aware of which resources create it, making it impossible for competitors to imitate the resource. Nevertheless, the firm should have a fundamental understanding of its resources, both strengths and weaknesses, to be able to exploit them through a consistent strategy. It is important to remember that it is the interaction of all the resources that creates competitive advantage (Grant, 2010). Thus, the importance of mapping all the firm's existing resources is emphasized in order to figure out the source of sustainable competitive advantage and value creation.

When discussing the strategic frameworks we often talk about firm performance. Sustainable competitive advantage is an expression, which is hard to measure, and such scholars have to find an output that relates to the phenomenon. This output is firm performance or value creation. A firm is established to gain maximal profit, and such implying that firm performance is the best result in evaluating sustainable competitive advantage in a firm. In order to succeed in a long-term perspective with the strategy to gain above-average performance it has to be sustainable. The competitive advantage is defined sustainable if the company is able to prevent competitive actions from other companies in the industry to imitate the strategy. Therefore we also see the need to shorty explain this interaction.

There are two main approaches to how a company can achieve a higher rate of return than its competitors and enable competitive advantage: cost leadership or differentiation. With cost leadership a firm can provide a similar product or service to a competitive price, while differentiated firm provides a unique product or service that customers are willing to pay a price premium to get a hold of. Porter claims that these are the only two options that one can create a competitive advantage in your industry. However by combining them to the competitive scope of the company he created three different generic strategies: cost leadership, differentiation and focus. All of these strategies present a fundamentally different path to achieve competitive advantage. They therefore procure companies with a choice of how to create competitive advantage.

Cost leadership naturally explains the ability of the company to reduce its cost at all levels and in all processes of the value chain. According to Porter there are cost drivers that are inherent to each industry and to each firm's overall strategy. The company's ability to exploit the cost drivers will affect its capability to succeed with every employed strategy. The identified cost drivers are economies of scales, economies of learning, product techniques, product design, input cost, capacity utilization and residual efficiency.

Differentiation occurs when a company is able to create a unique product or service that buyers in the industry are willing to pay a price premium to acquire. There are several ways of pursuing a differentiation strategy and the choice of a specific approach depends on the existing possibilities in the industry. However, it is important to remember that there is not a point in being different just for the sake of being different. Companies that seek this strategy, must therefore strive to cut cost in the

areas of the company that are not unique. There are many sources of uniqueness, such as product features, technology embodied in design and manufacture, quality and skill and experience of employees.

When a company chooses to narrow its scope within the industry and only focus on a specific segment it is identified as a *focus* strategy. This strategy aims to optimize the characteristics of the firm to meet the segment needs. There are two alternative paths of *focus*, cost focus and differentiation focus. The *Cost Focus* alternative centers on cost advantage in the segment that is targeted, while a *Differentiation Focus* seeks to be innovative and differentiate itself in the chosen segment. The scope of both strategies is the achievement of competitive advantage via distinction from the other players in the market segments.

Ingram and Baum (1997) discovered two interactive influences on business performance. The first being an interaction of firm level factors, and the second is an interaction of organizational capabilities and environmental change. The first argument arises from a small range of capabilities (more diversified and specified) will gain more value and face harder constrains when the industry is changing. On the other side the more general set of capabilities (economies of scale) will handle the change in a better way. This show how the two factors industry and resources interact and how the competitive advantage strategy can be complementary to RBV in the fact that these also are descriptions of cost leadership and differentiations strategies. Such resulting in the above mentioned generic strategies.

The above discussion also makes us questions whether or not the resources has equal value. Is there a likelihood that some type of capabilities would be more suitable for changes in industry or does it depend on the firms' possibility to exploit them. According to Spanos & Lioukas (2001) firms' that depend on organizational capabilities are less likely to adapt to major changes in an industry environment, than firms' whit individuals as their main capabilities. This suggests that this scholar argue that industry is a result of capabilities rather than Porters statement that industry, or competition within the industry, determents the capabilities. The foundation of ecological theory is that capabilities are shaped through competition, thus forcing the end for companies that do not fit the environment. Firms will try to change accordingly to the environmental changes and that the strength of the individual capabilities relates to the success factor. This view therefore claims that managerial actions explain the distribution of capabilities in an industry.

The economic perspectives state that at equilibrium of marginal costs and competitive all the firms in an industry have the same capabilities. Because when price meets marginal costs and the competitive environment meets, the company will either leave the industry or adopt best practice (Henderson & Mitchell, 1997). There are two paths for this equilibrium, either through the adaption of inefficient individual firm or the exit of firms with inefficient capabilities. This interaction is often left out of the discussion in neoclassic strategy discussion. However, this duality will essentially be one of the most important features in understanding the interrelation between the two dimensions for the scope of our paper.

3.2.2 RBV and SWOT

Some researches argue that resource-based view (RBV) could be divided in to two different perspectives that gain similarity to the SWOT matrix. This argumentation arises naturally since the RBV is a result of an effort to improve the rather static SWOT- framework. They argue that when RBV emphasizes on firm specific efforts by combing resource to achieve competitive advantage it provides the "strength and weakness" part, while industry analysis supplies the "opportunities and threats". The SWOT-matrix is builds on two assumptions, namely, the homogenous distribution of resources and the mobility of the resources. This hinders the framework from exploring internal resources as a source of sustainable competitive advantage. Valentin (2001) proves that a SWOT analysis is more useful with the use of the guidelines from the RBV. However the most important underlying assumption of the RBV is the fact that it assumes heterogeneous resources. This causes a diversion in the two perspectives that causes implications for synergies effects between the views.

Another aspect of the strategy frameworks that is a natural discussion point whenever elaborating on the interactions of firm and industry is in fact type of industry sector. Porter's framework build on the research developed from a typical manufacturing sector, which is also the most widespread use of sector in academic research. Most of the frameworks in addition to the innovation theories have been broadly based on the manufacturing industry by most researchers. It is important, therefore, that the frameworks are adapted in order to become suitable for analyzing the service sector (Wijnolst, Wergeland, & Levander, 2009). McGahan and Porter (1997) have also showed that the impact of firm- and industry factors differs from sectors. Their results show that industry effects are more important than business effects in the service sector in terms of explaining value creation, while manufacturing sectors it is the other way around (Spanos & Lioukas, 2001). This underlines the importance of interaction of capability and industry and how the might be different

from sectors in which the company operates in. The resource base view on the other hand focuses on the capabilities and how these give rise to the strategy, which implies that the sector is more of a natural result of the capabilities strengths.

3.2.3 Cluster- competition or collaboration?

There is little uncertainty around the fact that firms' are influenced by their location of operation. Silverman et.al is a study that discovered that a firm's mortality increases with its age and suggests that capabilities have an interaction with environmental change. Hence, implying that a country or a company's ability to sustain in an industry could be affected by its time within this type of location. We therefore believe that to serve the scope of this paper we have to combine empirical research in a historical perspective and theory. This will allow us to get increased insight in understanding of interactions between firm and industry and strengthen the impact of the discipline of business history within both economics and history.

When elaborating on such interactions between industry- and firm relations and the interactions between the different strategy frameworks, we also have to mention national diamond model or better known as cluster theory. This model is and expansion on Porters competitive advantage theory, suggesting that there is something called national competitive advantage.

'National prosperity is created, not inherited. A nation's competitiveness depends on the capacity of its industry to innovate and upgrade' (Porter, 1990). Other factors, exogenous to the company, such as the conditions of resource supply within a firm's environment, can be determinant for its success. The competitive advantage can therefore be sought in the way the individual companies in each country establish their strategies under the authority of the strengths existent in their environments. In consequence, the dynamic interaction between firms and environments can be considered a source of national competitive advantage creation.

Sakakibara (1997) explored the relationship between the industries and collaborative behavior. Her research implies that successful collaborative relationships are often formed through skill sharing in different industries rather than firms' in the same industry. This evokes an interesting difference between the two main frameworks discussed, namely the different view on industry behavior. Porter states that strategy is a result of competition, while resource based view with its assumption

of capability heterogeneity suggest that it will result in collaborative relationships. This is a considerable contrast in the frameworks.

According to Wijnolst et al. (2009) a company's decision on where to located normally reflect the balance between cost and market access. These are common characteristics of a cluster. Therefore location plays an important role in the questions of clusters. A cluster could be established in a single area where many similar companies operate or if it is a result of co-operation within a segment of the industry. This means that within in an industry there could actually be several clusters, or so called sub-clusters. This is simply an important factor to remember when considering whether or not the competitive advantage for a company derive from location benefits or the choice of location of operation. In order to further the life cycle of a company innovation is cherished which often is a result of demanding customers, which again relates to a level of competition.

The competitive advantage of nations has its basis on a scheme of four attributes of the national environment. These sets of variables individually and as a system interact to create the diamond of national advantage, which enables firms engage in innovation, pursue improvements and sustain success.

Factor conditions explain how the competitive advantage often evolves due to existing resources at the location where the company operates. According to the traditional theory of international economics these are skilled workforce, technology, infrastructure and capital. Good conditions cannot always procure and secure international success but also a company can turn a disadvantage into an advantage. Lack of essential conditions force the firm to develop the fundamental factor conditions or alternative-input factors themselves or employ sources from global markets. *Demand conditions* are relevant to the nature and role of home-demand for the industry's product or service. Firms are commonly most sensitive to the needs of their closest customers, hence the demand in their home country. However for firms that compete in a completely internationalized industry, home is far less important[1]. *Related and supporting industries* are often the result of spillover benefits of investment in any industry. Developments and investments of such kind often exceed the boundaries of that industry. Therefore, national industries that succeed in this are grouped into 'industrial clusters' and these related and supporting industries are incorporated in the business

[1] Shipping is the most internationalized business.

strategies of the industry. *Firm strategy, structure and rivalry* are a characteristic of the industries in different countries. These factors include strategies, managerial practices, structures, goals, intensity of rivalry within the business sector and individual attitudes. They constitute important determinants for the domestic and international development of the industries. The rivalry is harshly important in in pressuring firms to improve quality and innovation and cut costs in order to survive competition and achieve bigger market shares.

It must be stressed that these factors often operate interdependently rather than individually. One last issue that should be taken into consideration is the governmental influences in both a national and international level [2]. There, a combination of national and international standards and frameworks affect competitiveness and the factors generating it.

3.2.4 Interactions

There are three categories of effects on performance that are identified; these are strategy, industry and firm assets effects (Spanos & Lioukas, 2001). This again show the importance of the interaction between several dimensions, which seem to be an underlying issue in the frameworks discussed. Research frameworks are often static or one-dimensional and rarely shown the whole picture of a firms sustainable advantage. In order to serve the scope of paper we are bound to focus on the interaction of the three above-mentioned categories of effects. This implies that we have to use the supplementary traits of the frameworks and focus on interaction between capabilities and environments. It is important to remember that environmental factors is not necessarily a result of competition and organizational a result of capabilities (Spanos & Lioukas, 2001), but to focus on interactions from all levels. Research shows that multi-level analyses are important in order to determine a firm's actions to gain value creation. Henderson & Mitchell (1997) also underpin that a several-leveled analysis is critical in order to determine the actions of a firm.

Empirical research show that industry and firm specific factors are both important in an analysis on firm performance, however they explain different aspects of how to achieve value creation. Industry factors influence market performance and profitability, while firm assets act upon accomplishments in the market (Spanos & Lioukas, 2001).

[2] In international shipping, the 'home base' could as well be the international arena.

It is important to remember the limitations and difference of the frameworks we use in our analysis in order to gain an understanding of the results we achieve. The fact that the two main used frameworks in this paper have a contradicting foundation could be seen as a problem, however the main objective of the framework, sustain competitive advantage, is the same. The justification of using both frameworks is based on three things: 1) the two views have complementary take on firms' performance, 2) both theories explain the same aspects and 3) the firm is the unit of the analysis. This type of dual similarities in models is what (Spanos & Lioukas, 2001) investigated in order to create a model of the interactions of the frameworks. Including both frameworks will give us a balanced view on the sources of the competitive advantage for the companies.

4 INNOVATION

We have recently discussed how the interaction between industry, firm and individual level will be main focus of the paper and such explained the theories that elaborate on this subject. While elaborating on the different perspectives of the frameworks we have come across word such as change and innovation. However we have not discussed what innovation actually is and why is this important for the scope of our paper?

Joseph Schumpeter (1934) argued that unexpected, dramatic, contextual changes would lead to two categories of corporate response. The first is the adaptive response, which is expected, well known and in line with conventional practices. The second category is the creative response, which refers to the previously unknown, innovative response, characterized by innovation. Competitive environments drive innovativeness and promote competence building both through rivalry and the exchange of knowledge and that in turn helps developing a competitive edge for its players (Benito, Berger, De La Forest, & Shum, 2003).

Since the scope our paper is to explore what leads to sustainable competitive knowledge, these arguments makes it perfectly clear that innovation will be an important factor to discuss and such we see the necessity in explaining the foundation of innovation in order to build on it the paper.

4.1 INNOVATION THEORY

The most known scholar of innovation theory is Joseph Schumpeter with his classification of innovation and definition of the term *innovation*. This is today known as the Schumpeterian approach. He defines innovation as the emergence of new combinations of resources, which are more viable today than the existing ones (Schumpeter, 1934). According to Schumpeter (1934) "radical" innovation creates disruptive changes, and "incremental" innovation continuously advances the process of change. However, as Damanpour & Schneider (2006) state "Innovation is studied in many disciplines and has been defined from different perspectives".

Rogers' (1998) paper discusses the different views of defining innovation and approaches for measuring it. He concludes that different firms use different methods of innovation and some of them will even change their methods and definitions over time. Suggesting that there is not just one good definition of innovation, but rather a matter of firm-specific characteristics that classify and

define how innovation is interpreted.

The previous definition have been concerning firm-specific innovation, while for the scope of our paper it will be important to distinguish between firm-, national- and macro variables as sources of innovation. It is mentioned that other scholars have already expressed the existence of national innovation systems (Fagerberg, Mowery, & Verspagen, 2009; Lundvall, 2010; Nelson, 1993). Macro level innovation tends to develop after major worldwide crises. This is underlined by Rosenberg (1994) who states that the decision to innovate often takes place under great uncertainty. Winter & Nelson (1982) explain innovation as a process of interaction between numerous actors and factors, which contribute to knowledge and technology developments.

The distinction between firm-, national- and macro variables can be related to the degree of innovation. The classification interpreted by Schumpeter regarding the differences in radical and disruptive innovation, is of great importance for the outcome of our analysis. It will indicate whether the sustainable competitive advantage lies in world, industry or firm specific variables.

The Schumpeterian approach states that innovation is market experiments that result from large changes and fundamentally restructures industries and markets. Deviating from this approach, more mainstream economics theory perceives innovation as a matter of both asset creation and market experiments and therefore a part of the business strategy, efficiency improvements and investment decisions. All of which will be important for our paper. Therefore our definition of innovation will be a combination of the aforementioned definitions.

4.1.1 Innovation classifications

According to Baregheh, Rowley, & Sambrook (2010) there are many types of innovation, thus explaining the importance of classifying it under different types. The most known approach, Schumpeterian approach divided innovation into five categories (Schumpeter, 1934):

1. Product innovation: the introduction of products.
2. Process innovation that is new to an industry.
3. Market innovation: the opening of a new market.
4. Organizational innovation: establishments of new management organizations.
5. Input innovation: development of new sources or raw materials.

Production innovation relates to the introduction of products, and is often the most known form for innovation (Grant, 2010). Examples of such innovations can be technology, software developments and invention of non-existent goods. This radical type of change shows a clear innovative perspective and attracts focus from scholars and firms. Process innovation is a natural effect of product innovation as it is the implementation of new goods or methods. This type of innovation has direct effect on economies of scales, resulting from the firm´s attempt to identify the best implementation way and optimize cost policy. It is accordingly implied that innovation affects performance and value creation. Organizational innovation is a new or improved method to management enhancement, business policy or action, as a result of new regulations or needs. In this way, this type of innovation is both exogenous and endogenous affecting many levels of a firm. This type of innovation has to be seen in close relation to strategic decision-making and cost cutting, such as transaction and administrative costs. Organizational innovation is the fundamentals of input innovations, seeing as the organization has no other option than to change and adapt if development of new raw materials are to exist. All the type of innovations have interacting elements and will be highly dependent on each other, but it is still possible to distinguish which innovation is the source of the advantage that can be created.

Another aspect to be considered in order to identify and categorize innovation is the type of sector that is analyzed. According to Gallouj & Savona (2009) it is important to take into account the differences between the manufacturing and services sector, in regards to type of innovation. It is therefore important to be precise in the definitions of innovation categories during the analysis[3].

4.1.2 Innovation and value creation

A firm's ultimate goal is profit maximization. Thus the firm often focuses on its performance. Firms, in the micro level, as well as countries in the national level, focus on value creation and further development. According to Beinhocker (2007) wealth and value creation arises from evolution, which can be identified as change. Adam Smith's famous book *Wealth of Nations (1776)* discusses how wealth is not a fixed concept and it depends on the willingness of payment. Therefore a close link exists between value creation and innovation. The way of value creation depends on the firm's, country's or the world's ability to advance and be innovative. The aim of this paper is to determine sustainable competitive advantage and how this leads to value creation.

[3] The shipping industry is considered as a service sector, however some scholars (Stig Tenold & Theotokas, 2013b) argue that the industry also have many similarities to the manufacturing sector.

Innovation theory suggests that value creation is not possible without any form for change. This is underlined by Porter (1990) and is explained through an evolutionary process of the way countries strive for wealth. Based on this idea he establishes a process model for national competitive development comprised by four stages, namely, factor-driven, investment-driven, innovation-driven and resulting in wealth-driven. He claims that the three first stages are the most important to create national competitive advantage, since humanity is more interested in the distribution of wealth rather than the creation of it.

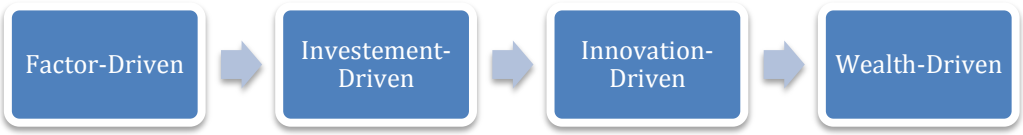

Figure 3 -Porters four stages of national competitive development

Source: Own figure based on Wijnolst et al., (2009)

Porter (1990) claims that it is possible to find a pattern in the nature of the competitive advantage of a country over time. He identifies innovation as the most important driving source for value creation as it creates competitiveness. This concept is accordance with Beinhocker (2007) with his focus on differentiation of firms. These are important findings to the scope of our paper. However, it is questionable if it is possible to diagnose only one source for wealth creation or if it is the complexity of the industry that influences it.

4.1.3 The importance of innovation

The overall discussion of innovation shows that there are several aspects of the term that have to be precisely determined during the analysis. Innovation theory is complex and will differ in many situations. Nevertheless, there are no doubts that scholars agree that innovation is an important factor for business survival and further prosperity in the competitive environment, and therefore a source for sustainable competitive advantage.

5 PREVIOUS RESEARCH ON FLEET DEVELOPMENT STRATEGIES

In this section we outline existing empirical evidence regarding fleet innovation strategies, while also discussing more specifically about shipping innovation and fleet structure in the three leading countries of our comparative analysis. We will look at previous research at three levels in the shipping industry, namely worldwide, national-level and firm-level specifics in the chosen countries. In the end of this section we will also investigate previous cross-country comparison conducted of the countries in question.

5.1 PREVIOUS RESEARCH ON FLEET DEVELOPMENT STRATEGIES

In this part of the review we will elaborate on fleet innovation strategies impact on the shipping industry during the post-war period. Previous empirical research conducted on the most common shipping strategies will be presented and how this interacts with the fleet developments

5.1.1 Previous research about fleet strategies

The shipping industry's existents and impact on the world economy have always been strong. As a result there are several studies of fleet structure in regards to size, growth, type of ships, ownership and general strategies for development of fleets. Many scholars have described the fleet evolution in form of size and ownership in different countries, such as Thanopoulou (2007) that discussed the expansion of the Greek shipping fleet or Tenold (2007) explaining the expansion of the tanker fleet in Norway. In addition, Tenold, Iversen, & Langes (2012) book about the Scandinavian countries have a historic view of the countries fleets growth pattern and company dominance. Harlaftis (2005) have done several thorough analysis of the Greek fleet dating back to the 1830s until today, while Wijnolst & Waals (1999) and Wijnolst, Wergeland, & Levander (2009) have done extensive research on all the common factors of fleet developments and shipping innovation strategies in the industry.

5.1.1.1 Fleet size

The focus of growth in fleet size has mainly to do with the globalization of the industry and therefore the importance of acknowledging the leading countries in the industry and their actions. Gomez Paz, Camarero Orive, & González Cancelas (2014) aimed to find the constraints that affect

the future size of container shipping, while others have investigated the role of ship registers and how this will not be enough to stop future decline in fleet size (Sletmo & Hoste, 1993). Gomez Paz et al. (2014) discovered that depended factors are economic growth, port access channels, berth depth alongside, air draft and limitations in natural channels and straits. Economic growth is a natural factor that can be transferred to other sectors of the industry as well. This topic is natural investigation object seeing as many measure the position of a company or a country by the number of ships in the fleet. Wijnolst et al. (2009) include a detailed overview of the global changes in the fleet in the post war period. Based on their investigations they found that the fleet increased from 39 million gross tonnage (GT) and 22, 500 ships in 1911 to 585 million GT and 88, 700 ships in 2002.

5.1.1.2 Fleet ownership

The introduction of flag of convince caused a shift in ownership structure for the leading nations in the shipping industry. With this also the national registers was created and caused even more confusion about which ships belong to which company or country. According to *ISL Shipping Statistics Yearbook 2007* Greece were the number one ship owning country in the world, Norway following as the fifth and Denmark as the 12th. As a consequence of the ship registers there has become a focus on the ownership of ships versus the chartered ships. This has result in studies discussing different strategies to employ for fleet development.

5.1.1.3 Fleet development strategies

Additionally, all of the above scholars also take into consideration which type of shipping sector each fleet consists of. While some countries have a clear sector (e.g. Denmark), others have not a clear position in just one of the sectors in the industry, but rather consist of several specialized sectors (e.g. Norway). As one of the largest sectors in terms of revenue and with a logistics problem, the liner sector is in the wind. Cho & Perakis (1996) tried to find optimal strategies for routing of the fleet. In addition, Lun & Browne (2009) investigate the fleet mix in the container sector of the industry and its effect on performance. Also Fagerholt (1999) aimed to find a method in optimal fleet structure in the liner industry. Such models contribute to finding the optimal mix of size and number of ships, which will be an important factor to cut cost in addition to gaining a sustainable competitive advantage benefit. These models contribute to companies finding their optimal fleet strategy and hence create value.

Fleet structure and innovation goes hand in hand to achieve competitive advantage for a company. The two interdependently factors will be important for an increased profitability and stability in the market, in which the company operate. This will contribute to sustainable competitive advantage and value creation for the company or a country.

5.2 PREVIOUS RESEARCH ABOUT INNOVATION IN THE SHIPPING INDUSTRY

Innovation is a researched topic with its complex impact and importance for survival in the competitive business world. Schumpeter is one of the most significant published scholars explaining how organization should be innovative to survive. Before this the term innovation was not expressively used, however the concept was stated as being of importance (Lorenzi, Mantel, & Riley, 1990; Schumpeter, 1934; Veblen, 2005). Zahra & Covin (1994) expressed the following statement "innovation is widely considered as the life of blood of corporate survival and growth", while Baregheh, Rowley, & Sambrook (2010) also argue for innovation existing at national levels with the governments several institutions for innovations. Freeman (1989), Lundvall (2010) & Nelson (1993) called this concept for "the national innovation system".

Innovation is tightly linked to change. Organizations use innovation as a tool in order to influence an environment or due to their dynamic environments (Damanpour, 1991). The complexity of industries stand to increase every day causing companies and nations into everlasting change, thus innovation of new technology is created (Geroski & Machin, 1992). The shipping industry is highly characterized by constant change and a cyclical behavior. Geroski & Machin (1992) findings that innovative firms are less sensitive to cyclical movements than non-innovative firms will suggest that the shipping industry benefits from being innovative in some form.

As already mentioned, there are many types of innovation (Baregheh et al., 2010; Ettlie & Reza, 1992) and Baregheh et al. (2010) underlines the importance of classifying innovation. Such actions are useful for companies in defining their strategy, which will enhance companies' ability to achieve sustainable competitive advantage. We will hereafter discuss the five categories of innovation in relation to the shipping industry.

5.2.1 Product innovation

When we think of innovation the first thing that comes to mind is often the invention of new or improved products, namely product innovation. According to Wijnolst & Wergeland (2009) the

shipping industry is also dominated by this type of innovation. However, the shipping industry is not categorized as high technological sector, but rather a mature sector of low technological opportunity (Thanopoulou, Theotokas, & Constantelou, 2010). The introduction of a new product in the shipping industry is to introduce a new ship, which is created by ship builders. Shipping companies have the ability to affect the product innovation in terms of design, specifications and need, but are highly dependent on external actors and their relationship in order to create product innovation in the industry. Nations and companies that focus on high product innovations would therefore benefit of a cluster milieu (Porter, 1990). This is underlined by Jenssen & Randøy (2006) who discovered that product and process innovation benefits that companies has good relationships with external actors, such as universities. Jenssen & Randøy (2002) also discovered that shipping companies that are highly differentiated (such as companies in Norway with strong product innovation focus) depend on strong management commitment to innovation. Underlining the importance of organizational innovation in the shipping industry and its effect on the other categories of innovation.

5.2.2 Market innovation

There is a close relationship to product innovation, process innovation and market innovation. There might be times that the invention falls into several categories and the distinction between the categories are small. According to Tenold & Theotokas (2013) service sectors are mainly interested in organizational, market and input innovation, but they argue that since the shipping industry has many manufacturing traits the last two innovation categories also are of interest. Due to the close relationship between market innovation and product innovation, the latter is more heavily researched. The introduction of new ships will naturally create a new market, underlining that the two innovation categories go hand in hand especially in the shipping industry. After the post war period there have been several new markets introduced in the shipping industry, every one of them due to specialization in product innovation. Chemical tanker and LNG carriers are some of the examples of such markets that have been introduced (Wijnolst et al., 2009). The variable that effects innovation the most in shipping companies is having a strategy for new services/markets (Jenssen & Randøy, 2002). These findings apply both for production and market innovation. This show the close relationship the categories have to organizational innovation category as well, because it is the management that creates strategy in a company.

5.2.3 Process innovation

Whenever there is a creation of a new product there will also be a method that has to be created to implement it. This is what we call a process and referred to as process innovation. Geroski & Machin (1992) suggest that the process of innovation matters more than the product of innovation, due to the company's survival ability during the recessions compared to other non-inventive companies. Implying it is more likely that innovative companies can handle change better because they are forced to tackle change often in their own environment. To distinguish between process and organizational innovation is one of the most difficult tasks. Both innovation categories aim for the same goal, namely to decrease cost through the same methods. These methods are the construction of new and more efficient concepts of production, delivery and internal organization. As we will discuss below, financial innovation methods are a type of organizational innovation. Mazzucato's (2013) discovered that it is important to consider the type of financial structure that supports the innovation process to create a favorable outcome. Clearly illustrating that these two categories are highly dependent on each other. Jenssen & Randøy (2002) investigated factor that promote innovation in shipping and among their findings was the importance of for managers to make accurate decision for product and process innovation.

5.2.4 Organizational innovation

One important aspect of innovation, is that is should contribute to increased profit in a long-term perspective. The expansion of innovation rest upon the capacity to replicate the capability of the production and sales of the new service or product (Zander & Kogut, 1995). Replication can lead to loss of profits and implies that cost leadership as a strategy might not be applicable. However, financing and innovation goes hand in hand (Schumpeter, 1934). As a result new methods for financing shipping investments has been developed over the years (Drobetz, Gounopoulos, Merikas, & Schröder, 2013; Syriopoulos, 2007). New financing methods are a form for organizational innovation. Organizational innovation involves new practices and structure that improve the company, both in term of performance and effectiveness (Birkinshaw, Hamel, & Mol, 2009; OECD, 2005). Case studies has also discovered that innovative financing methods can lead to faster starts of projects than innovative technology (Lethbridge, 2003). However, these results are rather questionable due to the number of cases and its ability to generalize from the results.

Commercial management strategies has become a rather important type of innovation path for Danish shipping companies due to lack of other resources such as financial strength (Sornn-Friese

& Iversen, 2011). Management strategies are clearly an innovational method for maximizing the organizational features of a company. They also include relationship management as success factor. Becoming a center for knowledge creates possibilities for networking as a form for innovation. This again leads to industrial leadership (Nelson, 1999). He also enlightens that cluster tendencies (such as in strong research faculties) and the interaction between companies and government agencies are sources for industrial leadership. Suggesting that a strong network and good relationship are depending factors for creating leading nations within an industry. This is underlined by Stefanidis, Ioannidis, & Mourdoukoutas (2007) who demonstrate that close family ties, clustering and tacit knowledge have created synergies and efficiencies by the Greek shipping companies that are hard to replicate by its competitors. Illustrating that in the shipping industry organizational innovation is important in order to increase efficiency, keep its value chain in tack and such value creation.

Kogut (1991) elaborate on the fact that long-term cycles in country leadership often arise from new organizational structures and methods and such create a competitive advantage. Which is underlined by Jenssen & Randøy, (2006) who find that strategy involvements and awareness of strategy have a significant effect on the degree of innovation in shipping companies. Hamel, (2006) state that of all the innovation forms, organizational innovation is the one that has allowed companies to cross new barriers in company performance over the last 100 years. Suggesting that innovation and value creation are highly dependent on the company's ability to manage a firm.

Outsourcing and alliances are also a type or organizational innovation, which has become a major aspect of the liner sector of the industry the last decades. According to the economist (The Economist) alliances was the solution after a long price war between the competitors in the sector, and the only way to survive. This collaborative method increased the companies ability to serve more ports and such increased value (Slack, Comtois, & McCalla, 2002). This development has lead to more standardization in the container segment, in which Denmark is a major contributor. Danish companies tend to outsource their industrial leadership skills, which will be elaborated on later in the paper. Suggesting that organizational innovation is a major part of the Danish shipping industry.

5.2.5 Input innovation

As explained in section three, input innovation is the creation of new materials and production, in which are closely related to organizational process innovation. To illustrate an example of input innovation in the shipping industry Tenold & Theotokas (2013) used the employment of sea farers from low cost countries which could not produce the expected result without adjustments at the organizational level and thus the development of human resource management systems. This type of innovation happens whenever there is time for a radical change, which can occur often in the shipping industry. Innovative companies are more likely to tackle changes as stated by Geroski & Machin (1992), and one of the factors why is the fact that they have the internal capabilities to do so. This will be an important factor while investigating sustainable competitive advantage in the leading countries of the shipping industry.

5.3 COUNTRY SPECIFIC PREVIOUS RESEARCH

We distinguish between research done within fleet structure and development and innovation in the respective countries to enlighten the differences and similarities of the countries. This again shows what can contribute to sustainable competitive advantage.

5.3.1 Norway

It is believed that innovation is the foundation to create sustainable competitive advantage for countries with high cost production and living standards (Fagerberg et al., 2009; Jenssen, 2003). As one of the richest countries in the world, thus on of the most high cost production countries, Norway is no exception to this belief.

As a leading country in the shipping industry scholars naturally have done extensive research in several areas of the industry about Norway. Fields such as the Norwegian ship register, innovation and capabilities, cluster analysis and the oil crisis impact on the Norwegian shipping industry are some of the articles that you can find about the past (Benito, Berger, De La Forest, & Shum, 2003; Jenssen, 2003; Sletmo & Hoste, 1993; Tenold, 2001b), while the future holds a high focus on ecological changes and its footprint in the industry (Fjaerbu et al., 2011; Henriksen, 2014; Lai, Lun, Wong, & Cheng, 2011). The post-war period with several waves of change is one of the latest fields with major contributions in research on the changes and the Norwegian shipping industry's

response. Norwegian maritime historian Stig Tenold are among several to have published numerous articles about the post war changes (Iversen & Tenold, 2014; Tenold, 2001; Stig Tenold et al., 2012) which explains the Norwegian industry's action and their constant use of innovation and specialization as a tool to survive the crises that have been. Also Wergeland's (1992) report about the Norwegian shipping industry's competitive advantage explains that the post war period was a turning point for Norwegian shipping and it hereafter became focused on innovation and especially product innovation. Being innovative in terms of structure, technology and knowledge sharing activities can create competitive advantage (Porter, 2008). However, innovation is not synonymous with profitability and competitive advantage. Wergeland (1992) argues that economy of scale or barriers to change firm are of great importance in the shipping industry to create profitability and competitiveness. Thus creating a first mover advantage possibility in the industry. According to Lieberman & Montgomery (1988) first mover advantage is often associated with RD patents, which suggests high RD expenses. Norway on the other hand differs from these characteristics of a typical high cost country (Fagerberg et al., 2009). One such feature is the fact that Norway use low levels of RD investments compared to the country's high growth in productivity and income. While Jenssen & Randøy (2006) aims to find how innovation contribute to firm performance in Norwegian shipping, Wijnolst, Wergeland, & Levander (2009) define different types of innovations. Jenssen & Randøy (2006) also state that a clear and explicit strategy is crucial for innovation. Using scenarios to predict the future and thus predict new technology can create long-term innovation according to Kroneberg (2000). This underlines the relationship between innovation, structure and strategy.

The Norwegian shipping milieu or cluster if you like, is a pool of knowledge-, information- and technology sharing environment, which contribute to innovation at low cost (Jenssen, 2003). Such a large maritime cluster inspires to innovation and creation of capabilities that can lead to sustainable competitive advantage (Fagerberg et al., 2009). As a result Norwegian shipping has been characterized with high degree of differentiation in their strategy for competitive advantage (Fagerberg et al., 2009; Jenssen, 2003; Wergeland, 1992). Benito et al. (2003) have conducted an analysis of the maritime cluster in Norway, and concluded that despite many other analysts and politicians' belief that the maritime sector in Norway has a dark future it is currently in good health. However they discovered that the cluster is not a so-called "super cluster" which creates room for growth.

An analysis of postwar shipping in Norway explains the different strategies of competitive advantage as well as fleet strategies and how the fleet has evolved during the different regimes (Iversen & Tenold, 2014a). The Norwegian fleet had to undergo some major change and it survived due to its willingness to leave the national regime and enter into an international regime with a cluster compromise. The new strategy included becoming a market leader in certain niches of the shipping market (Iversen & Tenold, 2014). Today the Norwegian fleet is dominated by high technological specialized ships and operates in several sectors of the industry (Henriksen, 2014; Tenold, 2009). Tenold (2009) also aims to find size and geographical patterns in the Norwegian shipping fleet, and he discovers that there existed a Norwegian first mover advantage in the specialization segment. During the 70s and 80s the shipping industry in Norway was hit hard by the crisis (Iversen & Tenold, 2014; Tenold, 2009), and as a response many companies started flagging out their ships under other flags than the Norwegian one. As a counteraction the government created the Norwegian International Ship Register (NIS). The NIS contributed to fleet growth in Norway at that time, on the other hand with the cyclical moves in the industry fleet structure develops rather slowly due to the difficulties of timing demand and supply (Wergeland, 1992). The Norwegian Seaowners Associations latest report about economic developments in the industry conclude that today the NIS fleet are declining, but the Norwegian managed fleet outside of Norway have increased. In terms of value the Norwegian fleet is the fifth largest in the world together with USA, after Japan, Greece, Germany and China (Henriksen, 2014).

5.3.2 Denmark

Denmark with it its 7,314 km off coastline and surrounded by water, naturally became a strong shipping country. With an impressive growth the latest years and a dominant player in the industry (Stig Tenold et al., 2012; Zhang & Lam, 2014), Denmark has developed an impressive impact on the global shipping industry. In 2006 it was named the leading maritime country in Europe by Lloyd's list.

Henrik Sornn-Friese and Martin J. Iversen have done extensive research on the Danish shipping industry, both in terms of a historic perspective of strategies of innovation and fleet development as well as new developments. In addition, they have researched the affect of the cluster milieu in the shipping industry (Sornn-Friese & Iversen, 2011, 2014; Stig Tenold et al., 2012). They explain the

strategies that have been taken the latest years, and state that since 1960 there have been three clear periods with technological, organizational and institutional innovation in the industry (Stig Tenold et al., 2012). They also present an overview of strategies over the years for each dominant player in the industry. According to (Sornn-Friese & Iversen, 2011) one of the reasons Denmark has prospered in the latest decades is the country's capability to exploit the opportunities they have been given which has lead to impressive fleet extensions. This stating that the Danes' industrial leadership skill might a reason that explains their success. It is no doubt that Mærsk has a major contribution to the Danish shipping industry and it has therefore been suggested that much of the success is explained in the shipping milieu of its exist within Copenhagen, the so called Danish cluster (Jakobsen, Mortensen, Vikesland, & Cappelen, 2003; Sornn-Friese & Iversen, 2011). According to Porter (1990) clusters are the main source to industrial leadership. The Danish international ship register is one of the contributor to the success of Danish shipping and a characteristic of the Danish shipping industry. Sornn-Friese & Iversen (2011) suggest that such registers will be most successful in countries with a cluster within the industry. Drejer, Kristensen, & Laursen (1999) map the reasons and developments of clusters in Denmark. Their definition of a cluster is the following: "a cluster is a group of firms, an industry, or a group of industries, which exist in relation to a strong knowledge base". Suggesting that resources at a national level are a factor for a great shipping industry.

Zhang & Lam (2014) recently published an article explaining the new program launched by Mærsk, called "Daily Mærsk " and the change this has contributed to in the liner sector of the industry, in which Denmark is heavily invested. Maersk have been the leading company in Denmark in terms of fleet size in death weight tonnage (DWT) since 1960, with a development of 1099 (1000 DWT) in 1960 to a total of 15828 DWT in 2008 (Stig Tenold et al., 2012). In addition, routing strategies for liner companies have been researched (Cho & Perakis, 1996). The program exists of daily long routes, as the name imply, which impact the fleet capacity of liner companies. Zhang & Lam (2014) conclude that this will contribute to the trend of increase of alliances, mergers and acquisitions in the liner sector. Due to this there has also been raised questions about port capabilities and structure (Slack et al., 2002) underlining the structural changes of the liner industry. Even tough it contributes to change Slack et al. (2002) state that such alliances imposes greater standardization on the container shipping industry. As already mentioned the Danes have good industrial leadership skills, and in the late 90s and early 00s there were a huge expansion of foreign owned ships

controlled by Danish ship owners. Scholars have also investigated the relationship of chartered and uncharted ships as well as owned vs. managed ships in Denmark (Sornn-Friese & Iversen, 2011; Stig Tenold et al., 2012). A trend in the past decades in the Danish shipping industry is commercial management of ships; Norden and Torm are example of companies with success with such a strategy. Investing in a organizational innovation strategy.

5.3.3 Greece

With a stable leading position over the last four decades (Theotokas, 2007) researches have tried to discover several aspects of the Greek shipping industry and the reason for its success. Topics such as taxation benefits (Marlow & Mitroussi, 2008), informal networking (Stefanidis et al., 2007) and management and fleet organization (Goulielmos, 2000; Lagoudis & Theotokas, 2007; Progoulaki & Theotokas, 2009; Thanopoulou, 2007; Theotokas & Progoulaki, 2007) are some of great interest for discovering Greek competitive advantage in the industry.

According to Goulielmos (1997) it has been argued that Greek shipping policy primarily focuses on maximization of the foreign exchange inflow from shipping in the post war period. His findings also discover a cost reduction benefit of 321,6 million dollar per year for the Greek shipping industry, due to ability to hire low cost crew. Also Progoulaki & Theotokas (2009) underlines that this do in fact lead to cost reduction and competitiveness. However, they question the ability to create sustainable competitive advantage with such a strategy. Nevertheless, they discover with the current market conditions in the shipping industry it appears that shipping companies tend to consider crew as an object rather than a contribution to their competitiveness and therefore chose low cost crew. The focus on cost reductions in the Greek shipping industry has also lead to flagging out (Goulielmos, 1998). Also Lagoudis & Theotokas (2007) support that cost is on of the strategies that has led to competitive advantage for Greek shipping companies. At the same time Theotokas & Progoulaki (2007) investigated how Greek seafarers perceive culture and how the shipping companies choice of crew affect operation of ships and management, their findings show that overall performance can be enhanced with culture management, which remove the aspect of cost reduction. Suggesting that this method do not lead to sustainable competitive advantage. As Theotokas (2007) stated, even though the competitive advantage for Greece has been sustainable the last four decades, it does not necessarily mean that the past dictates the future. He also emphases that Greek owned companies' flexibility and adaptability will be a future success factor as well as expanding and renewing their existing knowledge base.

Recent innovational developments in the Greek shipping industry are the use of modern finance methods such as leasing and syndications, IPOs and private equity funding and more (Syriopoulos, 2007). This has lead to a skill of combining new and traditional financing method and created hybridic methods of financing, which can lead to better performance for the shipping companies. Also Vassis (2010) explored the investment patterns in the industry by focusing on the Greek and the British fleet. He discovered that the Greeks are more market oriented and they are generally better to exploit the second hand market of ships. Even though many scholars have discovered that Greece has a cost reduction strategy, others have fund that Greeks have a high level of awareness for environmental impact on the industry (Giziakis & Christodoulou, 2012). They are actively involved in the discussions regarding regulatory framework in this area. However, the research suggests that their participation is due to their concern that this will have negative effect on the cost of operating rather the aim to lower the environmental impact in the industry.

The Greek shipping industry is characterized with small shipping companies build up as family dynasties and in an entrepreneurial fashion (Syriopoulos, 2007; Thanopoulou, 2007; Theotokas, 2007). Stefanidis et al. (2007) therefore studied the informal networking in Greek shipping and discovered that one of the major factors for Greek shipping success is in fact the Greeks ability to choose close partners and create long-term relationships. Such corporate organizational structure builds win-win strategies, which creates synergies for every person involved in the network, both separately and for all of them as a whole. This characterizes also the way the fleet of Greek companies is build up (Theotokas, 2007).

Many scholars have identified the fleet structure and developments of Greek shipping over the years. Among them Harlaftis (2005), Thanopoulou (2007) and Theotokas (2007) have done extensive research on size, type of ships, age, sector investments and ownership structure. While Goulielmos (1998, 2000) have focused on the impact of flag of convenience and the trends of flagging in- and out of the Greek flag. In addition, Lagoudis & Theotokas (2007) mapped the strategies used by different sized companies and how the capabilities of the companies form the foundation of these decisions.

During the crisis in the 80s the Greek owned fleet went trough a drastic reduction after a major percentage of companies started flagging out to preserve their low cost strategy (Goulielmos, 2000). As a matter of fact a company could save a total of 100 000 dollar each vessel by flagging out. The Greek fleet went from almost 80% Greek owned to less than 35% Greek owned in a matter of a short period of time. The findings of the research show that after the forcing of flagging out, it became very difficult to flag in again. In addition, he discovered that new companies tend to flag out more than established traditional Greek companies. On the other hand Thanopoulou (2007) found that the Greek owned shipping fleet is still growing, but the number of companies between 2000-2005 have decreased. She states that a mixture of specialization, low-cost and finance management will create successful firms and fleets in the future, which is the direction Greek shipping is taking today.

5.4 PREVIOUS RESEARCH ON COMPARISON OF THE COUNTRIES

Over the last decades scholars have become more interested in conducting comparative analyses of the leading countries of the industry. As the number one leading country over time, Greece has naturally been compared to countries like the UK and Norway, and is always mentioned in articles about international shipping. Still there is no previous research comparing Denmark, Greece and Norway in the shipping industry. This might be because Norway and Denmark is often considered the term Nordic shipping, however Iversen & Tenold (2014) state that while the countries are similar in terms of public policies their strategies in shipping are in widely different.

There are numerous comparisons of the Nordic countries conducting research on fleet development, strategies and action taken in different challenging situations. The most recent book published about the Nordic countries is Global Shipping in Small Nations (Stig Tenold et al., 2012). The purpose of the book is to analyze the varieties of strategies used for the Nordic shipping companies in the period after 1960. The book concludes each chapter with a brief comparison and wrap of each country but do not draw any conclusion about the differences. Nevertheless the book is a god contribution to mapping Nordic shipping strategies and also include examples from the Greek industry in the notes. It also provides a good statistical comparison of fleet developments of the Nordic countries conducted by Espen Ekberg. Iversen & Tenold (2014) have also done a comprehensive analysis of the changes of regulatory framework in Norway and Denmark in the postwar period. The approach include both company specific variables and regulatory variables,

which gives support to our method of exploring different levels of the industry. The result shows that by abandoning the national regime and rather changing to a more international regime the Norwegian and Danish fleet survived and thrived, while others died. Another outcome of the paper is that the new regime considered company interest higher rather than the interests of authorities and unions. This contradicts several articles claiming that the cluster milieu is the reason for positive development in the fleet of these countries (Tenold & Theotokas, 2013).

Norway and Greece are the countries with the first and second largest coastline in Europe respectively. In addition, they both were heavily invested in the bulk sector of shipping, hence making them interesting comparison objects. Tenold & Theotokas (2013) explored shipping innovation strategies in the respective countries, which lead to the discovery of two rather different paths that are joining forces. Greece has had a strategy for market penetration and low cost leadership, which create innovative solutions that exploit their intangible assets. On the other hand Norway has built up their industry on product innovation, investing heavily in advanced technological ships. This is underlined by Wergeland (1992) where he states that the focus of the Norwegian fleet has become technology oriented in the postwar period.

The lack of previous research on comparing Denmark, Greece and Norway give rise to the opportunity to discover strategies for innovation and fleet development in a broader context. In addition, it will provide a new perspective and a combination of three unique shipping pioneers and their path to sustainable competitive advantage.

6 MACROECONOMIC ENVIRONMENT

6.1 THE SHIPPING INDUSTRY AFTER 1945

In this section we are going to briefly discuss the major events that have happened during the postwar period in the global shipping industry. The historical overview will thereafter be put in connection to the relevant dynamics of the leading countries of our investigation. This will provide a deeper understanding of how the global changes have affected the nations and companies strategies in the different countries. This section will be divided into three time spans, which identifies the major events in the industry.

6.1.1 1945-1970: The rebuilding and the economic prosperity

After the World War II (WW II) many countries had been subject to a lot of destruction and there were need for rebuilding of the countries. This led to economic prosperity within the shipping industry. With a high focus on peace and stability countries focused on the rebuilding of the countries, as a result the needed materials were shipped through the use of ships. This period was characterized with a growing market combined with financial conservatism, meaning that it provided difficult to get capital. Steel and oil companies were the most stable in this period, and such a drive for ordering large vessels, which where run in long-lasting time charters. This led to the development of the "supertankers" vessels and container logistic systems for example. Due to the lack of capital, the solution became financing with "charter-backed finance" (Stopford, 2009). One of the reasons shipping had a high economic prosperity in this period, was its role as the main carrier of cross-border trade. The growth of the world market trade and that of the shipping demand had a relatively strong correlation (S Tenold, 2001b). Another important aspect during this phase is the fact that constant protectionism from every major shipping nation. Several regulations in regard to crew, management flag and tonnage requirements were in play, and there were a constant battle against liberalizing international shipping (Sornn-Friese & Iversen, 2011). Such events gave rise to the establishment of the United Nations Conference Trade and Development and led to the need of the involvement of the European Commission.

Suez Canal closing 1967-1975

Peace and stable relationship between countries were particularly important for the shipping industry, seeing as they were dependent on international seawaters in order to transport their shipments. Some of the ships had to go long distances in order to deliver their cargo, and the

shortest pathways were important for saving cost and time. The Suez Canal was one of those very important pathways, this one particularly for delivering cargo to Asia, since it was a much shorter distance than sailing around Africa. The canal allows ships under the weight of 240,000 DWT and up to 20 meter long and 68 meter high, which limits the largest vessels to go through. When the Suez Canal was closed for 8 years, due to a six-day war between Syria, Jordan, Israel and Egypt in 1967, it had a major impact on the trading routes for the European shipping companies as well as the global market. Since the war was not anticipated, it abruptly impacted the companies and several ships was trapped inside, and remained there for the entire 8-year period.

International Maritime Organization (IMO)

As the industry became more and more global, it became clear that it was a need for an international organization that maintained and developed the regulations in the industry. The organization was established in 1958, and its purpose is to facilitate cooperation among the Governments in the industry relating to all shipping engaged activities in international trade. This can be matters concerning maritime safety, efficiency and control of marine pollution from ships as well as legal and administrative related purposes. The organization has a 171 membership states and three associated members, where the secretary general is picked among the member countries and all have a certain numbers of seats in the organization. The first secretary general was Ove Nielsen from Denmark. Currently regulations and restrictions regarding environmental pollution and use of environmental friendly solutions are heavily discussed.

European Union (EU)

After the WW II, Europe sat out to create an organization that would secure peace in Europe which formed the today known European Union (EU). First established in 1951, but only for economic and trade purposes, later on it has grown to become one of the most influential organizations in terms of regulations, politics, economic growth and legal requirements within Europe. Its purpose is to maintain a secure environment in the continent and to cooperate in order to gain a knowledge spill for all of its member countries. Today a total of 28 countries are member states, while 8 countries are potential members. In 2002 the majority of the member countries entered into a joint currency, the Euro, in the vision of a more open an sustainable economy, which would lead to easier cross-border trades. The most recently discussed topics in the news, is Greece's possible exit from the union, casting a shadow over the Nobel prized union and its purpose of peace and stability.

Organization for Economic Co-operation and Development (OECD)

OECD was established right after the WW II, in 1948, to run the US-financed Marshall Plan, which was issued to countries demolished by the war. Also this organization had the intention of securing peace in the world and work towards a co-operation within the states of the continents. Today their global mission is to promote police that will improve the economic and social well-being of people around the world.

United Nations Conference on Trade And Development (UNCTAD)

After WW II it was an increasing concern about the developing countries and their place in international trade. As a result many of these countries urged the establishment of a full-fledged conference specifically devoted to tackle these problems and identify appropriate actions. As a result the first conference was held in Geneva in 1964. This organization aims to deal with development issues and especially international trade, which is done with three factors in mind, namely think, debate and deliver. Today they consist of a total of 194 countries and they produce innovative analysis that laid the foundation for their recommendations to economic policymakers.

6.1.2 1970: The crisis

The next phase of the postwar period has been labeled "crisis" of many scholars (Sornn-Friese & Iversen, 2011; S Tenold, 2001b). This is due to the global macro-economic recession and the deep shipping crisis that occurred as a result of several events in the global economy. The two most important events, the oil prices crisis and the introduction of open registries' were the reason for higher competitiveness within the industry.

Oil crisis

The oil price is one of the most important factors that affect the shipping industry. During the early postwar period, the traditional maritime nations (TMNs) were characterized with a lot of big oil tankers, which transported oil. High demand of oil prices led to high prices, however the supply was not enough, which increased competitiveness. Additionally, at that time all vessels were run on bunkers oil fuel, meaning that higher oil prices led to higher operating cost. Within markets that already had high operational cost and were dominated by this sector, the oil prices were actively followed. In 1974, the Yom Kippur war caused extreme levels on the oil price, which led to high inflation and unemployment and thus causing a decline in the economic growth. Prices went from

2,5 dollars to over 30 dollars in a matter of a few years. These war exposed areas later in the late 70s and the early 80s again caused high oil prices and further economic downturn. Below the development of oil prices since 1861, and the triggering effects of high oil prices are illustrated.

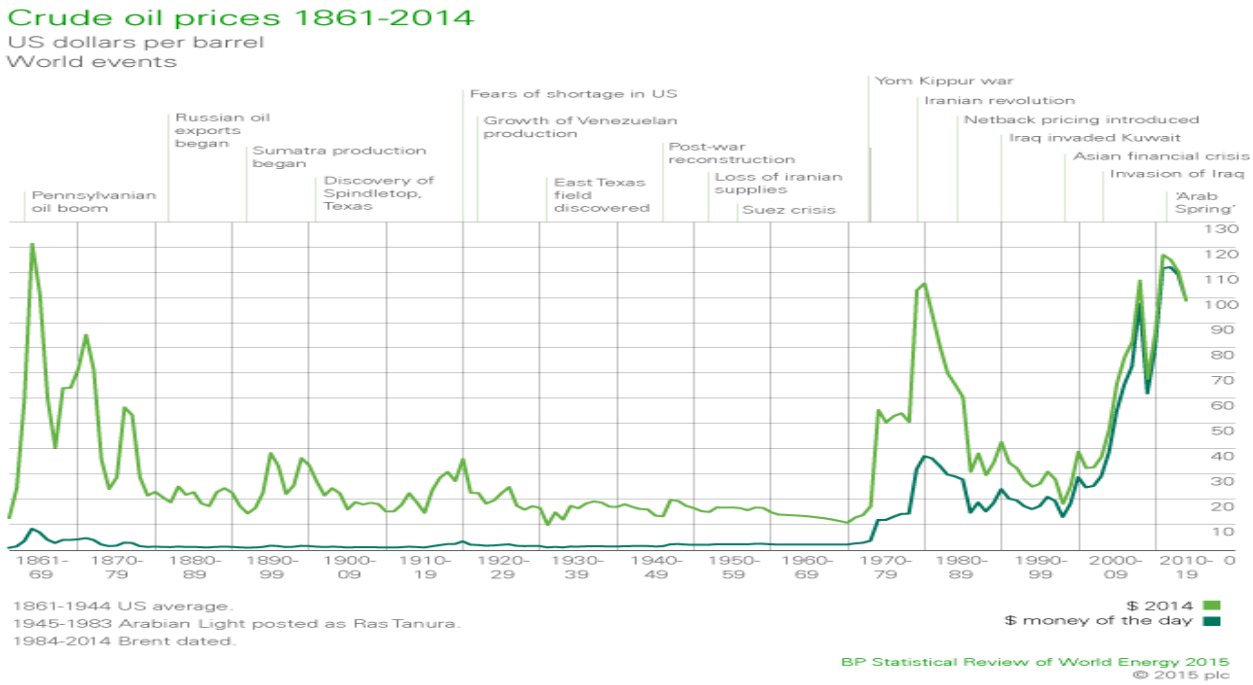

Figure 4- The historical view of the oil price

Source: BP

Since the high oil prices caused high operational cost, companies pursued low operational costs elsewhere. Since oil prices were an external factor that could not be directly controlled, the shipping companies looked for internal sources to minimize. The major differences of internal factor in the companies were labor cost. In order to be competitive with other low cost operational countries, a lot of European companies started flagging out.

Flag of convenience (FoC)

International law requires a vessel to be registered in a country and comply with this country's requirements and laws. The country the vessel is registered in has major differences, especially today, in terms of labor requirement, environmental issues and taxation, to mention some. A FoC listed vessel, is therefore one flying the flag of a country other than the country of its ownerships (iftglobal). According to Metaxas (1985), the concept of open registers such as FoC dates back many centuries, nevertheless the first effective open registers were not set up in Panama and

Honduras until the 20s. However, the use of such registries took a long time before they became a significant part of the industry. During the crisis of the 70s the trend became clear, more and more companies flagged out and the registries changed the industry completely for the TMNs. However, some countries were restricted to flag out by their ownership country's law, making them less competitive. When these laws were lifted, the trend increased rapidly. Some of the most popular flag states were Panama, Liberia, Bahamas and Cyprus. These high competitive forces, led to European countries creating their own open registries that could compete to some extent with those who were already established. Norway was the first country to create a second open registry, called the Norwegian International ship registry. Soon after other countries such as Denmark, Germany and Spain followed (Sornn-Friese & Iversen, 2014).

Below an overview of the top 10 flag countries in the world and the distribution among the different segments is represented.

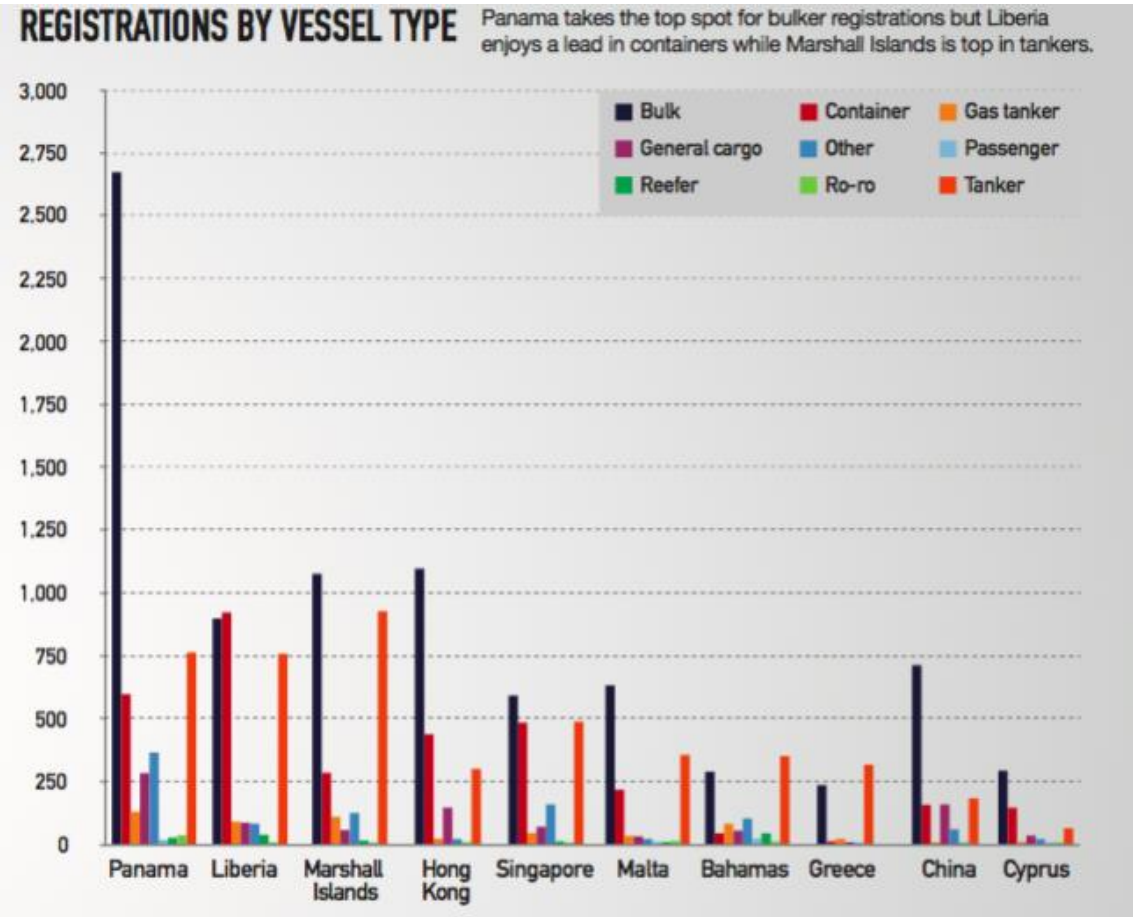

Figure 5 - Top 10 Flag countries in the world

Source: Loyd's list. See Appendix.

As a natural response to the flags of convenience the international labor organization grew stronger and employees turned to this organization in order to gain fair and equal terms.

International Labor Organization (ILO)

The ILO was established in 1919, as a part of the ending of the World War I. The mission for the organization is to promote social justice and internationally recognized human and labor rights, pursuing the belief that labor peace is vital for prosperity. The driving forces of the organization arouse from security, humanitarian, political and economic consideration. At the time of its establishment there were a trend of exploiting workers in industrializing nations, and therefore the first international labor conference were held in Washington D.C. in October 1919 and they adopted a total of six new conventions. These conventions constituted hours of work, unemployment, maternity protection, night work for women and minimum age and night work for young people. Today, ILO's main goal is to encourage rights at work and decent employment opportunities and enhance social protection and strengthen the dialogue on work-related issues.

As a natural response to the economic recession, companies that did not have the ability to flag out due to restrictions from their government started a search for new opportunities. These was especially common in high cost country, that started differentiating themselves and turned to innovation as a source for competitiveness. The phase of the crisis therefore also experience a lot of new technology developments, and several new sectors appeared. An illustrative example is the Roll on- Roll off sector that occurred in the mid-70s as collaboration between Norwegian and Swedish companies. Additionally, other large market that had not been a leading player started involving themselves in the industry. Asia started exploring the industry and soon posted as a threat in the global industry. Demonstrating that the industry started to become a true global industry.

6.1.3 1990: The globalization

From the 90s and beyond one could see a major globalization of the industry. The boarders between countries became less visible and a natural force for collaboration in the industry caused the industry to be less nation oriented. The continuous of flagging out caused less control of what is controlled, owned and management by whom, which led to a natural globalization of the industry.

In 1991, the cold war ended and with it came a new hope of co-operation between all countries in the world. The introduction of the European union, and several other organizations working for secure trade and stability made the cross-border trading easier than before. Additionally, the introduction of the EURO currency in 2002 made Europe connect even closer relationships and opened up the transactions between the European countries. While the industry usually trades in dollars, it reflects the changing environment and globalizing trends. The unions increasingly power, also caused a strengthening position in terms of regulations. Global standards for labor skills, security and environment, to name a few, were something both the EU and the IMO pushed for, making the companies less dependent on national regulations (Sornn-friese & Iversen, 2008). Among such regulations were the restrictions on capital that had caused companies to derive their capital from domestic sources. When the global standards were enforced, this also changed the ability for shipowners to find capital elsewhere. This is one of the factors that led to a focus on innovation driven competitive advantage within the companies during this time. The innovation driven search for competitive advantage has also caused major eruptions of new segments during the earlier phase as well as newer times, among them the offshore sector. During this phase also other aspects of the industry became more important such as the management on board on the vessels. The contribution ship management firms introduced was the success of combing expertizes and capital from OECD countries with inexpensive labor from developing countries. This is often referred to as the fourth wave in shipping (Sletmo & Hoste, 1993).

As a part of the change of a narrow shipping policy and rather pushing for the global standards, the shipping organizations have promoted the benefits of maritime clusters. Therefore cluster tendencies and collaboration within industries in different companies also gained a lot of focus during this period. Today there are several clusters within Europe, Norway is said to have the most complete today (Wijnolst et al., 2009). The establishment of a European Network of Maritime Clusters in 2005, have moved the cluster perspective from national to regional levels (Gammelgaard, Sornn-friese, Hansen, Jessen, & Larsen, 2013).

The flag of convenience played an important part of the globalization of the industry, and during the 90s you can see an even higher rate of vessels flagging out. Flagging out combined capital from OECD countries with labor from developing countries, allowing for a major globalization (Sletmo & Hoste, 1993). Although high cost countries such as Norway, Denmark and Germany created

successful secondary registers, the trends of flagging out were still high and are still today. The share of the world fleet, which was registered in a FoC country, went from 30% to more than 55% in 2010 (Sornn-Friese & Iversen, 2014), expressing the dominance these countries have in the industry. Additionally, companies operating in the shipping industry are taxed according to a tonnage scheme rather than normal corporate tax. This tax system was presented by the European union maritime business as a policy to eliminate tax disadvantages. Tonnage tax is based on vessels net tonnage. The tax must be paid regardless of the vessel operations. This means that even though a vessel may not be operating at the time, the companies still need to pay tax on the vessel. This tonnage tax is similar for all the countries operating the EU.

The last decade the industry has been influenced by several crises. The Financial Crisis, The Greek debt crisis and the Iranian opening of the oil restrictions have all had some effect on the shipping industry. While the two first mentioned have caused economic recession and poorer relationships between certain countries, the latter have opened a higher supply of oil that needs to be transferred.

7 NATIONAL ENVIRONMENT, INDUSTRY AND FIRM SPECIFICS

7.1 GREECE

7.1.1 INTRODUCTION

"As all the relevant analyses explicitly or implicitly indicate, shipping stands as the backbone of the maritime transport system' (Brooks, Button, & Nijkamp, 2004). Undoubtedly, the fleet owned by Greeks constitutes the foundation of the Greek paradigm as well, transforming the latter to a case study that is worth examination.

With the term 'Greek companies' we refer to all the shipping firms that manage and operate seagoing ships owned by Greek interests.

Greek Shipping

Greek-owned shipping as it is known today was formed over the past two centuries. At the outset, European nations used Greeks as intermediaries in their trade with the Ottoman Empire. Later Greece became an independent maritime nation. During the postwar period the Greek shipping industry grew at a phenomenal rate, despite the almost complete destruction of the Greek fleet during World War II. The Greek-owned merchant fleet became the world's largest after 1972, and this position remains unchanged. Greece has been part of both the old pre-oil crisis maritime order as well as part of the post-oil crisis new international maritime order (Cafruny, 1987).

Greek shipping has advanced since the 19th century as an international cross trader almost entirely focused on tramp shipping (Harlaftis & Theotokas, J. 2002). It started by carrying bulk cargoes along the routes of the Mediterranean. It eventually grew into a worldwide tramp fleet in the twentieth century benefited and supported by the tight maritime business network that was created by the Greek ship owners (Harlaftis, G., & Theotokas, J. 2002). Greek-owned companies are active in the markets of bulk shipping which is highly competitive, while only a small proportion operates in the liner market, mainly focused on local or peripheral markets. In addition, there are a small amount of companies, which operate liner vessels by chartering the ships to liner companies instead of providing a liner service themselves. It is clear therefore that the vast majority of the companies acquire their advantage from their ability to be competitively active in the bulk shipping markets (Lagoudis, I. N., & Theotokas, I. 2007).

The purpose of this chapter is to illustrate the factors that have contributed to the creation and still reinforce the competitive advantage of the Greek-owned fleet as well as the strategies that sustained and extended this advantage. These factors include but are not limited to the network with international constituents, the efficiency and quality of know-how of managing ships, both at high hierarchy levels but also at the level of personnel ashore or at sea, managerial skills and techniques, implementation of innovative strategies, flexibility in the choice of flag and advanced competencies and expertise in the buying and selling of ships. (Theotokas & Harlaftis, 2009). Alongside the aforementioned factors that are firm specific, it is important to highlight the role that the national environment played in the creation and maintenance of the competitive advantage; the Greek companies were favored by the government in terms of tax treatment.

7.1.2 ENDOGENOUS FACTORS

The business philosophy, management and structure of the Greek-owned companies are to a large extent the characteristics that determined the patterns of development, innovation and market response of the firms. Therefore, in order to analyze the progression of Greek shipping we will focus on the internal environment of the companies and analyze their resources and capabilities in addition to their structural characteristics. The Greek nation has a very limited share in world seaborne trade[4], there is no significant home demand for shipping services or supporting industries and the capital requirements exceed by far the capabilities of the domestic capital markets. In other words, Greek companies lack the favorable demand conditions and related and supporting industries which are important prerequisites, according to Porter's theory (Porter, 1990) for a nation to create and sustain a national competitive advantage. However, some important factor conditions contributed to the success of Greek shipping and they will be analyzed using the same frameworks as Theotokas and Harlaftis (2009) and Theotokas (2007). The resource base of the Greek-owned companies will be examined from the angle of resource-based view (Barney, 2001). The resources available to the firms in combination with the structural characteristics of the companies, which were more or less identical for the majority of the companies, assist them to develop into a homogenous group that operated with similar patterns.

[4] According to UNCTAD STAT Greece accounts for approximately the 0.22% of the world's merchandise exports and 0.33% of the world's merchandise exports (data of 2014).

Human resources and knowledge base

According to Barney and Wright (1997) human capital can be the basis of sustainable competitive advantage as it is a source, which can be valuable, rare and inimitable. In general, intangible resources are more likely to produce a competitive advantage since they are usually quite rare and hard to be imitated by competitors, in any kind of competitive landscape (Black & Boal, 1994)

It is a common belief that 'a vessel is as good as the people who navigate her'. This 'quality level' refers to their skills and capabilities and depends on the seafarers' training and background. Companies with large fleet have the ability to offer permanent employment and methodical training of the crew in order to manage issues related to cultural and language differences. This, however, was not the case for the vast majority of small-size Greek-owned companies that flagged out during the 80s. (Theotokas, 1997). The contribution and importance of Greek seamen to the advancement and competitiveness of Greek-owned shipping has been largely acknowledged from stakeholders and researchers. However, it was not until recently that it started to be more specifically evaluated (Sambracos and Tsiaparikou, 2001; Theotokas and Progoulaki, 2007a). Researchers, utilizing the resource-based view, have investigated the quantitative aspect of hiring Greek seamen as well as the qualitative ones that contributed to the competitiveness of Greek shipping. (Theotokas and Progoulaki, 2007b; Tsamourgelis, 2007).

Shipping is a capital-intensive industry since ships are assets of high value. A nation with inadequate capital would face great difficulty in penetrating the sector. Nevertheless, a nation with restricted capital resources but with sufficient labor could possibly enter the market, using the labor factor to substitute for the lack of the capital factor. This is how Greeks operated in the early post-war decades. They were purchasing second-hand ships of advanced age and with low specialization, which had low demand in the market and therefore lower prices. These ships with their high operational costs were considered uneconomical and technologically backward for other fleets. However, the Greek seamen had the know-how and the ability to make them seaworthy. With the exploitation of the labor factor, a fleet consisting of such ships would be competitive.

Greek seamen kept such ships fit for sea with overtime work and continuous repairs even under unfavorable conditions. Especially the first post-war decades, the salaries of Greeks were considerably lower than the seamen of other traditional fleets, such as those of the Japanese, the

British and the Norwegians (Theotokas & Harlaftis, 2009). Greek ship owners could therefore obtain a competitive advantage by utilizing the high maritime skills, commitment and knowledge base of a low cost crew. This know-how is important even in today's technologically advanced vessels. However, the seafaring labor is being renewed with a negative ratio the recent years (Theotokas & Harlaftis, 2009). This is transforming Greece into a nation with adequate capital but lacking workforce.

This issue was evident already in the 70s and became more intense in the 80s. There was a shortage of Greek officers and seamen in the late 70s, after years of expansion in the Greek flag fleet. Although their numbers increased there were not enough to cover the demand, as the rate of fleet expansion was so high. In the beginning of the 80s unemployment was not high and young men were not attracted by a job at sea. Despite that, the fleet continued to increase (Theotokas & Harlaftis, 2009).

According to Korres (1978) there were a number of reasons that resulted in the decrease of the Greek crew. These included changes in the structure of demand of labor in the Greek economy sectors and the rise of the standards of living and greater employment opportunities, as mentioned above. This became more apparent in the 80s with the tourism development of the coastal areas and especially islands where traditionally seamen came from. Additionally, there was a stagnation of wages as the calculation method changed from pounds sterling to drachmas. High inflation rates in the years to follow brought only slight increases in the salaries when they were calculated in drachmas and a real stasis, or even decrease, deriving from the fluctuation in the exchange rate of the US dollar.

Shipowners were allowed a maximum of 25% foreign crewmembers, a limit that they often had to surpass as a result of the lack of Greek crew. Recessed freight rates, in combination with an increase in bulk trades by low cost countries, led to a cost pressure for Greek operators in the beginning of the 80s. Throughout the decade Greek shipowners increased the use of foreign crews and flags of convenience. After 1982, the aforementioned reasons, in combination with reduced embarkation of Greek seamen, resulted in high rates of unemployment and consequently an evident fall in the overall amount of Greek seamen.

Greek seamen were, and remain, the most valuable factor for Greek-owned shipping. Their contribution to the maintenance and competitiveness of the vessels was of indisputable significance. Most important though is that these generations of seamen were the source for the maritime entrepreneurship, which led to the renewal of the class of shipowners in the second half of the 20th century (Theotokas & Harlaftis, 2009).

The Business Philosophy and Familial Ownership

A particular characteristic of Greek shipowners is the way they approach shipping activity. The vast majority of them functioned as entrepreneurs and not as investors. As mentioned before, many of them came into the business from a former seafaring profession. This is one of the reasons that they treated shipping not only as a source of income but as a professional arena (Theotokas & Harlaftis, 2009). They keep and aim to maintain absolute control over their business and they take all the strategic and operational decisions.

It is also important to be mentioned that Greek shipping companies are owned and controlled by families almost entirely. It is the members of the families that participate in the top management and hold enough of the equity to be able to exert control over strategic decisions. This typical feature has been dominant throughout the modern history of Greek shipping (Harlaftis, 1996). It gave them flexibility to operate in the market and take advantage of opportunities in the secondhand ship market (Theotokas & Harlaftis, 2009).

Management and Organizational Models

The management of typical Greek shipping company displays the general elements of Greek management. Those refer to a shortage of formal rules for strategic decision-making and lack of transparency regarding financial issues due to their small size and entrepreneurial characteristics (Bourantas & Papadakis, 1997).

Flags of convenience gave the opportunity for registers recording in countries that provide low taxes and lenient conditions of employment and operations procedures. The typical structure of a shipping company was aimed and planned to avoid taxes and other types of claims in various countries along with further operating costs regarding crew's salaries and insurance (Grammenos & Choi, 1999). The shipping firm would be the one that usually controls the ship and acts as a ship-

management company. The ships would belong to shipowning companies, which are registered in nations that provide favorable institutional and fiscal facilities. Every shipowning company owns one ship and the management of it is assigned to the management firm.

For example, when a Greek shipping company purchases a vessel, it establishes a new company under a foreign flag, such as Panama, Malta or Liberia. It then operates the ship via an agent located in London, which in fact is the shipowner themselves. In this way, one large company with offices located in London would have under it a broad number of single-fleet companies. According to Harlaftis (1996) many traditional shipowning companies were located in London, especially those from the island of Chios.

Basil Metaxas (1986) defines the shipping firm as the company, the individual or group of people who make decisions regarding employment (or not) of the production factors in the shipping sector. When referring to Greek shipping, the ship management firm is the entity that, although appearing independent from the shipowning organism, in fact decides the allocation of the vessel as a productive unit.

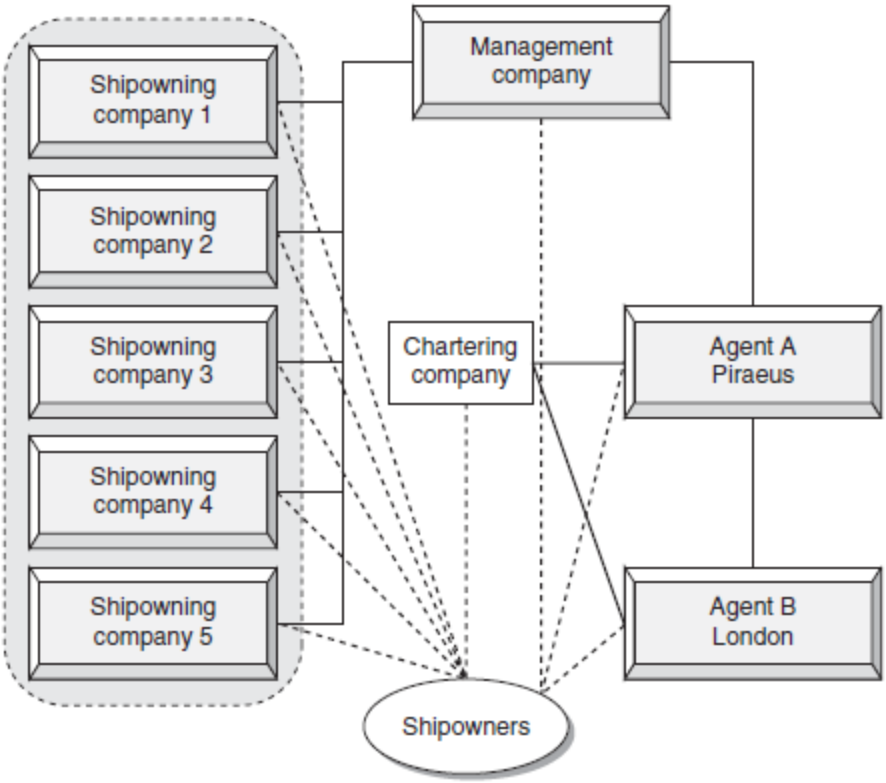

Figure 6 - Organizational model of Greek-Owned shipping companies

Source: Theotokas & Harlaftis, 2009

Large number of small companies and fragmentation

The majority of Greek-owned shipping companies between the two World Wars were small enterprises, controlled by co-ownership – a small amount of offices in London operated as intermediaries and often behaved as partners for many small 'single-ship' companies in Greece (Chlomoudis, 1991)- which worked on the basis of kinship per common origin, the 'Greekness'. The companies were small and with low degree of internationalization.

In the period that followed the Wars, larger internationalized enterprises started to emerge. This appearance emphasized the difference between 'traditional' and 'non-traditional' ship owners. The first ones were the owners who were second generation at least and had inherited the fleet from their parents. As a general rule, their representative offices were located in New York and London. The latter group included ship owners who entered the market after the Second World War and came from other professions (Harlaftis, 1993). They had their offices in Piraeus.

Increased operational demands in addition to the need for technological advancements and exploitation of economies of scale led to a growth in the average capacity of Greek owned fleet (Harlaftis, 1993; 1996; Naftiliaki, 2000). Despite the growth during the 50s, 60s and 70s, the average Greek-owned shipping company remains small, has a small amount of vessels that operates which varies between one and four. This pattern – large amount of small firms- is due to the specific characteristics of tramp shipping, which allows companies to enter the market regardless of their size. In 1991 there were 1072 Greek shipping companies world-wide, of which 54% were small ones with one or two vessels. Furthermore, 72% of the firms had fewer than four vessels and 90% had a fleet of no more than seven ships.

Table 1- Distribution of the Greek companies based on the size of the fleet

Year	Small	Medium	Large
1958	75,00%	18,00%	7,00%
1975	72,60%	21,10%	6,30%
1990	65,90%	23,90%	10,20%
2000	67,60%	27,00%	5,40%

Source: For 1958 (Harlaftis 1993), for 1975 and 1990 (Theotokas 1997), and for 2000 (Petropoulos 2000).

However, it is the small companies that experience the highest volatility in their numbers (Theotokas, 1997). The basic factor for this fluctuation is the recurring changes in freight rates. A significant renewal source was Greek seamen. It was usually the engineer or the captain who accumulated capital to enter the market by purchasing a second-hand overaged ship. As a result, the single-ship companies where operating vessels older than the average age of all Greek-owned companies. These shipowners, like the already existing ones, kept the same organizational and managerial traits. There was no separation of ownership and management as the ship owners and their families were the ones running the companies.

Networking

There are different explanations of differences in performance of companies or the source of their competitive advantage. The resource-based view focuses as mentioned to the firms' resources and capabilities (Barney, 2001) while the industry structure view focuses on industry-specific factors (Porter, 1980). There are, however, some specific characteristics of company operations that require further interpretation. This is the case of the Greek network of shipping companies that formed a clublike arrangement. This type of arrangement creates positive network externalities such as development of reputation capital, access to important business information and expertise, transaction cost saving and quality assurance through trust, which derived from 'Greekness'.

Ethnically homogenous grouping is the basis of such an arrangement and makes the Greek ethnic identity have a special meaning in the sector. Those kinds of relationships were based on familial and common island ties. The Greeks created and maintained a far-reaching network of shipping companies. Their existence in financial centers such as London and New York, in addition to the aforementioned advantages, enabled them to draw on expertise in order to finance their ventures.

The importance of the preservation of 'Greekness' is highlighted by Harlaftis (1997):
'Kinship, island and ethnic ties ensures the cohesion of the international Greek maritime network. The unofficial but exclusive club of these cosmopolitan entrepreneurs clung to its Greek character; 'Greekness', beyond any cultural or patriotic aspirations, was extremely important for their economic survival. It provided access to all the expertise of shipping: market information, chartering, sales and purchase, shipbuilding, repairing, scrapping, financing, and insurance and P & I clubs. It also provided consultancy from older and wiser members and information about the

activities of the most successful members of the group. Imitation proved an extremely useful 'rule-of-thumb''

7.1.3 NATIONAL ENVIRONMENT

Before we proceed to the presentation of some strategies and explain how the above-mentioned factors contributed to the specific strategic decisions, it is important to present some factors regarding the national environment and its interaction with the macro one. One of the most crucial factors that contributed to the expansion of Greek shipping is the political environment, namely the non-intervention on the part of the Greek government and the tax liberalization (Harlaftis, 1997). Every time in history there was an attempt from the Greek government to raise the taxes, there would be an exodus of Greek companies to other cities, such as New York and London, Flags of convenience was the element that to a large extend made this exodus possible (Metaxas, 1985).

There are multiple reasons for Greek flagging-out as well as for flagging-in. It is easy to identify how flagging out is induced; the operating cost of the vessel in connection to the prevailing freight rates. What needs to be underlined, though, are the reasons to flag in and how the Greek government assisted to the expansion of the Greek-owned fleet. Reasons for flagging in Greece were the favorable low taxation, the stable political situation in the homeland and the institutional framework (Goulielmos, 1997) in contrast to the unstable political environment in open registries that Greeks used such as Cyprus, Panama and Liberia. Additionally the vessels carrying the Greek flag were protected from the ITF (International Transport Workers' Federation) action against flags of convenience (Harlaftis, 1993). Embargoes that appeared throughout history (China, Vietnam, Cuba, and Persian Gulf among others) had a negative or positive impact for the Greek flag and the flexibility to shift flags largely benefited the Greek ship owners.

7.1.4 STRATEGIES

The companies that operate in the shipping industry are not in a position to control their earnings since they cannot directly affect the level of freight rates in the market[5]. Hence, the way to achieve an increased profit is by cutting costs. (Downard, 1994) Since this is the prevalent strategy for all companies of bulk and tanker shipping, the factors that led to competitive advantage of Greek-

[5] When the business time charters the ships with long-term contracts, it can calculate the inflow of its incomes beforehand, taking into consideration of course the reliability of the time charterer

owned enterprises will be analyzed further. Although the analysis is from a national point of view, firm-specific examples are given. The reason for this is that in some cases Greeks were the pioneers who actually caused a shift in the market and how business is done, so it is worth mentioning that they were not just adopting a new strategy.

7.1.4.1 Cost leadership

The dominant postwar strategy of Greek-owned businesses was 'cost leadership', namely being active in the market on the basis of competitive costs (Porter 1985). The competitive advantage derived from the interrelationship of exogenous and endogenous factors. The companies managed to exploit the exogenous factors exactly because the endogenous enabled them to do so. The endogenous factors, the ones connected to the actual operation of the shipping business, such as the business philosophy of the Greek shipowners, familial focus of firms, organizational structure of companies and advanced know-how of ships' operations, functioned well and interacted with the exogenous factors, the ones associated with the businesses' external environment, such as flags of convenience and fluctuations in ship prices and freight rates. For example, the policy of flagging out after 1973 helped Greeks and Japanese preserve their share in the world shipping, while it did not have the same outcome for British and Norwegians. (Thanopoulou, 1994)

The companies' organizational structure and mode management assisted in the reduction of running costs. The direct involvement of the shipowners with the management of the business and the strategic and operational decision-making enabled them to have knowledge of every cost aspect and therefore control them. During the postwar period the Greek-owned fleet was old and had low specialization so to an extent the low-cost strategy was justified. However, for small businesses cost reduction was not as accessible as it was for medium-sized and big companies, which had more opportunities to exploit economies of scale. Therefore small companies sought competitive advantage in other areas indirectly linked to cost.

According to Thanopoulou (1994) the acquisition of second-hand ships and the extension of their economic exploitation was a strategy for reducing fixed costs and improving the competitiveness of the fleet. Many of the families owning a small fleet followed a model already introduced during the interwar period and entrusted the commercial and the entire or partial operational management to offices of relatives or compatriots in London. Certain aspects of operational management such as

crewing were kept in-house. The London offices managed a large fleet, being able to exploit economies of scale. From the late 60s the popularity of this model decreased and companies became bigger and started operating independently. Between 1967 and 1973 returns from shipping were exceptionally high and even small businesses had high profitability without the need for cost policy optimization. After 1974, the freight rates plunged so cost cutting became imperative once more and the small companies went into collaborations in order to achieve this. More official forms of these collaborations were the consortium Oinoussian Maritime and the Hellenic Maritime Consortium (HMC). This was an attempt to use economies of scale and enhance their bargaining position towards their suppliers. More specifically HMC's scope was to undertake the ship management functions by having common supplies, common negotiation of insurance issues and crewing facilities. This led to 35% cost reduction. However, when the freight markets improved after 1986, this necessity ceased to exist and the consortium was subsequently dissolved with the shipowners returning to their smaller informal forms of collaboration, which was also a decision in order to avoid agency costs.

This aforementioned activity throughout the years highlights the role of the unifying element, for instance the common origin and how that interacts with the values, mentality and ideology of Greek shipowners and their attitude towards participation in the markets. The attitude of Greek shipowners towards formal collaboration is revealed and it is apparent that they chose to engage in a formal structure when it was really imperative. However, it is clear that networking in all its forms is of high importance to the Greek shipowners.

7.1.4.2 Differentiation - Innovation and competitiveness

The reasons the Greek shipowning companies engaged in the development of innovative applications and strategies were to attempt to lower costs and participate in the market in a more competitive way.

There were shipowners who engaged in product innovation by introducing new ship types. The term 'supertanker' was first introduced in the 1950's and it was associated with Aristotle Onassis whose tanker 'Tina Onassis' was admired as a technological marvel. (Beth et al., 1984: 31). This vessel carried 60% more than the world largest tanker in that period. Stavros Niarchos, Onassis' biggest shipping rival, also introduced supertankers the same period. This innovation was fueled by

the need for cost cutting in building but also operating and exploiting ships. The supertanker innovation was adopted by the industry and was widely applied-they changed the rules of the game. In the opposite direction of large vessels building, George P. Livanos introduced mini-bulk-carrier ships. This innovative idea derived from the need for flexible ships that could navigate shallow seas and channels. The first such ship was delivered in 1969 and was followed by a total of 51 vessels with common characteristics. The number alone indicates the success of this type of ships in that period. Other innovations regarding the product aspect included the continual upgrade of bulk-cargo vessels and development of the fleet by C. M. Lemos. Later, in the 90s, the Lykiardopoulos group built the first double-hull-double-bottom supertanker (VLCC[6]). This radical change, in terms of technological product innovation, directly followed the passing of the Oil Pollution Act in 1990 (OPA90).

Another innovative strategy, also initiated by Onassis and Niarchos, was the placement of orders for series of vessels with the same characteristics and specifications. The result was that the shipyards were able to optimize their operations and production cost and therefore the shipowners could get their order in competitive prices. Apart from the innovation in the methods of production, a new way of financing was introduced by these two leaders and then followed by the rest of Greek shipowners. The new tactic was the use of long-term time-charter contracts of the ships as collateral to ensure funding for the newbuilding of their tankers. Although in the early postwar years they used their own capital to expand their business, later in the 50s, following the same tactic as the Norwegians, they managed to borrow capital using the time charters from American oil companies. They also combined the two previous strategies, ordering series of ships with only one time-charter contract as guaranty.

It is essential that the innovation at a management level is also highlighted, as it related to the operational management of ships and is considered the sector where Greek shipowners are considered most competitive (Theotokas & Harlaftis, 2009). The know-how of operating and technical management of ships, which derives from the strategic asset of human resources, was the basis of innovative applications. They were related to both shipowners, who decided for the ship management, but also the personnel on land and sea. This underpins the importance of resources

[6] VLCC stands for Very Large Crude Carriers. They are crude oil tankers with size ranging between 280,000 and 350,000 DWT, with typical load capacity of 2 million barrels of crude oil. They cannot pass Suez Canal.

and capabilities of the companies regarding human resources. Examples indicating this importance include the Lascarides and Constantacopoulos family and others.

The Lascarides family is one of the few Greek companies that developed its activities in specialized markets. It exploited its established knowledge, skills and experience in the fishing-ship market in order to expand into the reefer[7] market and the specialization of transshipments at sea. The shipowner identified the opportunity and through collaboration with other skilled owners and related organizations managed to get an important portion of the reefer market. Later, his sons with specialized knowledge from universities abroad joined and expanded the business creating by the 70s a small fleet of reefers. They managed to sustain their competitive advantage through the ability of their fleet to carry trans-shipments in the ocean (Theotokas & Harlaftis, 2009).

There were also a couple of companies that entered the market with vessels of particular features, which they exploited to the utmost by operating in different freight markets. They were cargo carriers with added car decks, which enabled them to carry general dry-bulk cargo and automobiles simultaneously. This was a differentiated strategy that also provided diversification and risk mitigation. The owners became more competitive in the specialized market of automobiles transportation and they also had the chance to exploit the ship's capacity to the maximum. This chartering strategy was highly dependent on the productivity and skills of the seamen.

Last but not least, there are those shipowners who exploited their resources and capabilities to expand in emerging markets. V. Constantacopoulos is a very distinctive example of this category. He became the biggest independent shipowner of containerships chartered to liner companies by exploiting his competency in the effective operation of liner shipping vessels and entering a fast-developing new market where the ability to perform was the key to success (Fafaliou & Theotokas, 2006). What he did is applying to liner shipping the traditional approach Greek shipowners had to tramp shipping, namely the low-cost strategy. He formed a fleet of container ships operating as a shipowner and not as a liner operator and time-chartered the vessels to liner companies. Liner companies preferred to sell a ship to a manager and then time-charter it to a lower rate than their own operating costs. This strategy filled a gap in the market, was followed by others and became

[7] Reefers are the vessels carrying frozen or refrigerated goods such as meat, vegetables and fruit.

the basis for the expansion into management of this type of vessels (Theotokas & Harlaftis, 2009). This strategy enabled the company to focus on its core competency, which was the efficient operation of the fleet.

7.1.5 COMPANY CASES IN GREECE

This part includes the analysis of some family shipping businesses. On the grounds that one of the most dominant and decisive characteristic of Greek shipping was the family orientation, the examples chosen are not specific companies but the family operating them. The information included is drawn from books such as Ploto and Pontoporeia (Harlaftis et al., 2002; Harlaftis and Vlassopoulos, 2004) and other published material. It was not easy to determine which examples to include. However, with the families included both the traditional and non-traditional shipowning families are covered and some of them are still considered among the most influential people in the shipping world according to Lloyd's List.

7.1.5.1 Aristotle Onassis

The shipping tycoon Aristotle Onassis (1900-1975) was 'the archetype of the cosmopolitan Greek shipowner' and a name synonymous with the acme of Greek shipping. Born in Smyrna and emigrated in his early twenties to Buenos Aires, Argentina, Onassis entered the shipping arena in the peak of the crisis in the 30s when he bought his first steamship. Expanding his business and seeing the significance of tankers he ordered his first tanker, the Ariston, before the outbreak of Second World War. Moving to New York in 1942 he managed his fleet of tankers and tramp ships under the neutral flags of Panama and Sweden with the intention to exploit the high freight rates in the free market.

Expanding his fleet, Onassis bought ten Liberty cargo ships on the open market in 1947 which sailed under Honduras flags. Similar to other Greek ship owners at the time, he established several American shipping companies and acquired additional ten Liberties and tankers (sailing under the American flag). Onassis was determined to include more tankers to his fleet and to start a massive newbuild program. Taking advantage of the destroyed German and British ship-yards he ordered sixteen tankers from a shipyard in West Germany with particularly convenient terms. By 1953 Onassis' fleet consisted of seven Liberties and eight newly built tankers. One of the tankers is the

first supertanker Tina Onassis (40,080 DWT). In the next five years his fleet expanded considerably from 15 to 49 vessels. The 15 Liberties (10 of which were under American flag) and the 34 new tankers had a capacity of more than 1 million DWT.

Onassis continued expanding his fleet and by 1965 it reached 60 vessels with a total capacity of 1.33 DWT - ten Liberties, two new bulk carriers and the rest were tankers. In 1969 he managed 72 ships. The supertanker Olympic Armour (200,000 DWT) was among them, sailing under the Greek flag. It was Onassis intention to keep a percentage of his fleet transporting dry-bulk cargo although he was considered one of the 'tanker kings'. By the time of his death in 1975 even though he reduced the fleet to 55 vessels (42 tankers and 13 bulk carriers), its overall capacity was 5.2 million DWT.

As already mentioned his innovative business strategy changed the standards in technological advancement and operational expertise in global shipping. He was among the first to realize that increased capacity of a vessel resulted in reduced operational cost. He was also one of the first Greek shipowners who took advantage of the flags of convenience. In addition he was lucky enough to be able to take advantage of the unexpected changes in the sector. He was able to exploit the rise in demand for tankers because of the Suez Canal closure with his newbuilt fleet that had remained unchartered due to an annulled deal with Saudi Arabia about becoming the exclusive carrier of its petroleum. He expanded his activity in banking, real estate, tourism, and fishing and also attempted in shipbuilding without success. In 1956, among other investments to develop Greece, he invested an exceptionally large sum to buy the Greek air routes and widened its network of destinations benefitting tourism and Greece in general.

Onassis' name, even now, 40 years after his death is still a talking point. The Alexandros S. Onassis Public Benefit Foundation (which held half of his fortune), continues to manage what is left of the fleet, oversees various other activities and invests in public benefit purposes.

7.1.5.2 Stavros Niarchos

The "golden Greeks" Stavros Niarchos (1909-1996) entered the shipping business in the 30s when he began working for his uncle. In 1939 he moved to London and bought his first ship. He stayed there shortly as the Second World War's outbreak forced him to go back to Greece and join the

Navy. His ships followed the faith of the ships of many Greek owners and were lost in the War. Once the War ended, Niarchos served as an honorary naval attaché in the Greek embassy in Washington. He relocated his shipping business to New York, being in the right time on the American capital market (upsurge for the oil market) and also joining the Greek ship owners' community.

Using the insurance indemnities from his lost ships, he bought some Liberties and four ships sailing under the Panama flag. Wishing to establish a position in the tankers business, Niarchos ordered multiple tankers from American and European shipyards. In less than a decade, his fleet grew from two ships (with a total capacity of 14,480 DWT) in 1947 to 64 (with a total capacity of more than 1 million DWT) in 1958. Niarchos' fleet had 56 tankers and 8 cargos. By the 70s the fleet reached 70 vessels, 55 tankers and 15 cargos with an overall capacity of 1.4 million DWT. Acknowledging the necessity to have bulk carriers, Niarchos acquired 15 and in the 80s managed to face the international freight crisis with a fleet of which two-thirds were bulk carriers (20 bulk carriers, eight tankers and two combined carriers and 1.9 million DWT). After this period the fleet was reduced in terms of both ships and capacity and the high proportion of bulk carriers was kept.

Niarchos' impressive rise resulted from his innovative strategy in shipbuilding as aforementioned. Simultaneously, together with Onassis, he introduced the trend of very large vessels. Innovative ways of financing and placement of orders of buildings backed with long-term charter contracts were also strategies which contributed to his growth. He also invested in the development of Greece, with the major investment in Skaramangas shipyards, the biggest shipbuilding place in Greece and among the biggest in the Mediterranean. This investment affected and contributed positively to the growth and renewal of the Greek fleet in general.

In the 90s the second generation of the Niarchos family took over the company and its size was further reduced. The new owners switched the specialization of the fleet back to tankers and 8 out of 18 were such in 1995. In 2000 the Niarchos family owned two bulk carriers, four tankers and five product carriers. By the end of 2003, the company was sold to other Greek ship owners. The Stavros Niarchos Foundation that got the 20 per cent of his fortune offers its income for public-benefit projects, out of which half must be in Greece.

7.1.5.3 Angelicoussis

The Angelicoussis family originates from Kardamyla on the island of Chios as many other shipowning families. The business activity is connected to Antonis Angelicoussis who acquired the Astypalea, his first ship, in 1950 and was a stalwart of the international shipping industry from then until his death in 1989. A permanent collaborator, he founded his first company, Angelicoussis & Efthymiou, with D. Efthymiou, Pegasus Ocean Services in London with 4 other Greek shipping families in the early 60s and Agelef in 1968, again with Efthymiou in London. In 1971 he decided to pursue his own interests and created Anangel Shipping Enterprises.

In stark contrast to most of his contemporary Greek shipowners, who relied on the superior maritime acumen and experience of Greek sailors to prolong the functional life of second hand vessels, Angelicoussis focused on acquiring new craft. The average age of his fleet in 1975 was 7 years, dragged down by the 42 new vessels that were constructed for his various companies between the years 1965 and 1985.

In 1987 he launched his final collaboration with American Express Bank, Anangel American Shipholdings Ltd. By floating its shares on the Luxembourg and New York stock exchanges (NASDAQ) he again showed his natural tendency for innovation and became the first Greek shipowner to rely on the strength of the international markets to raise capital.

The legacy of basing development on newbuilds, long ship functional life and flying the Greek flag on ships operated by the Angelicoussis group was continued after Anotonis' death by his children. However, the fleet has diversified and is now made up of tankers, cargo ships and bulk carriers.

In 2000 Antonis' two children (Ioannis and Anna) created separate shipping companies to pursue independent interests in the industry. Ioannis acquired and delisted Anangel American Shipholdings Ltd in 2002 and manages cargo ships and tankers. Anna manages tankers through Alpha Tankers & Freighters and bulk carriers through Kristen Navigation Inc. Ioannis (John) Angelicoussis ranks 5th in Lloyd's List Top 100 most influential people in shipping for 2015.

7.1.5.4 Frangos

The Frangos family hails from Kardamyla of Chios as well. The Frangos family hails from Kardamyla of Chios as well. Rising to prominence after the Second World War, this Greek shipping family was split into two main dynasties, the families of Elias and Nikolaos Frangos.

After serving in the Greek Navy during the Second World War, Elias Frangos became captain of the Liberty Aliki and he was also share holder of the ship. With the purchase of his second ship, the Euphrates, in the late 40s his fleet began to take shape. From 1958 he was predominantly interested in part ownership of the ships in his fleet. However, by 1964 he had realised that the conflict of interests necessary for part ownership negatively impacted his ability to flexibly and efficiently manage his fleet. He established Elias Frangos & Son Shipping Ltd and Elfrangos Compania Naviera to manage his fleet and brought his son, Markos Frangos, into the fold.

Markos Frangos decided to focus on collaborations and partnerships with other Greek shipping families, founding Liberty Maritime Agency Ltd in 1973 with N. Efthymiou, and then in 1988, Elias Frangos & Son Shipping Ltd and Elfrangos Compania Naviera were merged with the companies of the Glyptis family. This partnership established Uniship Maritime Inc to manage bulk carriers.

Elias and Markos Frangos took the strategic decision to manage only a small number of ships concurrently, emphasising the importance of personal relationships between collaborators and tight control over the ships that they managed.

Nikolaos Frangos' first venture into shipping, in the post war years, was resurfacing the torpedoed Ostrakon with Loukas, his uncle. The Ostrakon was then repaired and retained by the family for a period. Acquiring and repairing/repurposing ships that other ship owners could not easily make use of was typical of Nikolaos Frangos' involvement in the industry throughout his career.

Throughout the 50s Nikolaos continued to work with his uncle to managing the family's ships, however, in 1960 he purchased his first ship and in 1966 formed N.Frangos-N.Moundreas, a partnership with N.Moundreas. Frangos drew on his experience captaining and managing his family's ships and dominated the operational and functional management of the fleet, whilst

Moundreas used his experience as a freight-broker and lawyer to manage the commercial aspects of the business.

As mentioned above, Frangos actively targeted second hand ships with a history of accidents or functional issues for purchase to take advantage of knocked down prices, however, these ships were retained, not sold and different routes were explored to raise capital.

7.2 NORWAY

7.2.1 INTRODUCTION

With the title of the world's second largest coastline there is no surprise that Norway was and still is a leading country in this industry. The industry has been struck with several transitions and its players have been forced to take actions to prevent downfall. According to Stig Tenold et al. (2012) there have been three major waves after the 1960; namely the boom, the shipping crisis and the revitalization after the introduction of the Norwegian international ship register. The last decade has been characterized by booming offshore activities and a transition from large vessels to smaller significantly more advanced ships leading to a major increase in value creation. However, the future may hold troubled waters as the oil prices keep decreasing.

The purpose of this chapter is to illustrate the factors that have contributed to the creation and still reinforce the competitive advantage of the Norwegian-owned fleet as well as the strategies that sustained and extended this advantage. These factors include but are not limited to the innovational behavior, the urge to develop new technology, the Norwegian International Ship registry and the flexibility of flags and the long lasting experience with the sea.

Norway is a small country highly dependent on international trade to maintain its living standards and economical status in the world. In addition, Norway carries an open economy that makes them dependent on an equally open economy globally. In order to analyze such an economy, it is crucial to take into account the dynamics of the government-business relations (Drobetz et al., 2013). Historically the labor party has had a significant role in Norwegian politics, and has governed the country for many years.

7.2.2 ENDOGENOUS FACTORS

According to (Tenold et al., 2012) the specialized segment of the industry is heterogeneous compared to the tanker and dry bulk segments. The Norwegian shipping industry has the last years been dominated by the specialized shipping sector and therefore is becoming a fragmented industry. Tenold also states that the newcomers in the industry were even more heterogeneous, as they included companies that today are among the largest shipowners, as well as companies that capitulated after only a few years. Back in 60s, when the specialized ships were first introduced,

only three types existed (Tenold et al., 2012). Today Stopford (2009) categorizes the specialized ships into thirteen different types. This explains some of the complexity of the industry and the resources developed. The heterogeneous characteristics of the industry create an environment of co-operation, and less pressure from internal rivalry in the country. This backs the view that capabilities are the source of strategy and thus empathizing the importance on each capability within a firm or an industry.

Tenold categorizes the companies' size such as a small shipping company operates 1-2 ships, medium sized operates 3-9 and a big company operates more than 10 ships. Based on that, Norway mainly consists of medium- and large-sized shipping companies. During the postwar period Norway have had a majority of large companies, since the small ones did not have the capital to overcome the crisis. Out of the 10 largest companies in 1960, six of them are still among the top 30 today (Tenold et al., 2012).

The Norwegian shipping industry is characterized by many different ship types and sectors, which caused the industry to be commonly associated with innovation and differentiation. Within the shipping sector a rather important capability is of course the ships the firm own or operate. This heterogeneity of resources creates an advantage for the Norwegian ship owners, since their capabilities are difficult to imitate but also more importantly difficult to control without high knowledge about them. This interaction between the capabilities within the firm is an interesting aspect of the industry. However, is quite difficult to interpret if these interactions arise as a response of changes in the industry or as a strategy implemented from above from the leadership. Nevertheless, it shows the importance of innovational thinking in order to gain value creation in the industry in these companies. Norway have often been developing new types of ships with advanced technology that makes it more difficult to steer, this type product innovation give room for market innovation, seeing at the innovation is such a major change. Historically, Norwegian shipping has gone from tanker and oil to a more diversified industry. Is the global industry affecting the Norwegian companies to change strategy or is it rather the capabilities of the Norwegian firms' that lead the path for the industrial changes. We have often interpreted the Norwegian companies change in strategy as a response to change in industry. However, there is clearly an interaction with the capabilities of the firms and the industry that have played a role in this change.

As we mentioned the evolution of technological aspects in the industry (which have not usually been characterized as high technological) have made it clear that the ability of managerial actions have played a role. The Norwegian have a long history anchored in their family roots with seaman and the long coastline. The interaction between the seamen's' experience on the sea and the Norwegian capital that allowed for technology have clearly been a benefit for the Norwegian shipping companies. Historically, the Norwegian ship-owners were families with connections to the sea, either through location connection or work experience as a seafarer. Today most of the Norwegian shipping companies have gone public with the majority of them being listed on the Oslo Stock Exchange (OSE). OSE is the largest shipping stock exchange in Europe, which displays the large number of companies in Norway (Oslo Børs). As a result of being public, the companies tend to have relatively dispersed ownership structure (S Tenold, 2001b). However, in many companies one can still observe the family founders being represented in the ownership of the company. The constitution of the Board of Directors reflects that fact as there is at least one representative from the fund of the family founders aboard. An interesting evolution of the industry is therefore if the leadership capability that was a clear advantage is no longer un-imitate able and the competition is now higher than before. However, we see stronger tendencies of external actors playing a more important role in the development of the companies and strategies. The national environment in which the company operate have become regulated and have created pathways for the companies, which despite their strategy they have to take into consideration.

In October 2013, Prime Minster Erna Solberg, representing the conservative party formed a coalition with the right winged Progress party. This change in government enhanced the development of the private sector, including the shipping industry. Norway is not a part of the European Union (EU), however it is a part of the European Trade Union (ETU), which makes the Norwegians implement all the regulations and policies that the EU enforces. In fact, Norway tends to be the first county to implement the regulations, underpinning the first mover characteristic. In the 90s over 80% of the Norwegian exports were conducted with the European countries (SSB).

Norway supplies energy efficient products and therefore is subject to a lot of environmental policies. As a result the shipping industry has been proactive implementing environmental friendly solutions for years. As an example, Norway was the first country to accede to the Hong Kong Convention on 26 June 2013 (IMO). As a matter of fact it is stated that Norway, despite being a

non-EU country, is the first to implement the EU regulations. The country's location has also determined much of its behavior in the industry, due to the challenging climate conditions. Some international policies can be very costly when implementation of new expensive technology is required. Norway, however, already has a strong focus on technology, which benefits its competitiveness. Therefore, a national pattern towards environmentally friendly thinking can be identified. Norway based on its advantage of advanced technology can form the implementation of global policies that can affect the world industry.

The fragmented industry have caused the government to activate certain initiatives among them are investing in research programs, creating collaborative conferences and the creation of certain organizations. It is stated that Norway has the most complete cluster in the shipping industry. A cluster is the result of collaboration between companies at the same location, this do not necessary mean between other shipping companies but also between other actors that have knowledge to share. It might be that the Norwegian shipping industry has blossomed due to the fact that the knowledge of technology has transferred from one industry to another. This would mean that capabilities across industries could be exploited and create value creation. Indeed, this has occurred in Norway at several levels. The fragmented resources and the size of the country causing several sub industry locations are of importance in order for this collaboration to prosper. This has resulted in both sub-clusters in the shipping industry, knowledge sharing across industries and the combination of the two created a clear advantage for the industry and the firms. The knowledge transfer has also resulted in other industries benefiting on the shipping industry's competitive advantage. This interaction is clearly seen in the financing sector.

Norway has one of the largest shipping banks in the world, DNB, which is internationally located. The existence of such a bank eases the Norwegian shipowners' access to capital. The investment costs on Norwegian soil have doubled in the time period 2004-2011 and increased with another 50% the last years (Innovasjon Norge). Close relationships with the lenders are vital in a cyclical industry such as shipping, as the companies will be dependent on such institutions during harder times. The common capital structure in the industry is high debt ratios. In the beginning of the second quarter of 2015, DNB had a total of 26, 3 trillion USD in loan receivable and guarantees for shipping and offshore companies (DN).

We mentioned that governmental investment in shipping have caused research facilities. Actually, Jenssen & Randøy (2002) have stated that one of the clear advantage for the industry is the Norwegian universities. Norwegian University of Science and Technology (NTNU) offers education in various technological directions, including marine technology, and is one of the best research facilities in Europe. Additionally, NTNU collaborates with research facilities such as SINTEF Group and Allforsk, in order to bond the gap between industry and academia. Among of the most important targets in the government's new strategy is the further development of maritime education. The strategy suggests the further subsidizing to MARKOM 2020, which is cooperation between several institutions to promote professional education within the maritime sector. In addition, the government will fund a new ocean center at NTNU. All these actions illustrate the political standpoint of promoting innovation and development in the industry. Today the industry also offers trainee positions among several maritime firms, including finance, drilling, law building and so on, called Maritime Trainee. The impressive part of this trainee program is that includes many of the actors in the cluster. The aim is to present the attractiveness of the industry and attract skillful people within it. This investment in education and training shows the willingness to optimize the maritime cluster in Norway and therefore make the industry more competitive abroad. The interaction between the shipping companies and academia, contributes to further knowledge exploitation, which can lead to competitive advantage.

The above-mentioned focus on technological inventions and education has led to an increase in the number of employees in the industry. It is at a total of 110,000 people working in maritime related companies. There are 40% more workers in the maritime industry now than there were 12 years ago. However, 60 % of the total number is foreign labor. Although the technological focus has also led to higher production growth, the industry is experiencing a so-called "jobless growth". This type of growth is driven by restructuring, rationalization and autonomy (NSA). The production is higher, but there is no need for more employment. The industry is able to produce more with fewer employees, which has caused higher salaries due to company optimization.

The interaction between change, innovation, technology and leadership is very consistent through the last decades in the industry. An interesting perspective is that although Norway claims to be innovative in other industries', they are not among the top developers in the world. Whereas, in the shipping industry they have prospered for years, suggesting that although the shipping industry is

characterized by this type of behavior it do not seem to be the only reason for the success of the industry. This clearly illustrates that the sustainable competitive advantage of the Norwegian shipping industry are dependent on all the above-mentioned interactions.

7.2.3 NATIONAL ENVIRONMENT

According to (Knutsen, 1997) governmental policies during the postwar periods reflect an active industrial interference. This interference in the industry was done in order to obtain full employment and social security. The uncertainty in the early years after the war was reduced by the long-term relationship between the state network of industrial planning and industrial finance and the financial institutions and industrial firms. This led to reduced informational and transaction cost, which formed possibilities for relatively small Norwegian companies to undertake large investment projects in capital-intensive industries (Drobetz et al., 2013).

The companies have followed the flagging out strategy due to the taxation policy in Norway. Taxation has historically been a major disadvantage in the country. According to Sturla Henriksen, CEO of the Norwegian Shipowners Association (NSA), Norway is one of the only countries in the world were companies are taxed on the value of their assets regardless of whether they are making money or not (Shippingwatch). The most popular foreign registries for the Norwegian shipowners are Bahamas, Singapore and Malta. According to NSA, the reason these registries are chosen is due to preferable quality and service, accessibility, price and regulations, compared to other open registries.

One of the most important governmental actions for survival of the Norwegian Shipping Industry was the introduction of the Norwegian International Ship Register (NIS) in 1987. The main objective of this register was to ensure that Norwegian owned ships were registered under the Norwegian flag and improve the competitive state of the industry. In addition, it was created to assure that the Norwegian seafarers still had employment possibilities. With the introduction of NIS, companies could also utilize foreign labor, which was significantly lower priced. One limitation of the registry was the trade area restriction. NIS-registered ships could not carry cargo or passengers between ports in Norway. This limitation is one of the recent discussed problems in the industry, and said to be the cause of a new era of leaving the Norwegian flag. “If they don't change the framework conditions for NIS and the net wage scheme for seafarers, we believe that the fleet

under Norwegian control will keep growing, but that the growth will happen under foreign flags and foreign crewing solutions. And over time this will weaken Norway as a maritime nation, " says Sturla Henriksen. However, new governmental strategy is set out to adjust this restriction intending to make the industry more competitive (Martime Strategy 2015). According to the NSA this would give immediate results. As an indication, a total of 8 owners with 24 ships have claimed that they will return to NIS after this change in the policy (E24). However, shipowners do not show too much enthusiasm for something they believe is an empty promise (Ivar Myklebust, see appendix). However it do not change the fact that after the introduction of NIS, by 1990, the total fleet had increased to more than 24 million gross tons, compared with 7.7 million gross tons at the end of 1986 (Iversen & Tenold, 2014a). Later on, many countries followed in Norway's footsteps and established ship registries.

7.2.4 STRATEGIES

During the postwar period Norwegian-owned shipping has undergone major transitions. Therefore a number of different strategies have been employed in order to create and sustain competitive advantage. However, throughout newer history Norway has been characterized as a country that uses differentiation strategy to achieve competitiveness. This derives from the view that high cost countries have to build their competitiveness on the production of something new, namely innovation, and knowledge intensive products (Jenssen, 2003).

7.2.4.1 Cost Leadership

The postwar period's strategy was clearly a drive for economies of scale, since they pursued a cost leadership style. The underlying factors to pursue such a strategy were related to the cost structure of the Norwegian industry. A high cost production country has to optimize its operations in order to be competitive. The increasingly high wage level of Norwegian crewing and the rigorous crew regulations made the operations costly (Tenold, 2001b). By the early 70s, annual crew costs for a medium-sized ship were approximately 158,730 USD higher than for a Greek vessel, and relative to ships crewed by Asians the difference was even larger (Tenold, 2001a). The crew cost was still more than 60% higher for a Norwegian ship than a ship registered in one of the open registers at this time (Tenold et al., 2012).

Since, the Norwegian companies had to operate under the Norwegian flag by law, a cost leadership strategy was favorable to achieve higher performance. They, therefore, invested in larger ships, such as dry bulk, combination carriers and oil tankers (Tenold, 2009), as the incremental change in crewing cost was small. As an example, 164 Norwegian shipowners, owned ships larger than 5,000 gross tonnages in 60s. According to Porter (1980), the Norwegians were among the first owners to invest in VVLCs and ULCCs. Additionally, they constantly renewed their tonnage, meaning that they bought new and large ships as soon as new technologies to exploit economies of scale were introduced. As a result they had larger and newer vessels than the world average. These investments were a result of the country specific resources that characterized the country. Norway was and still is a commodity exporting country in international trade, with commodities such as oil, gas, fish and aluminum (SSB).

On the other hand, capital was relatively inexpensive, both in terms of equity and loans, and so it has remained until today. This led to another direction for the ship owners, namely to invest in high technology niche tonnage, however few chose this path in the early postwar period as such investments were much more expensive than the first mentioned. According to Thowsen & Tenold (2006:309) the specialized vessel was six times as expensive per ton compared to a 200,000 DWT tanker.

As a part of this strategy, shipowners operated heavily in the spot market, which at that point was quite successful due to high demand. Even though the Norwegians only owned 15% of the world tanker fleet, their percentage in the spot market was as high as 50% (Porter, 1980). However, as history showed this were a short-term solution and not a sustainable strategy for the Norwegian owners. The Norwegians' had put all their money into one basket, and demand is an exogenous factor that they cannot influence.

When the oil crisis struck, the Norwegian fleet was the one hit hardest by the Nordic countries (S Tenold, 2001b). The majority of the companies had huge investments in oil tankers and lacked diversification, which caused a major decrease in their performance. The ones operating in the spot market felt the economic pressure, while the few who had diversified their fleet and tonnage where not equally as hard impacted. This shows that the heavy reductions were not only due to exogenous factors, but also a matter of choice of a sustainable strategy, which is based on firm-specific factors

as management and organizational styles. A need for change in strategy became apparent to the Norwegian owners. Even though the national resources remained the same, the owners changed the way of utilizing them.

7.2.4.2 Differentiation strategy- Innovation and competitiveness

The low growth and hard competition that followed the oil crisis made the Norwegians investigate and utilize the already advanced knowledge and experience in the sector that derived from the country's maritime history. Based on their existing facilities and know-how, they explored the field of specialized ships. New technological opportunities created the possibility for more purpose-built tonnage that secured demand to cover the investments (Tenold, 2009). This changed the fleet drastically, as it consisted of smaller ships and more activity as these ships concentrated on new segments. As a result, the Norwegians gained the first-mover advantage in these sectors. The fact that specialized sectors was characterized by long-term relationships between customers and shipping companies suited the Norwegians ability to co-operate with each other. The influx of new technologies resulted in reduced unit freight cost and increased volumes (Tenold, 2009). This stimulated further trade, which enabled the ability for specialized ships to prosper. Companies pursuing the strategy of using specialized ships operated on two fronts. The first trying to out compete the conventional operator on unit transport cost if possible, while the second is obtaining a premium over the freight rate offered by the conventional operators by offering a differentiated service (Stopford, 2009)

However, this strategy was not without risk due to the big investments it required and challenges of entering new markets (Tenold et al., 2012). As a lesson from the crisis and as a risk management tool, Norwegian owners also diversified their operations into linked technological activities in order to minimize future risk. For that reason they invested in infrastructure, terminals and ports of different segments. This also prevented the companies to be out-competed if the technology became easily imitated. The differentiation strategy offered more predictability of revenues, due to less world competition, and the suitability of the strategy model for companies operating in a high cost country. This led to a sustainable strategy for the Norwegian shipowners in a long-term perspective.

According to Porter (1980) the Scandinavians were diversified and highly respected in the shipping business and also known as the most technological sophisticated owners. Ships were well

maintained and the crew was considered the most skillful in the world. However, as mentioned before the country was expensive in terms of taxation and strict concerning crewing demands. As a counteraction from the Norwegian government to the flagging out behavior, NIS was introduced. This country-specific factor affected all Norwegian owned companies because the operating cost was immediately reduced. Their differentiation strategy was this way supported and strengthened since lower costs, at least in terms of crewing enhanced the innovation implementation. This clearly illustrates the importance of the government-industry dynamic.

After the implementation of the differentiation strategy in Norwegian owned shipping, the strategy has not wavered. However, as technology becomes imitated and old, the focus on price as a competitive factor will once again lead to a cost leadership strategy and need for economies of scale exploitation. Under these circumstances even those who had employed differentiation strategy and invested in specialized ships would have to flag out in order to succeed. It is implied that in order for this strategy to be sustainable, constant innovation is needed

The high oil prices have created a very high interest in expanding the offshore fleet and offshore-related activities and the country already obtains knowledge in this sector. Smaller and significantly more advanced ships, such as chemical tankers, offshore supply and gas shipping, dominate the current Norwegian market. New technology has again given rise to expansions into new segments, and the Norwegian fleet is stated to be among the most advanced in the world.

Inventors

While Norway is well known for its technological inventions of products in the industry, it is even more known for the new concepts it has introduced. By concept innovations, we refer to the developments of a completely new segment or a method of handling business. Jacob Stolt-Nielsen, Leif Höegh and Wilhelm Wilhelmsen are among the well-known entrepreneurial individuals that are remembered for their concept innovations.

Stolt-Nielsen will be remembered as one of Norway's most important innovators in the Norwegian shipping milieu. Though his ancestor was all from a line of shipping owners he also had experience from the fishery industry, before starting his imperium. His entrepreneurial behavior led to the development of ships with different compartments, which had the ability to carry different kind of

specialized cargo aboard. This meant that instead of trading only one product, one were able to carry 60 different products in the same vessel, at a highly competitive cost (IVAR). This method was not only more profitable for the owners, but also a lot less risky for the customers. The first purpose built parcel tanker was named "M/T Freddy" and was built in 1955, it had 13,500 tons of leak-proof compartments accessed via 16 deep-well submersible pumps. The ship was a success and the profits were beyond expectations. Additionally it became the model for new international safety regulations, illustrating the global impact he had on the industry. Jacob Stolt-Nielsen was nicknamed "Jackpot Nielsen", and this was the beginning of the chemical tanker segment, in which Norway has an extensive share of the world trade (Stolt-Nielsen).

Wilhelmsen and his generations, is today Norway's oldest shipping company. One of the reasons of their survival and success is their ability to adapt to the changes in the industry. During the 60s, Wilhelmsen invested in liner vessels, and by the early 70s they had found a new way to make the transportation of automobiles more secure. Through a jointly operations, the development of the Roll on-Roll of (Ro-Ro) carriers were invented. The partnership between WW, Transatlantic and East Asiatic in Australian Trade, created the first Ro-Ro vessel, which were named as ScanAustral/ScanCarriers. The Ro-Ro vessels were installed with specialized parking garages so that there were hardly any cargo damage left. This allowed the owners to gain more profit from transporting large volumes over large distances at the same time securing the risk for damage of the cargo for the clients (Ivar).

Leif Höegh, similar as Wilhelmsen, invested in the liner segment and took advantage of the possibilities that were introduced with the Ro-Ro concept, and restructured their liner vessels in to car carriers. Höegh who became a respected businessman in Norway, both in terms of political influence and the way he run his imperium, have had a job in WW before he started by himself (Höegh). Seeing as cars at this time became more and more frequently used by all, and not only the wealthy, it was a growing market and with great potential. Additionally, he is rather less known for the software skills behind the planning of the routes, that were required and developed to operate efficiently such vessels (Ivar, see appendix). Even though, Leif Höegh himself did not create the Liquid Neutral Gas carriers, the company was among the first to use the designs that were created in Norway. The Moss-design is still the main design that is in use today, with smaller adjustments (Ivar, see appendix).

7.2.5 COMPANY CASES IN NORWAY

In this section we are going to investigate large actors of the Norwegian industry and are all listed on the Oslo Stock Exchange. The companies chosen have the typical above-explained pattern of Norwegian shipping. All of the information in this section is found in the respective companies annual report and homepages.

7.2.5.1 Farstad Shipping AS

Farstad Shipping (FS) was established in 1956 in Ålesund. It strives to be a long-term major supplier of large modern offshore service vessels to the international oil and gas industry. With their 63 vessels and one of the most advanced offshore fleet in world, they are a leading company in this segment. The firm operates at a global level and consists of 2200 employees with 29 different nationalities. Their existing fleet currently operate anchor handling tug supply (AHTS), platform supply vessels (PSV) and construction and maintenance vessels (CSV/Subsea). In 2014 their 'the oil crisis struck, due to overcapacity in the market. A number of investors co-operated in order to create a profitable specialized firm. They were able to contract more new buildings, due to this collaboration and their successful management. The offshore segment was completely new for FS and it was therefore through their partnership they were able to train their employees, even before the delivery of their first offshore vessel. In 1974, their first AHTS-vessels arrived. This differentiation strategy was not an immediate success, however, they survived by upgrading their fleet at a pace that provided them with better profitability than others, in addition to having tonnage that could operate in the North Sea, making them competitive. Ever since their change of strategy in the 70s, FS focus on solving tasks a new and better way. With a customer oriented perspective it has led to encouraging innovational thinking in the company, and constantly improving the employees' skills.

As a part of their strategy they have expressed a goal of becoming the most environmentally friendly and cost effective fleet in the world, and thus preferred because it consciously operate with lower consumption of fossil oils. This way they are both being competitive on cost and proactive towards the environmental policies. Some of their inventions during their existence are the shark jaw, operator chair, anchor handling simulator and a gypsy switch. This illustrates the company's strong focus on product innovation. Several of which are conducted in collaborations with others within the industry. As a result they have received many awards for their contribution to the

environment and the industry, among them the Thor Heyerdahl Award, which recognizes individuals or companies within the maritime sector that introduced or developed new profitable environmental technology. FS has become established as a central contributor in the cluster and the interaction has caused the company to further innovational goals and developments.

During their existents, they have mostly bought new vessel and invested in customized ships. However, over time they have also done some purchases of second hand ships, such as the Wilhelmsen offshore fleet in the 80s. Since their establishment as an offshore focused company, they have become more and more true to their aforementioned strategy, and in the 90s they sold of 12 vessels, which did not match the strategy. As a result they average age of the fleet was only 7 years old. This average is the same today, where most of their new buildings are AHTS and PSV vessels. Farstad Shipping's board of directors consists of seven members of, which three of them are women and the Chairman being Sverre Farstad, one of the founders of the company. Today the Farstad family holds 40,5 % of the shares.

7.2.5.2 DOF ASA

DOF ASA was founded in 1981, in Austvoll Norway. The company's vision is "to be a world class integrated offshore company, delivering marine services and subsea solutions responsibly, balancing risk and opportunities in a sustainable way, together, every day". DOF is a highly global company with operations in all of the world continents and a fleet of almost 80 modern offshore vessels. As a matter a fact more than 65 per cent of their revenues are generated from beyond the Norwegian continental shelf. Their fleet consist of PSV, AHTS and Subsea vessels, fairly equally divided and the total number of employees are as high as 5,300. They have a total of 1,618,412,698 USD in revenue in 2014. [8]

Their history is strongly connected with the existence of Austevoll Seafood, which have the same major shareholder, the Møgster family. Traditional fisheries founded the company, with innovative entrepreneurs investing in the education and knowledge of the people. DOFs first two vessels were the largest in their segments and were both constructed and build in Norway. They continued a high expansion in their fleet, focusing on skilled personnel, which is still today their trademark. This was

[8] The exchange rate used is the average rate for 2014. https://www.dnb.no/bedrift/markets/valuta-renter/valutakurser-og-renter/historiske/hovedvalutaer/2014.html

done through a number of mergers and acquisitions throughout the years. During their history the ships were mostly bought and build in Norwegian shipyards, and on the premises on new builds with high innovational features.

Their business strategy has been consistent over their 30 yearlong establishment in the offshore supply segment, with a modern fleet and the engagement of long-term contracts for their vessels. Their main strategy is to gain extreme performance through the recruitment and maintenance of skilled personnel and utilize the most modern and advanced technology. DOF strives to become a world leader in the fields of health, safety, environment and quality (HSEQ). Therefore, they consistently advocate these areas in the execution of all activities and operations in the firm. In order to become a world leader, they state that they have to be on top of innovation and promote such innovative thinking within the company. They have therefore focused on giving their employees high quality training programs, and tried to implement a high innovational thinking culture in the firm. Such a strategy can also lead to cost optimizing as it leads to efficiency in the firm. With the intention of only operating in offshore and becoming specialized they have gained an expert core competence in their segment.

Some of their implementations of innovational technology are hull design, safety procedures, carbon disclosure project, diesel electric hybrid propulsion systems and ship energy efficiency management plans are installed. This illustrates that they are concerned with the environment, in addition to constantly focusing on improving their organizational efficiencies. The board consists of five people, of which two are women, and two are representatives from the founder family. The Chairman of the company is Hegle Møgster, and the largest shareholder, with 51,22 % is Møgster Offshore AS.

7.2.5.3 Höegh LNG

Höegh ASA was founded in 1927 and has a long international history in the shipping industry. Höegh LNG was established after a restructuring of the company in 2006, causing Höegh to separate the company into two entities, namely Höegh LNG and Höegh Autoliners. The holding company Leif Höegh & Co Limited is the primary owner of both the entities today. The Bermuda registered company's vision is to become a market leader within floating Liquid Natural Gas (LNG) services. The fleet consists of four LNG carriers and five floating storage and regasification units

(FSRU). Today the company have 577 employees, 475 of them were maritime personnel, the rest office employees. In 2014 their total freight income in USD was 90,001,000.

First established Höegh ASA was invested in oil transportation as well as liner. Since liner was seen as a counter cyclical segment, this was a method of mitigating risk, proving to be a wise strategy, due to the oil crisis. They further diversified their company by investing in other segment, and when the world's first LNG carrier was delivered in 1973, they made an industry changing impact. The vessel is still trading on a long-term contract today. When the company acquired a 100% of Höegh-Ugland Auto Liners in 2000, their strategy changed to from diversification into a specialization strategy of LNG and Ro-Ro carriers. They disposed of the ships that were not possible to change into the new employed strategy and in 2003 there was a complete renewal of the fleet.

Höegh LNG clearly states in their strategy that they want to have high technological and commercial standards of their operations. The firm emphasizes that this should be done through technological development and operation excellence. Through their 40 years of experience in this relatively new segment, they have become experts in designing, owning and operating the carriers to optimal utilization. Their transition from only operating LNG carriers to investing in FSRU fleet and Floating Liquefaction Terminals (FLNG) have given them a fully integrated organization, with many high technological developments. The recent fleet development shows a change of strategy and is now investing more in FSRUs rather than LNG carriers. The company has a strategy of doubling their FSRU fleet by 2019. With a high demand for LNG and an expected market growth of 1,9% annually over the next 20 years, such units will important in order to gain profitability. This can led to competitive advantage and will decrease today's average age of 10 years. Some innovational features of the company is green recycling, ballast water purification, reduced fuel consumption and air emission and compressed natural gas technology.

Höegh LNG is dominated by the family name and in the board of directors both Leif O. and Morten Höegh are represented. Leif Höegh & Co, Ltd, which is a holding company for the Höegh family, owns the majority of the shares in Höegh LNG.

7.2.5.4 Wilh. Wilhelmsen AS

Wilh. Wilhelmsen (WW) is today one of the leading actors within maritime related services, transportation and logistic solutions. With operations in over 72 countries and 17,600 employees, it is impossible not consider their actions as an industry-shaping contributor. Their ambition it to set standards for ocean transport of rolling cargo and provide the way for the future development of the industry. Today the company consists of three major entities, namely Wallenius Wilhelmsen Logsistics (WWL), EUKOR Car Carriers (EUKOR) and American Shipping and Logistics group (ASL). Last year they delivered products and services to 25,000 vessels and handled 70,000 port calls through their network, with their impressing fleet of 146 vessels. In 2014 WW had a total income of 2,592,000,000 USD.

In 1861, Morten Wilhelm Wilhelmsen began the adventure that today has become the world's largest company of Ro-Ro carriers. On the way the company has undergone several changes of sectors and restructurings of the company, in order to survive the challenges that has occurred. Investing in steamships and controlling a total of 22 ships in 1900, made the company Norway's largest at the time, and a decade later they have also entered into liner and tanker shipping sectors. During the World War 2 they contributed with ships to carry soldiers around, and the fleet was heavily reduced during that time. The company continued to focus on tanker trade until they shifted in 1984 into car carriers, which is their main niche sector today. WW was one of companies introducing the invention of the Ro-Ro concept, causing the fleet to be relatively young of 7,3 years. The company also invested in bulk and offshore during their existence. However, they sold off their offshore fleet and rebuild their tanker vessels intro car carriers and become focused solely on the Ro-Ro and car carriers segment in the 70s. They have also acquired several companies over their timespan, which has caused major expansion and created a big company.

Their basic philosophy is that empowered employees in an innovative, learning organization are the group's main competitive advantage in meeting the needs and wants of their customers. WW intends to be a pioneer in their sector and are willing to take the risks that are expected of them to achieve the innovative need of the industry. One of the contribution factors in order to achieve motivation for employees are training and leadership courses. This type of organizational innovation contributes to an increase in human resources and a development of greater understanding of the industry within the firm. In addition, WW acknowledges the environmental challenges that the shipping industry faces, and aims to be a shaper of environmental friendly

vessels. To reach this goal, they invest in new environmental friendly technology solutions emphasizing the need for product and process innovation in the industry. Throughout their 150-year history they have contributed to several innovational developments, such as gas cleaning systems, energy performance monitoring, implementing vessel energy reporting tools and adapting to recycling policies. The firm's innovational pattern will continue to be focused on, and especially environmental efficient solutions are high on their agenda, either through organizational innovation or product development.

Their board exists of a total of five people and the chairman is Thomas Wilhelmsen. The company is Malta registered and Wilh.Wilhelmsen Holding ASA owns 72,73 % of the shares. During the whole existents of the company it has been in the Wilhelmsen family and today a fifth generation Wilhelmsen, Thomas Wilhelmsen, is the group's CEO.

7.2.5.5 Solstad Offshore ASA

Solstad Offshore ASA was established in 1964 by captain Johannes Solstad and is today one of the leading offshore companies in the world. It operates an integrated shipping company with high specification vessels with both owned and chartered vessels, mainly conducting petroleum related operations. The current fleet exists of a total of 47 vessels divided into AHTSs, PSVs and CSVs. The firm operates globally with 1800 employees and 63 % of their activity is conducted outside of the North Sea. In 2014 they had freight revenue of 593,174,603 USD. [9]

When the company was first established they invested in the dry cargo segment, and during the first decade of their existence they bought and operated 11 vessels and took delivery of three new builds. In 1973, they order 4 offshore supply vessel and such diversified their fleet. They continued ordering several supply vessels and for the timespan 1974-1982 they hade a combination fleet of both offshore and dry cargo. However in 1982 they sold of their last dry cargo vessel and specialized themselves only on offshore, for the next years renewing the fleet with many new builds in order to become experts in this segment. In 1989 they invested in handy size bulk carriers, which again created a more diversified portfolio. However, after a ten-year period they sold of this fleet as well and focused on their strength, namely the offshore sector. In 1996 their strategy of operating a

[9] The exchange rate used is the average rate for 2014. https://www.dnb.no/bedrift/markets/valuta-renter/valutakurser-og-renter/historiske/hovedvalutaer/2014.html

more modern fleet caused them to a complete renewal of the fleet, thus making the vessels advanced in terms of size, strength and having more advanced and fitted equipment on board. Today their average fleet age is 9, 93 years and consists only of offshore supply vessels.

Solstad's strategy is to offer customer focused solutions and quality services. At the same time they aim to develop the services that are needed by both the current and the new customers. Their ultimate goal is to provide a wide range of services, with a high level of quality in their vessels. Additionally, they want to provide highly competent and skillful personnel on board. The company is vertical integrated providing everything from operation, manning and technical management and have a green operational focus. Some of their environmental friendly measures are reducing electrical consumption, anchoring handling, emission control, reducing transit speed and rainforest protection. The company discloses at all time how much these measures contribute to a better environment. In 2014 Solstad saved 147,040 tons of CO2 by having greener vessels.

Solstad Offshore have a small board of five skillful individuals and the Chairman is Terje Vareberg. The largest shareholder is Soff Holding with 35,95 % of the total sharers. Soff Holding is the founder family's holding company. Anette Solstad is also represented in the board and has a direct link to the founder and such illustrating the family ties in the company.

7.2.5.6 Frontline LTD.

Frontline was established in 1985 as a transporter of crude oil. It had it origin from Fronline AB and became Frontline when John Fredriksen bought it in 1996. Today it has one of the world's largest fleet of VLCCs, Suezmax tankers and Suezmax OBO carriers. The fleet consists of 39 vessels. The company has established itself to be a leader within this segment, and according to Lloyd's list (2014), Fredriksen is the tenth most influential person in the shipping industry today. The firms vision it to provide quality transportation services to all its customers and develop long-term relationships with the major charters of tankers. The Bermuda registered company has a total of 180 employees and their total operating revenue in 2014 was 559,688,000 USD.

The company's business strategy to provide their customers with flexible and reliable transportation services is based on some specific principles. These principles explain the focus for the company, such as low operational cost and high utilization of vessels, complying with the new environmental

regulations, develop relationship to main charters and safety and maintenance of vessels. As a part of this strategy they conduct extensive outsourcing of operations, such as ship management and crewing and accounting services. Independent companies provide these activities, and the crew is commonly Filipino, Russian or Indian. This shows that unlike many other shipping companies in Norway, Frontline tend to focus more on cost leadership and outsources the capabilities which are their weaknesses. Additionally Frontline operates a large portion of their fleet in the spot market, by pursuing this strategy they seeks to maximize earnings.

The company's largest shareholder, Ship Finance International Ltd., has 27,7% of the shares and is controlled by Hemen Holding. This fund is John Fredriksen's family fund. In addition, Fredriksen owns 13,3% of Frontline Ltd, making the Fredriksen family the largest owner. Fredriksen is also the CEO, Chairman, President and Director of the company. The board consists of six people, equally divided in terms of gender.

7.3 DENMARK

7.3.1 INTRODUCTION

In the Greek and Norwegian sections we describe strategies and present an analysis of specific example in separate sections, whilst in this section these are merged. The reason for this is the very large amount of small Greek shipping companies since the level of fragmentation is very high. Norway also has a large number of small companies. On the contrary, there have not been as many companies and families operating ships in Denmark and the market is more concentrated in specific players (Iversen & Tenold, 2014b). Therefore, instead of talking of general strategies the focus will be on analysing case studies of specific players and their strategic moves. Furthermore, taking into consideration that the cluster effect is stronger in Denmark we incorporated the analysis of human resources and knowledge base and spillovers in the analysis of its cluster, contrarily to the Greek and Norwegian analysis.

7.3.2 Danish Shipping

Denmark has been a maritime nation for centuries and since its commencement has been sailing in European and international waters.

There have been various factors that contributed to the creation, maintenance and reinforcement of the competitive advantage of Danish shipping. Traditionally, on the national level, there has been a political consensus regarding framework conditions that support Danish shipping and it has actually been formed in close collaboration with the industry itself. There have also been physical conditions that favoured the industry, such as the lengthy coastline and several scattered island communities, good ports, merchants with entrepreneurial spirit favoured by the open-economy characteristics and of course its geographical position between the North Sea and the Baltic. On the industry level it is essential to highlight the importance of the maritime cluster and its contribution to the growth of Danish shipping companies.

7.3.3 INDUSTRY CLUSTER AND ENDOGENOUS FACTORS

The idea of the Danish Maritime cluster (often referred as *Blue Denmark*) started in the nineties, developed with the Growth Strategy for Shipping – Competencies and Growth[10] in 2003 and had a particular focus on the maritime education system (Bech, 2006). The analysis is based on the publication 'The Danish Maritime Cluster – An Action Plan for Growth published in 2006.[11]

According to Porter (1990) the clusters are the main source of industrial leadership as it is the network of companies, institutions and related organizations that interacts in order to create value and reinforce innovation. The cluster is comprised by core and related industries and supported by secondary industries and institutions. Shipping, maritime services, shipyards, equipment industry and the offshore sector comprise the core industries while the Danish Navy, the fishing and leisure industry are related to them. The cluster also includes secondary industries, suppliers or subcontractors, that provide goods and services. Additionally, there are supporting industries such as government authorities, business organisations and education including universities and research.

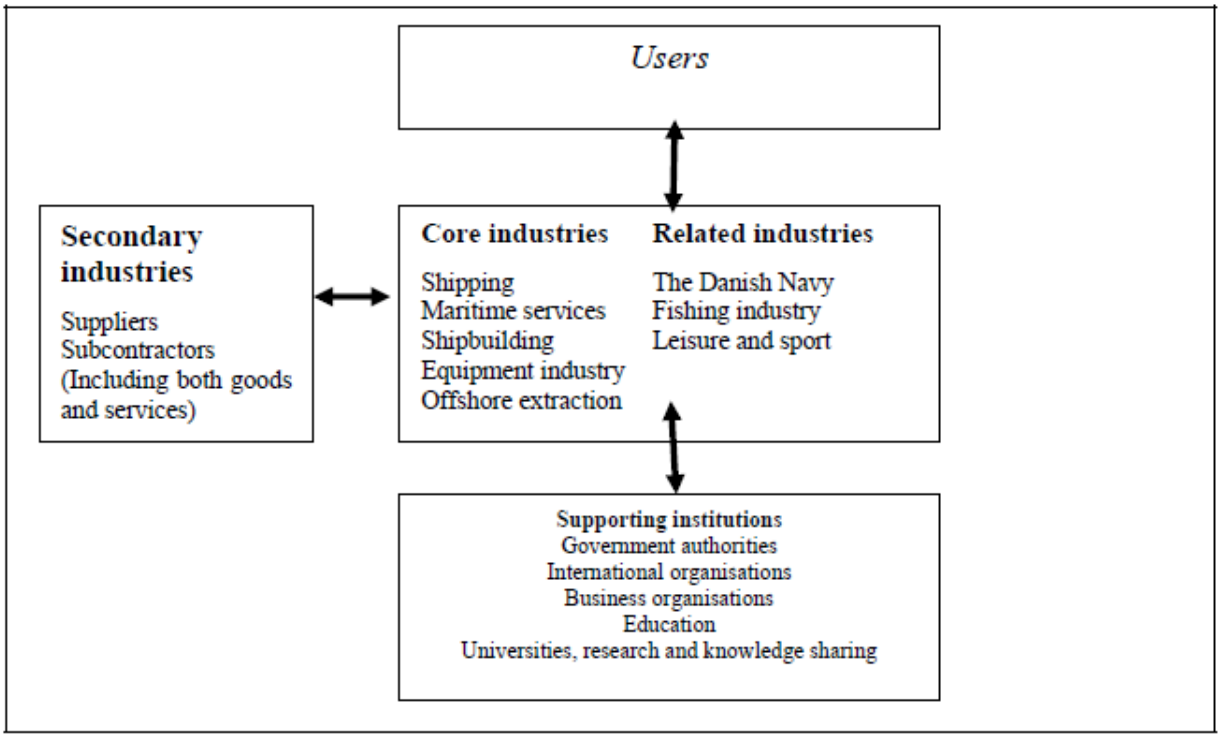

Figure 7- The Danish Maritime Cluster

[10] Søfartspolitisk Vækststrategi – kompetencer og vækst, Danish Maritime Authority
[11] The Ministry of Economic and Business Affairs, June 2006

It has frequently been indicated that the success of Danish shipping has its roots in the fact that the country is the basis for a large amount of complementary maritime industries, connected with business and social links. The institutional foundation for the sector consists of a common mentality and attitude towards shipping, social norms, formal organizations and laws, codes and regulations such as DIS and the tonnage tax. The interaction and dynamics of this nexus supports and promotes innovation and 'represents a critical mass of maritime competence' (Bech 2006, Danish Maritime Authority 1999, 2002, 2003, Sornn-Friese 2003). The above is verified by the increasing amount of foreign companies that establish their headquarters in Denmark or hire Danish operators to manage parts of their fleet (Sornn-Friese & Iversen, 2008).

Taking a different theoretical approach regarding the agglomeration mechanisms that are foundations for a cluster, we will assess the existence of: a) 'labor market pooling', b) the sharing of specialized inputs and c) knowledge spillovers, according to Paul Krugman (1991).

The pooling of educated labor is much related to Danish shipping and provides an explanation for the aggregation of major operators and shipowners in Copenhagen. Some of them are the Maersk Group, Torm, Norden, J.Lauritzen, DFDS and Clipper Group. Additionally, foreign shipowners have moved part of their operations in Copenhagen. For example, in the late-90s Camilo Eitzen &Co, the Norwegian shipping group, moved their commercial headquarters in Denamrk. According to the CEO of the group what attracted them there was the concentration of excellent Danish professionals and the trainee systems the companies have adopted. Another indication of the human resources pooling effect is the leading position the Danish shipowners and operators hold in commercially managing pools, especially product tanker ones (Sornn-Friese & Hansen, 2012). The task of these managers include the collection of freight and payment of voyage costs, the management of the commercial operations of the vessels and distribution of the earnings to shipowners who participate in the pool. Deep knowledge and understanding of the shipping markets and ability in conducting business are prerequisites in order to be able to operate in such conditions and the Danish shipowners have developed very advanced related capabilities (Sornn-Friese & Hansen, 2012). Additionally, there is high level of maritime education.

Researchers have always treated the knowledge spillovers for the companies that are included in the cluster referring to the general level of expertise and know-how that is being increased but such interactions. However, there can also be potential disadvantages; namely strategic tactics and confidential information being revealed to rivals. In order to avoid such problems, as well as others

ones related to losing valuable employees to competitors, Danish companies maintain non-compete clauses.

Recent studies have shown that the input-output relations, among shipbuilding facilities, shipping companies and operators, and marine equipment and technology providers are not strong (Sornn-Friese, 2003). Although in the past years the need for sharing specialized information was of major significance and constituted an important element of clustering, it is no longer apparent that such a cluster still exists in Denmark, at least not in its complete form. According to the Danish Shipowners' Association it is not the cluster in itself that is the source of success, but rather the dynamics of the sizes in Denmark and all that, which makes the industry special.

7.3.4 NATIONAL ENVIRONMENT

Like any other Nordic country, Denmark struggled with the high manning cost of operating in Denmark, and the tendencies of flagging out were equally as high. By June 1987 almost 30% of Danish-owned ships were registered abroad (Sornn-Friese, 2008). According to Sornn-Friese there were five major problems to competitiveness in Denmark at this time; manning requirments, vessel fitting and equipment requirments, tax provisions, burdensome administration and deficiencies in the Danish maritime educational system. As a response the Danish government introduced the Danish International Ship registry (DIS) in 1988, which was based on the NIS and suggested by Nils Wilhjelm (Sornn-Friese & Iversen, 2014). Although the registry had similarities with the NIS, it had a major difference, it was not to be perceived as an open register, because it would only apply to Danish owned ships. This was done to ensure Danish labor, and at the same time make the industry more competitive. There were still regulations regarding the minimum number of seafarers on board, but the tax burden was lifted and the manning cost declined (Iversen & Tenold 2014b). As an illustrative example it was pointed out that annual manning cost on a large vessel sailing under one of the Scandinavian flags with Scandinavian crew, compare with those of a vessels under open registry with mixed crew could amount to 1 million USD (Sornn-Friese, 2008). With the introduction of the DIS, it made sense for the Danish Shipowners to sail under Danish Flag and invest in R&D facilities in Denmark (Rasmus With), and such keeping the innovational features of the industry in the country.

The Danish International Ship Register (DIS) in combination with the tonnage tax are two of the main elements that ensure a competitive Danish merchant fleet. The shipping friendly business environment that offers shipowners favorable economic conditions, including the possibility of low tonnage tax and tax exemption for seafarers, gives incentives to shipowners to register under the Danish flag and enables them to compete on a global scale. The Danish Maritime Authority (DMA), a government agency under the Danish Ministry of Business and Growth, offers quick service and high quality administrative support. According to the Danish Shipowners' Association the stable political environment and institutional framework in the 90s and early 00s supported and reinforced Danish maritime leadership.

In 2002 the Danish Tonnage Taxation Act was passed which resulted in a small tax relief for the Danish shipowners, who until then paid ordinary corporate tax. The ordinary corporate tax had favourable depreciation rules, but with the new Act they were paying a low flat-rate tax on the total tonnage they operated and this reflected better the tax conditions of foreign competitive nations. The Danish Minister of Taxation mentioned that the Act 'reflects similar conditions in other countries, and it would not have been possible to retain the fleet in Denmark by having considerably worse conditions here' (Ministry of Taxation 2005).

7.3.5 Danish Companies and Strategies

This part includes the analysis of some of the most important Danish shipping companies and the representation of their strategies. As mentioned before this part is slightly different than the equivalent parts in Norway and Greece. This was decided because the strategies that affected the growth of Danish shipping are better illustrated by archetypical cases of firms.

From the mid-nineties and onwards there have been two directions in which Danish shipping grew. First was the specialization in container shipping to a greater extent with simultaneous focus in the establishment of comprehensive logistics systems. The most outstanding advocate of this strategy is the Copenhagen-based colossus A. P. Møller–Mærsk with an impressive vertical integration via its investments in overseas container ports, onshore infrastructure and container ships among others. It would not be exaggeration to state that the supremacy of Maersk influences the whole national

industry. The Maersk Group is the world's biggest company by operated tonnage with 499 vessels and 33,831,745 DTW[12].

Second was a growing focus on operating rather than owning vessels. This strategy required flexible chartering and pools of ships available for use. The most prominent proponents were Torm and Norden.

In the last years shipowners from Denmark have become more interested in establishing connections with foreign ones in order to enhance classical shipowning with competencies in commercial management (Sorn-Friese & Iversen, 2008). This direction, which has been more apparent since the late 90s, has its roots in the fact that Danish shipowners did not own substantial funds to buy the vessels required in order to be competitive in the growing market. Since 1998 the tonnage operated by Danish shipowners has doubled, and more than half of the revenues of the Danish firms come from controlling foreign owned tonnage. It is very important to highlight that this expansion in commercial operation of ships has turned Denmark in an international hub for maritime knowledge and expertise for commercial management.

The information included is drawn from articles such as Bramsen (1983) Eriksen (2005), Falkensteen (1996), Frandsen (2008), Graae (1966), Hornby (1987), Lange (1995), the company web pages and other published material.

7.3.6 Maersk Group

The origins of A.P. Møller – Maersk Group are in the Steamship Company Svendborg, founded in 1904 by Peter Maersk Møller and his son Arnold Peter Møller, and the Steamship Company of 1912 which was founded to secure independence from investors. The two companies merged in 2003 to form the current A.P. Møller – Maersk Group. The company was chairmanned by Maersk Mc-Kinney Møller from 1965 to 2003, when he resigned at the age of 90. Top management has since been taken over by Michael Pram Rasmussen from Topdanmark, who became chairman of the board in 2003, and Nils Smedegaard-Andersen from Carlsberg, who became the CEO in 2007. The conglomerate is involved in various industries; Container shipping constitutes the main part at 57% of revenues, the rest coming from energy (16%), shipping and offshore (8%), and retail and other business (19%). (Sorn-Friese & Iversen, 2008)

[12] According to the Danish shipping statistics published in May 2015

As a large and old conglomerate, Maersk has a complicated structure and organization. It did not publish any total account figures until 1998, so from before that time the group size had to be approximated through some uncertain methods. Regardless, the growth of Maersk has been driven by two things. First, it diversified into various areas such as oil, retail, manufacturing and aviation from 1965 to 1993. This diversification into unrelated areas played a key role in the company's growth, along with diversification into various related areas. The latter included the originally tramp shipping company venturing into shipbuilding, tankers and container shipping. Second, growth was driven by mergers and acquisitions between 1994 and 2007 (Sorn-Friese & Iversen, 2008). In 1917 Maersk constructed the Odense Steel Shipyard, in which among others, Maersk E-class container ships were built in 2006 and constituted the biggest vessels in their category in the world. Due to the global financial crisis its closure was announced in 2009.

Maersk's diversification into container shipping began in the 70s, when the company purchased nine container vessels for the transpacific line. This was the largest investment in the company's history. Maersk logistics was established in 1977 to handle container traffic, and Maersk Container Industry in 1992, which produced the emblematic Maersk containers in Denmark. The 80s saw the opening of new routes in the Pacific and between Europe and the Middle East. The container shipping fleet grew heavily between 1986 and 1995, expanding from 36 to 96 vessels (Sorn-Friese & Iversen, 2008).

Maersk Mc-Kinney Møller was succeeded as CEO by Jess Søderberg in 1993. This started the pattern of vigorous growth through acquisitions for the company. Within the same year, the company gained a strong position in the connections between Europe and East Asia with the acquisition of all shipping activities from EAC. During this period, the company focused on specific industries and shipping areas, namely specialized gas tankers, super tankers and container ships. This drove rapid growth form the mid-90s to mid-00s. Other important acquisitions during this period included South African container shipping company Safmarine in 1999, and also American container-shipping company Sea-Land Corporation. An alliance was also briefly established with British P&O Containers, but this was terminated after just three years in 1996. (Sorn-Friese & Iversen, 2008).

Today, Maersk Line, the container division of the conglomerate, named after the acquisition of P&O Nedlloyd in 2005, is the largest container shipping company in the world. The company lost market share because of unexpectedly high integration costs, and in 2007 the top management was

replaced with people from outside the company. The company currently faces challenges of integrating its new corporate structure, rising fuel expenses and declining US growth rates. These factors combined with aggressive competition present challenges that the company will have to overcome as a "world leading facilitator of enhanced globalization" (Sorn-Friese & Iversen, 2008).

Nils Andersen, Søren Skou and Kim Fejfer, the Maersk Group trio, is currently in the top of Lloyd's List Top 100 most influential people in shipping for 2015, despite the rough waters the company has recently been in, due to overcapacity.

7.3.7 Norden

Norden, the now successful deep-sea general cargo tramp shipping company, was established in 1871 by Mads C. Holm. Even though the company has been active in several shipping segments during its existence the strategy remained unchanged for more than a century; 'one ship, one cargo', meaning the transportation of homogeneous dry bulk in all major segments. Norden has always been prepared to meet the demands of its clients and this is reflected in its strategy of constant change in segments, number of vessels and people during its period of life. From the mid-90s the firm has grown impressively and rapidly resulting in it being among the top operators in the world in its segment. Today Norden has offices in seven countries, owns and operates 152 dry cargo and tanker vessels, in addition to having 25 vessels in a newbuilding program. The total revenue for 2014 was approximately 2,038,000,000 USD.

The company exploiting its deep knowledge in the shipping markets, accumulated from its many years in the sector, can foresee and seize emerging opportunities for chartering tonnage. It also uses financial instruments in order to hedge the risk that the shipping markets are vulnerable to because of the high volatility in freight rates, oil and vessels prices. Such instruments are Forward Freight Agreements (FFAs)[13], Contracts of Affreightment (COAs)[14], vessel buy options and bunker hedging contracts such as oil futures. Clemens (2005) has characterized this outstanding development a result of 'very good foresight and some luck'.

[13] FFAs are financial forward contracts that allow ship owners, charterers and speculators to hedge against the volatility of freight rates. They are traded OTC (Over The Counter) and the owner has the right to buy and sell the price of freight for future dates.

[14] Contracts of affreightment are contracts between a ship-owner and a charterer. The ship-owner agrees to transport goods for the charterer, or to give the charterer the use of the ship's cargo space entirely or partially in order to transport goods on a specified voyage or voyages or for a specified period. The charterer agrees to pay the freight which is a specified price.

Mads C. Holm was a major player in the Danish shipping industry and he also founded the Helsingør Shipyard and co-founded the Danish Shipowners' Association, which had a huge impact on the industry. Throughout its early years the company acquired several steamship firms but in the late 30s the company turns to motor vessels and the liner industry, and the last steamship was sold in 1946. However, Norden was quick to follow the trends and its ability to change strategy in the same path as the industry has supported its continuous existence. In the 70s they invested in bulk carriers, and the last liner vessel was sold, refocusing from tramp to bulk. The company entered the tanker sector in the 90s in order to diversify its business and acquired several small product tankers which were later sold off. Although Norden's history shows a constant shift of segments, after the 90s its strategy became more consistent, and investments were mainly made within the bulk carrier and tanker segments. This coincides with the appointment of Steen Krabbe as CEO in 1988.

Mr. Krabbe established a principle in the company affecting the culture and the method of operation; success in shipping derives from your ability to operate a fleet rather than solely the amount of ships owned. He diversified into the tanker sector in order to reduce market uncertainty, using to advantage existing capabilities. Furthermore, he stepped further from the uncertain sport charter market and operated more with long-term COAs. From 1997-98 and onwards the company expanded as a dry bulk operator with a fleet of vessels on long term charter with purchase options. By 2004 they had a total of 159 vessels and expanded into countries such as the US, India, Brazil and Singapore, becoming a global provider of their services. The last decade has been characterized by several expansions into new countries and heavy investment in new vessels. The firm performance has been mentioned in the top ten financial performances in the industry several times.

7.3.8 Torm

A/S Dampskibsselskabet Torm was founded by Ditlev Torm and Christian Schmiegelov in 1889. The company operated with general cargo ships as a traditional tramp and liner shipping company until 1960s, when it moved to the dry bulk market. Since then, the company has expanded its fleet with modern bulk vessels and tankers and heavily increased its operated tonnage, leading to a huge growth in revenues (Sorn-Friese & Iversen 2008).

The governance structure of Torm underwent significant changes in 1974, when it merged with Bornholm's steamship company of 1866 and almost all members of the board of directors were replaced. This set a new course for the company's strategy as Kai Engell-Jensen, the new chairman, sought to pursue mainly tanker operations. He set out to achieve this goal by headhunting Erik Behn from Maersk to be new CEO of Torm and restructuring the fleet by acquiring new tankers, selling some of the older bulk and liner carriers and dismissing a quarter of the seamen. This has led to Torm becoming one of world's leading tanker operators, carrying a variety of refined products. The company still remains active in dry bulk in the Panamax[15] sector, carrying coal, iron ore and grain. Torm has responded to the ongoing consolidation in the oil and chemical industries through fleet expansion. In summary, the company controls about thirty percent of global tonnage in the LR1[16] and LR2[17] markets (Sorn-Friese & Iversen 2008).

Klaus Kjaerulff, who has been with Torm since 1976, was appointed CEO in the year 2000. The company thrived under his direction, his global experience and collaboration skills. His experience in the tanker markets helped him develop the pooling concept with other leading shipping companies, which has made Torm a leader in the Panamax and Aframax[18] segments (Sorn-Friese & Iversen 2008).

Torm established a joint chartering venture with BurWain Tankers International in 1991. This helped coordinate the use of both companies' vessels and allowed them to develop new market areas whilst sharing risk. The partnership subsequently expanded to eight shipping companies and was called the LR1 Pool, operating Panamax vessels. Under the commercial management of Torm, the pool was the world's largest operator of Large Range vessels at the time. Torm was also involved in the MR and LR2 pools, being commercial manager of the former and managing the latter jointly with Maersk Tankers. The pools operated Aframax and 45.000 DWT vessels, respectively (Sorn-Friese & Iversen 2008).

[15] Panamax - vessel of about 60,000-80,000 DWT. The largest type of vessel capable of passing the Panama Canal.
[16] Tankers Long Range 1 (LR1): 55,000–79,999 DWT
[17] Tankers Long Range 2 (LR2): 80,000–159,999 DWT
[18] Aframax - vessel of about 80,000 and 120,000 DWT. Medium sized oil tanker.

In 2002 Torm bought a third of the shares of Norden. It attempted to acquire the remaining shares by presenting a voluntary public tender offer to the shareholders, but this was seen as an attempt at a hostile takeover and was subsequently declined. The proposed merger would have run the tanker activities under the name Torm and combined bulk under Norden. Torm eventually sold the shares in Norden in 2007, turning a profit of 643 million USD. Torm then acquired the shares of OMI Corporation together with the Teekay Corporation with a 50-50 split. Torm took over 26 product tankers from OMI as well as their technical organization in India. They also got part of OMI's office in Connecticut, gaining a foothold in the tanker shipping center of the United States. They chose to carry on with the name OMI with their tanker operations in the US, as it is an established name especially among investors (Sorn-Friese & Iversen 2008).

Klaus Kjaelruff was replaced as CEO of Torm in 2008 by the current CEO Jacob Meldgaard, who served previously as executive vice president of Norden. Under Meldgaard, Torm has withdrawn from the pools established under Kjaelruff (Shippingwatch 2014). The current tanker fleet stands at 81 vessels, consisting of 7 LR1, 10 LR2, 53 MR and 11 handysize vessels, with further vessels under construction (Torm 2016).

8 COMPARISON

This part has two purposes. First is to compare the national characteristics that arose from the individual countries analyses and try to identify whether the paths that each nation followed were as different as we initially forecasted or if a common pattern can be recognized. Instead of only comparing them, some examples of interrelated actions will also be presented. Second is to present the contemporary condition in the world markets, how this specifically affects the shipping industry and where Denmark, Greece and Norway stand today, in terms of prevailing strategies and fleet size and structure.

The comparative analysis is structured as follows. First the company-specific (micro level) characteristics are compared. Second the national environment and the conditions each country had for their operation is examined in contrast. It is very important, however, to keep in mind that it was not only specific capability or one change in the international environment that triggered a specific way of reaction. As it is evident from the above analysis different factors interact in order to explain an incident. Third, we look at the current situation at the market and where our examined nations stand in terms of fleet size, composition and age, newbuilding activity and foreign registries.

8.1 COPMANY SPECIFIC

8.1.1 Capabilities: innovation paths

In the previous part the success of Greek shipowners in the tanker sector was analyzed. They entered the market in the late 1940s and 1950s and expanded significantly during the postwar period. However, it was not stated that part of the success was the utilization of the Norwegian experience alongside the advantageous situation in the international markets (Theotokas & Harlaftis, 2009). It was the Norwegians who were the main independent tanker owners in the interwar years (Tenold, 2007). The Norwegians acted as entrepreneurs and took a business risk entering a new market. They started by purchasing a few dozen second-hand tankers from Anglo-Saxon Petroleum Co.[19]with time charters in the end of 1920s and by the beginning of the Second World War had created the largest independent tanker fleet (Sturmey, 1962). Approximately two decades later, the Greeks noticed the gap in the market, created by the inability of the Norwegians

[19]Anglo-Saxon Petroleum Co. was the transport arm of Royal Dutch/Shell

to cover the increasing demand. This inability derived from the postwar foreign exchange crisis in Norway. Since there was an inadequacy of foreign currency reserves, the government blocked the purchase of ships from abroad between 1948 and 1951 (Thowsen, 1986). In the beginning, Greek shipowners financed their investments with their own capital. However, later they followed the same tactic as the Norwegians and borrowed capital for newbuilding contracts, minimizing their financial commitment.

As analyzed above the Greeks always considered and conducted shipping as a commodity business. They traded vessels, purchasing them at bargain prices from bankrupt companies or vessels that were old, and selling them when the price was believed to have peaked. The risk of investing in new ships was borne by others, such as the Norwegians (Grammenos & Choi, 1999)

This illustrates one of the biggest and maybe the most important difference between these two countries. The Norwegians embraced their ships as their most valuable asset, while the Greeks went wherever the market turned. The Greeks relied on their deep knowledge and experience in the shipping markets as their key capability to seize new opportunities; a pattern that bore great resemblance to the way in which the Danes operated.

Stig Tenold & Theotokas (2013) explained what were the types of innovation that have normally been used in Greek and Norwegian shipping. We have seen many examples of arguments underlining their research throughout our analysis of the countries. The classic innovation types associated with the service industries are organizational, input and market innovation. The Greeks used their organizational capabilities, such as knowledge and tactic to exploit new market opportunities and are said to have used the typical service industry types of innovation. On the other hand the Norwegians with their ability to create new products in forms of ships and technology most certainty created new markets. During the 80s and 90s the Norwegians were the first movers in several segments while the Greeks pursued their strategy of organizational capabilities as their competitive advantage. An interesting aspect of these two quite different directions is that they depended on each other. Without the creation of new products there would not have been a creation of a new market, and therefore the Greeks would not have exploit it. This rather important interaction between different innovation types, will of course affect the international aspect of the industry.

While the Norwegian and Greeks at first pursued obviously opposite strategies (at least at the early stages of comparison), the Danes did not indicate such a clear pathway. It is argued that the Nordic countries share a rather similar strategy in the industry, however our analysis shows that there are clear differences between the two. As we already mentioned the Danish companies strongest capability is leadership. This capability has evolved through years of experience. It is unquestionable whether or not the national aspect played a major role in country's ability to become a leading nation in the industry, however their resemblance to the Greeks is rather interesting. The Danes have become a stable actor within few segments, in which they have operated through their whole existence in the industry. This shows, that unlike Norwegian shipping, the Danes draw similarities to the Greeks strong position in a few segments as a result of organizational capabilities. We argue that this is the strategy chosen by the Danish companies, rather than that the organization capability is the reason behind the strategy. This argumentation is based on two factors, first, the Danes were equally innovative as the Norwegians and secondly they were more risk adverse. Denmark is a high cost country, with high-educated people and strong technological facilities, to some extent even more than Norway. Even though these capabilities were possible for the Danish companies to exploit, there was moderate development of new radical shipping technology. We believe that this had to do with the Danish attitude towards risk. This is a feature that is unlike the Norwegians and Greeks, with the Norwegians radical product developments and the Greeks willingness to jump into new markets. This clearly illustrate that both countries were willing to take on high risk in order to gain high performance outcome. This suggest that the Danes, were willing to concentrate on a long term perspective and such creating and sustaining an advantage in the segment in which they operated, clearly illustrated by their current dominance in the container/ liner segment today.

8.1.2 Leadership and crew

The countries main capabilities have been discussed and an aspect of this discussion have led us into the angle of leadership and labor. While the first factor is related to the companies' ability to create organizational innovation, the second is also highly dependent on national and international regulations, which will be discussed later on.

Whereas the Greeks early started using foreign labor on their ships, the Norwegians and the Danes still used the labor from the same location. This had of course to do with national regulations not

allowing the Nordic countries to use low cost labor. The Greeks had to incorporate managerial actions that would help them keep their advantage. New people, meant new languages and set of behaviors and a strong and clear management style was needed and implemented. In order to exploit the opportunity of low labor cost they also had to make them achieve the same result as the previous crew. This developed their organizational capabilities even further, thus creating an advantage. The Norwegians and the Danes on the other hand could rely on stable labor well known labor from in-house sources. Although, this meant that they had to pay the cost of this labor. Innovational thinking is a response to change, and the Greeks exploitation was clearly an advantage for management development in now such an international industry. Another aspect of the leadership style is in the fact the term of "London-Greeks". The Greeks often turned to London or New York to establish their headquarters while the Norwegian and Danish companies were controlled by close home base management.

8.1.3 Shipbuilding and capital

In the 60s before the crisis struck both Norwegian and Danish shipping companies were so called "integrated shipping companies" (Iversen & Tenold, 2014). This meant that they more or less did everything in-house. Management, crewing, operation and the legal ownership of the vessel was kept close to the company. Especially in Norway shipbuilding became an essential part for the companies. The Norwegian history shows that the industry has shifted from segment to segment clearly illustrating a first-mover trend. Norwegian shipbuilders were amongst the first to build tanker ships, ro-ro ships, oil service ships and many more. Even though the ship builders developed the ships, it was the ship owners initiatives that lead the decision for such developments (S Tenold & Theotokas, 2013). The two parts often collaborated in order to achieve the wanted result. Greece is not a stranger to inventing new ships, however it was rather the exception than the rule. The strong position that Norway has created in this segment and the interaction between the builders and the shipping companies has led the path for its high investment in such a diversified portfolio of ships and has transformed it into the fragmented industry that is today. An important factor that helped the Norwegian companies to make such investment was the ability to get capital. The Greek companies had to rely on foreign investors; while in Norway and Denmark there were much more willingness form local investors and the state. This reflected the fact that the capital for the acquisition of ships was made by foreign financial institutions that favored the use of foreign registry (Harlaftis, 1993). This has led the Greeks to innovational financing structures and Norway

to have the largest shipping bank in the world today.

8.1.4 Family ownership

A common feature of all the companies in the three countries is indeed the family owned characteristic of the industry. In Norway you can hear family names such as Fredriksen, Stolt-Nielsen, Whilhelmsen, Höegh and Farstad which all are connected to the shipping industry. In Denmark the Mærsk family is well-known, while in Greece big international names such as Angelicoussis, Niarchos, Frangos and Onassis exist. All those families have contributed and played a major role in each of the companies and countries existence in the industry. The family ties in the industry are not only limited to these countries but are a common characteristic for the industry. However, as time has passed the internationalization of the industry, has affected the ownership structure in the respective countries. In Norway, the family driven operations have passed on the knowledge to second and third generations. While the companies still hold the names of the founders, the family management has been to some degree washed out. The operation is not primarily driven by family members, but rather limits its influence through ownership. This could be a result of governmental influence from a focus on high education for everyone. In Greece on the other hand family ties have always played a major role regardless of industry or business. Family is held high, and is therefore no surprise that it is still sustained in the industry. In contrast to the Greeks who always attempted to keep the ownership and management in the family, the case studies we investigated for Denmark indicated that the CEOs were more often than not sought in outsiders.

8.1.5 Entrepreneurship vs. diversification?

We mentioned that the Norwegians entrepreneurship earlier in this discussion and their willingness to take risks. This individual trait that might be seen as a culture, has indeed influenced the Norwegian companies' strategies and such lead for the diversified segment that Norwegian shipping companies operates in. However, what we failed to mention is the Greeks clear entrepreneurship pattern. How come those two countries with same individual traits ended up with so different strategies? Well, our suspicion is the countries have similar features that we were not aware of. To further investigate the differences and complementary features of the three countries we have to elaborate on the interaction with the national sources of competitive advantage.

8.2 COUNTRY SPECIFIC

8.2.1 Cluster and networking

One of the most important national aspects of the industry is the cluster-milieus in the respective countries. The visible and clear cluster in Norway and Denmark are in huge opposition to the more or less non-existent cluster in Greece. In order to create product and market innovation in the service sector it is stated that a player relies on collaborative actors in the industry (S Tenold & Theotokas, 2013). A cluster is a result of such collaborative forces. Also the heterogeneity of resources contributes to this collaboration, since actors can benefit of each other's knowledge without the fear of competition. This also underlines the importance of the fragmented sector to keep the cluster sustainable. However, in the end the important factor for the companies' strategy is value creation, which could be achieved without the cluster. We stated that Norwegian cluster was an outcome of the Norwegian industry's feature of market and product innovation. If that was the case, how come the Danish cluster also became such an important part of the Danish industry?

We believe that there are several factors that have played a role in this outcome, however, one of them is without doubt the most important, namely the location of the companies. Whereas the Norwegian and the Greek companies are spread around in different locations in Norway and in the world, all the Danish companies are located in Copenhagen. Copenhagen became the natural transport hub in the Nordic region, thus making the Danish companies establish themselves there. On the contrary, Norway had in a period over 26 different home ports (Iversen & Tenold, 2014). Whit this close location to each other, the companies formed collaborative bonds, despite operating in many of the same segments. These collaborative bonds have contributed to making Denmark the largest actor in the container and liner segment. In Norway, these different homeports have created sub-clusters, which might have contributed to reducing some of the competition between the ports and instead furthered collaboration.

Greece may not have a clear cluster, however there is little doubt to whether or not the networking aspect of the industry was of high importance. The Greeks gathered "clubs" where they shared knowledge about the markets and opportunities in the international shipping industry. Even though this is not comparable to a complete cluster, it underpins that knowledge sharing is a major source in order to create sustainable competitive advantage in this industry, which the countries have in

common. In cases where a firm does not hold all the relevant expertise internally, participation in networks may give access to "missing knowledge" necessary to develop new products or processes (Newell and Swan 2000).

A rather important aspect of the cluster is of course the national influences on it. Throughout shipping history, there have been clear that governmental actions have affected the industry and such the cluster. The Norwegian and Danish cluster have experience both benefits and disadvantages from regulations forced by the government. However, the cluster is also highly dependent on a national willingness to contribute. Both Norway and Denmark have strong educational programs that are funded by the state to further develop the industry. Through investment in different programs and companies, the national aspect of the industry becomes very important resource. Additionally, governmental backing contributes to the companies' ability to respond to major transitions. However, the internationalization of the industry has reduced the national influences considerably since the industry's beginning.

8.2.2 National perspective on the companies size and numbers / age of the fleet

All the countries in our analysis have been leading nations within the industry for decades. However in the 60s the Norwegian economy was far more dependent on the shipping industry, such also resulting in rather different characteristics of the industry. In Norway companies were spread around in different cities and were in different sizes. The companies could be small, medium or big and there were a total of 164 companies with vessels larger than 5,00 grt. On the contrary Denmark had only 13 shipping companies whit the same amount (Iversen & Tenold, 2014). Four of the Danish companies (one of them being Mærsk) owned 2/3 of the fleet, while in Norway the 4 largest actors only owned 17% (Iversen & Tenold, 2014). At that time the Norwegians were heavily invested in one segment, 86 % of the fleet was tankers and bulk. Today, however these characteristics are dramatically changed for the Norwegian industry, while the Danish still have many similar features.

8.2.3 Flag of Convenience

The opening of the flags of convenience at an international level and the dramatic change in oil prices and overcapacity in the international industry brought the Norwegian and Danish industry into a heavy crisis. The Norwegian and Danish companies reacted by flagging out the ships, an

action mainly Greek and American companies have been undertaking so far. The Norwegian fleet went from 27 million gross tons in 1976, to 7 million by the end of 1986 (Iversen & Tenold, 2014). This was a dramatic change for the Norwegian industry, and even though the Danish was not struck as hard as Norway, it also felt the heat and flagged out. Measures were taken at the national level to regain a stable and leading fleet that belonged to the Norwegian and Danish industry. The introduction of NIS and DIS became a rather crucial national source for competitive advantage. The Norwegian international registry was the first of its kind, and while Denmark soon followed with a similar registry, there was a significant difference. The DIS was not open to others than the Danish owned ships, meaning that the taxation benefits that the registry provided would only impact the Danish owners. Drastic measures had to be implemented in these two countries in order to preserve the existence of companies at the home base. Meanwhile in Greece the shipowners could very easily switch among different flags according to their advantage. For example, during the first postwar decades, Greek shipowners drew funds to invest in the market from foreign financial institutions which encouraged the use of foreign registry (Harlaftis, 1993). The only time the vessels carrying the Greek flag outnumbered the ones with the foreign was from the mid-70s to the mid-80s (S Tenold & Theotokas, 2013).

Taking into consideration that shipping is an industry that requires heavy and long-term capital investment, either this is on vessels or infrastructure, certainty and stability in the institutional level is of great value. It is not coincidence that all three nations had more or less institutional stability which helped their industries grow. However when the situation was not favorable, the companies took advantage of the flexibility foreign registries offered and left their country, only to return when homeland had esttablished equally beneficial conditions.

Denmark was the last of the compared nations to introduce the tonnage tax in 2002. Greece and Norway, alongside other big maritime nations such as Great Britain and the Netherlands, had already passed similar regulations. With those rules the shipping companies were not anymore taxed on an ordinary corporate tax basis but paid tax on the operated tonnage. There is, nonetheless, a difference between the Danish tonnage tax and the ones in the other European countries. This tax includes the foreign tonnage which is registered under foreign flag but is being controlled by danish shipping firms in the ratio four to one between non-Danish and Danish tonnage. This difference illustrates the late specialization of Danish companies in commercial management.

8.3 CURRENT SITUATION

For an overview of the current relative positions that the nations examined in this paper hold in the world, refer to figure 8 published by Lloyd's List Intelligence.

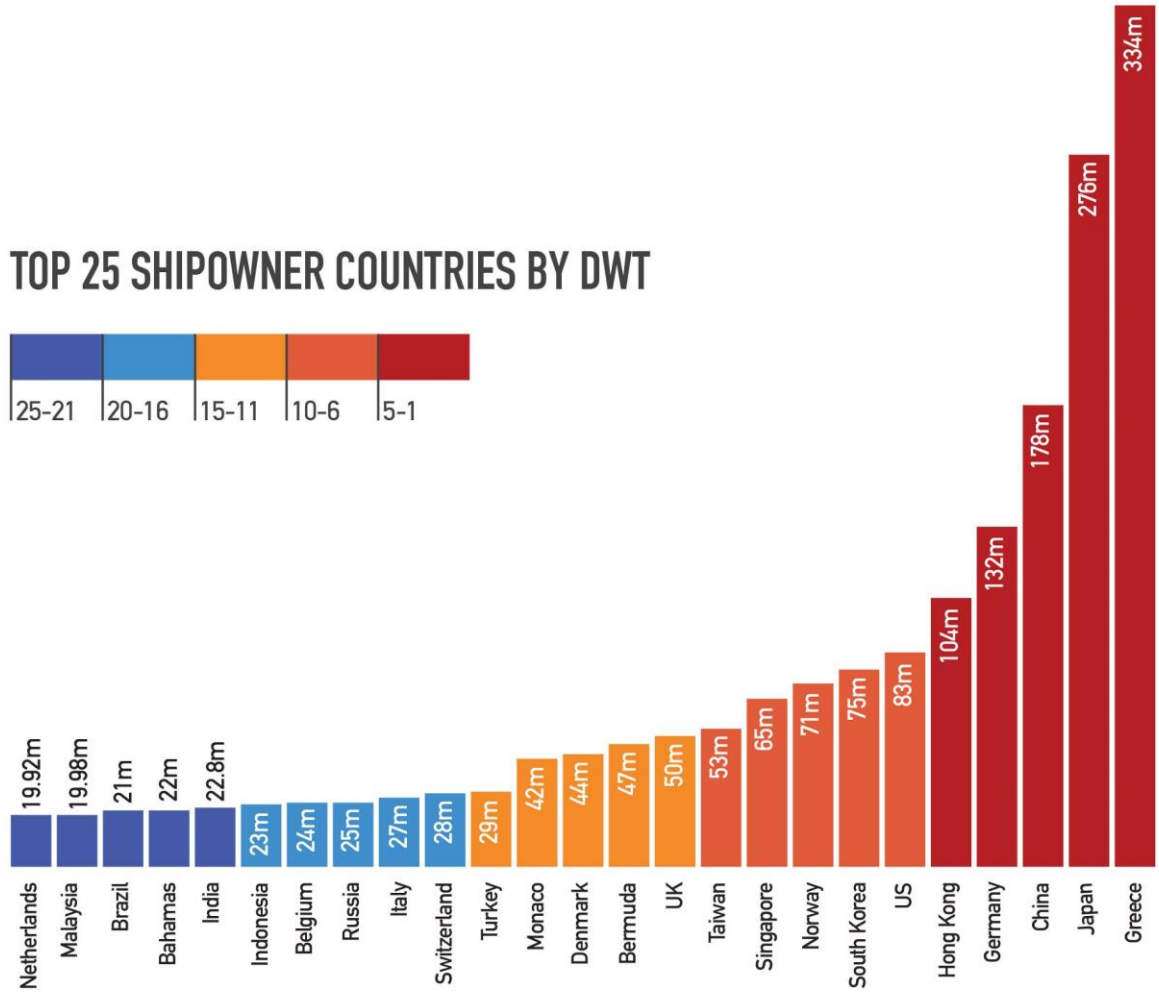

Figure 8- The World Fleet 2015 (a snapshot of regional ownership)

Source: Lloyd's List Intelligence

It is important, nonetheless, to also take a look at the development that the examined nations had in the past years. Some of the strongest EU merchant fleets are depicted in the published statistics

from the Danish Shipowners' Association. Using as base year 1980 it is obvious that Denmark compared to Greece and Norway is the one that had the most outstanding growth.

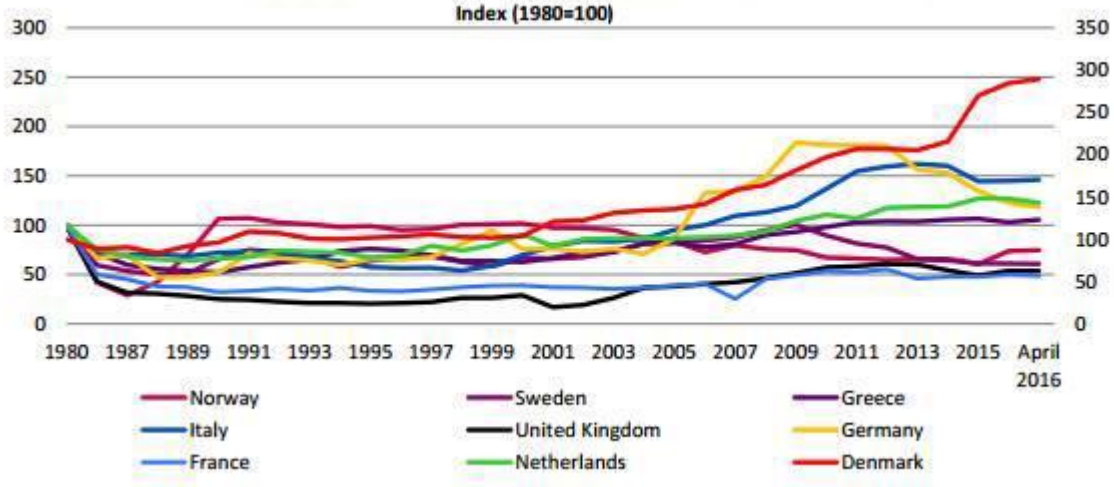

Figure 9- Development of selected EU Merchant fleets 1980-2015

Source: Danish Shipowners' Association

8.3.1 Fleet Size

The below short summaries of the current state of each of the countries illustrate how each country operates with different measurements in order to draw the attention towards their advantages. This is a tactic observed in other industries as well[20] and makes the analysis harder in order to validate the numbers as comparable. After this point we use the numbers from the Danish shipowners association' statistics as they include all the countries in question.

Greece

According to data from the annual report by the Greek Shipping Co-operation Committee (GSCC) and Lloyd's Register Fairplay, Greek interests control 4,057 vessels of various categories, by 10.03.2015 when the report was published. The statistical data present the Greek controlled ships over 1,000 GT (gross tonnage). The ships have a total of 314,456,451 DWT (deadweight tonnage) and 184,063,875 total GT. The last year's respective numbers were 3,901 ships, 290,847,132 DWT and 170,984,684 GT. The Greek fleet is the world's most valuable at $106 billion, according to

[20] The auditing and concultancy firms PWC, EY, KMPG and Deloitte all claim to be the largest firm within their segment, however they all use different factors to value this output. They use factors such as number of employees, profit and number of clients.

London-based VesselsValue.com. According to the same source the Greek fleet accounts for 19 percent of the world's tankers in terms of value.

Denmark

According to the Danish ship owners association (DSA) report about ships statistics in 2015 the Denmark is the 8th biggest shipping nation measured by operated tonnage and controls 4,11 % of the total merchant fleet across all segments. This amounts to a total of 1807 vessels. If you measure the fleet in ownership, Denmark is in 13th place according to Loyds list (see appendix) and is the twenty-second biggest nation in number of vessels. The development of the fleet the last decade has shown a rather positive trend in relative terms. According to the DSA one reason for this is the lucrative net payment scheme in the DIS. By April 2015, the nation had a total of 658 ships amounting to 16,6 MDWT, were 4,70% of this came from the container segment. The next biggest segment is product and chemical vessel with 2, 88 %.

Norway

Norway is the tenth largest shipping nation in the world measured in tonnage, the seventh measured in number of ships, and according to calculations conducted of Menon Business Economics (Menon), Norway has the sixth largest fleet in the world in terms of value creation[21]. According to the Norwegian Ship-Owners Association (NSA) the Norwegian fleet consists of 1775 ships[22], which supply approximately 48,000,000 DTW as of April 2015. This makes the nation the 9th largest according to number of ships, do we however look at ownership it is ranked as the 8th largest (Lloyd's List, see appendix). This amounts to a total of 4 % of the world's merchant fleet measured in number of ships. In addition, the fleet is considered to contain a total of 37,000,000 gross tons (GT), which equals a little over 3% of the world fleet.

[21] Menon Business Economics calculate value creation as the following: total turnover minus acquired goods and services.
[22] If we exclude NOR, the total number of ships are 1558 consistent with Uncstat.

8.3.2 Composition of the fleet

Most types of Greek controlled vessels have increased numbers compared to 2014, with the exception of Chemical and Product Tankers, Other Cargo and Passenger ships that had a slight decrease. This means that the investments were more directed towards Oil Tankers, LNG Carriers, Ore & Bulk Carriers, Containers and Cargo ships. The percentage of oil tankers in number of ships has raised from 24.9% to 27.1% and the percentage of total DWT from 24.0% to 26.6%. Although the percentage of number of ships of LNG carriers remained the same on 10.9%, the percentage of total DWT increased from 10.4 to 10.6. Ore and Bulk carriers increased by 0.3% and 0.5% in percentage of number of ships and percentage of DWT respectively. Slight increases are observed in Container and Cargo ships.The Greek registered fleet as a percentage of the world fleet in terms of number of ships, GT, and DWT is 1.6, 3.5 and 4.1 respectively. It should, however, be mentioned that for oil tankers the percentages are 9.8, 10.0 and 10.1 respectively.

The Danish fleet consists of more than 650 ships where almost 72% of the tonnage of these ships operates in the liner segment. The specialized segment has the most number of ships, but contributes the least tonnage of all the segments in the Danish fleet operate. This is not surprising seeing as liner ships normally are of larger size than specialized ships. The statistics show that the composition of the Danish fleet in gross tonnage is respectively, 1.The liner segment, 2.The tanker segment, 3.Tramp trade and lastly specialized ships. It also reveals that the Danish fleet has a bigger share of very large ships (measured in how many GT they can hold) or they have very small ones. The main focus of the fleet is container shipping and ro-ro ships.

The Norwegian fleet is highly characterized by small-specialized ships that carry little tonnage. According to the DSA, the Norwegian fleet consists of 2382 owned vessels, which is twice the amount the Danish fleet own, when we look at group ownership. It illustrates the distribution of specialized companies in Norway. In the fleet the three most common segments are the offshore supply, other dry bulk and chemical tankers. The first to segment alone constitute of 1100 ships. However, if you look at tonnage other dry bulks are superior, and have almost twice as much as the second segment, gas tank ships. The fact that offshore supply ships only is the 6th biggest segments in terms of tonnage and comparably have the most ships, confirms that the use for this ships are technological and not mainly for transport. Below you can see two graphs illustrating the above-

mentioned situation. The left graph show tonnage and the right graph illustrate segments in terms of ships.

The following figures show the composition of the operated merchant fleet in regards to owned and chartered vessels.

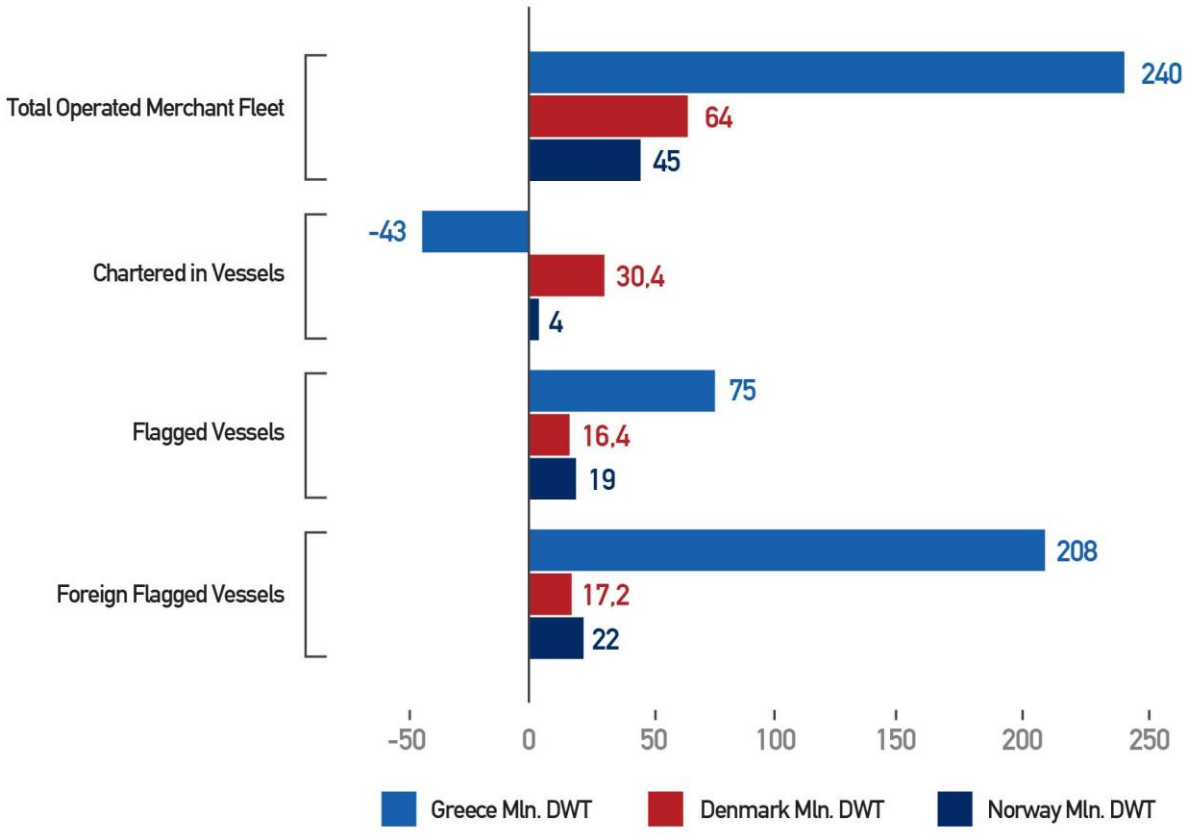

Figure 10- Operated Merchant Fleet

Source: Own creation based on data from HIS-Fairplay (Sea-Web)

In the appendix illustrating figures of the composition of all fleets are included.

8.3.3 Newbuilds

According to the DSA, Greece is the first country in world's total newbuilding orders with a total of 388 vessels and 39,652,000 GT. These numbers represent 6.34% and 13.74% respectively of the total amount of shipbuilding. It is safely assumed that Greeks are investing in bigger vessels. On the other hand, the Danish fleet have a total of 94 ships in the newbuilding programed, which equals 2,6 million GT and have value of a total of 30 billion Danish kroners. Seen in a historical perspective 2015 is a rather low year for investment in new builds, however the rather large investment conducted in 2008 explains this factor. Norway has a total of 207 ships in the program, which represent 8,7 MGT. Of these ships, a 106 of them are for the general cargo and ro-ro sectors. According to the NSA this is an increase of 20% compared to 2014, showing that the Norwegian believe in prospers times. This places the countries in 1th, 16th and 9th place respectively in total newbuilding orders by owner domicile in the world fleet.

Rank	Company Domicile	Gen. cargo / Ro-Ro		Container		Tankers		Bulk carriers		Total	
		Vessels	TDW (1 000)	Vessels	TDW (1 000)	Vessels	TDW (1 000)	Vessels	TDW (1 000)	Vessels	TDW (1 000)
1	**Greece**	**7**	**65**	**39**	**3 318**	**171**	**18 471**	**171**	**17 798**	**388**	**39 652**
2	China	142	1 833	80	6 426	85	10 393	162	12 398	469	31 050
3	Japan	64	623	41	6 661	92	4 213	125	9 154	320	20 642
4	Singapore	167	514	7	300	122	10 281	65	6 851	363	18 085
5	Bermuda	14	698	12	303	87	6 278	55	8 034	168	15 313
6	Germany	49	561	34	1 397	5	136	121	9 793	209	11 887
7	Monaco	0	0	6	1 176	54	3 257	69	6 911	129	11 344
8	South Korea	12	120	10	216	47	3 321	39	5 930	108	9 587
9	**Norway**	**106**	**1 297**	**10**	**1 113**	**60**	**4 308**	**34**	**2 051**	**207**	**8 732**
10	USA	143	1 495	9	310	64	4 953	14	1 492	230	8 250
11	UK	31	373	13	1 356	59	4 299	34	1 716	137	7 744
12	Hong Kong	32	138	10	1 435	15	904	68	4 366	125	6 842
13	Canada	16	36	25	3 122	24	2 007	23	875	88	6 039
14	Taiwan	3	3	4	370	3	397	45	3 855	55	4 625
15	Brazil	41	2 145	3	114	31	2 154	1	80	76	4 492
16	**Denmark**	**33**	**139**	**11**	**1 217**	**42**	**1 422**	**8**	**385**	**94**	**3 163**
17	Netherlands	110	412	0	0	13	369	17	1 815	146	2 778
18	Kuwait	10	3	14	2 266	4	418	0	0	28	2 687
19	Australia	40	423	0	0	0	0	8	2 040	48	2 463
20	Jersey	0	0	0	0	6	1 800	5	408	11	2 208
	Others	1 597	6 611	117	7 627	430	15 035	579	41 647	2 720	70 845
	Total	**2 617**	**17 490**	**445**	**38 727**	**1 414**	**94 415**	**1 643**	**137 597**	**6 119**	**288 429**

Figure 11- The World's total newbuilding orders by owner domicile

Source: Danish Shipowners' Association (2015)

8.3.4 Flags of convenience

The fleet registered under the Greek flag has increased in terms of ship numbers, DWT and GT. It now consists of 839 ships, and also 47,185,619 GT and 80,472,189 DWT which amounts to more than 25% of total DWT of the Greek owned fleet. The rest of the Greek controlled fleet is registered under some 45 flags and the most popular countries are Liberia, Marshall Islands, Malta, Panama and Cyprus. Liberia has 739 Greek owned ships of 54,034,080 DWT on its register, the Marshall islands follow with 697 ships of 54,806,342 DWT, Malta with 606 ships of 48,550,930 DWT, Panama with 398 ships of 25,210,082 DWT and Cyprus with 253

During the last decade the Norwegian owned fleet have fled the Norwegian registers, today 42% of the Norwegian owned ships operate under Norwegian flags. For comparison, for ten years ago the same number was 57% (NSA). Entering into the year of 2015, there were 522 ships registered in NIS, while there were as many as 1036 ships operating under foreign flags. The last ships, remained true to the Norwegian Ordinary Ships register (NOR), which have maintained on an equal level the last decade. The most popular foreign flags for the Norwegian ship-owners are Bahamas, Singapore and Malta. Bahamas have twice the registered number of ships as Malta. According to NSA, the reason these countries are chosen is due to preferable quality, services, accessibility, price and regulations

Today a total of 17,2 MDWT of the Danish's fleet is operating under a different flag than the Danish one. Even though almost 27% of the Danish fleet operates under a different flag, Denmark is still high on the rank of merchant fleet flag state. The Danish fleet is ranked number 13th in the world, while Greece is the 9th. On the other hand, Norway does not even make it on the top 25 list. This illustrates the difficulties one encounters while comparing the different statistical measurements.

8.3.5 Age of the fleet

The average age of the Norwegian fleet have decreased with three years since 2005, making the average fleet age 11 years as of 2015. There has been invested in number of new building the last decade. In addition, some of the elderly tonnage has been re-registered to non-Norwegian flags. NOR have decreased their average fleet age, from 12 years to 8 year in 2015, due to investments in high technological offshore ships, which has contributed to the overall decrease. During the next

two years, there is expected a total of 90% of the ships under construction to be delivered, which will continue the decrease in age average.

The average age of the Greek controlled fleet has increased by 0.1 years since 2014. However it continues to be 2.5 years below the average age of the world fleet. In terms of ships the average age of the Greek controlled fleet is 10 years. In terms of GT it is 8 years and in terms of DWT it us 7.9 years. Regarding the fleet registered under the Greek flag, the age has decreased by 0.1 years compared to 2014. In terms of ship numbers, GT and DWT the respective values are 11.4, 8.3 and 8.2 years. Since the numbers are adjusted to GT and DWT, it is clear that the bigger ships are newer.

Based on the numbers given by the DSA we have calculated that the average age of the Danish fleet is approximately 11-12 years old. The oldest part of the fleet is surprisingly the specialized fleet, where over 60% is older than 20 years old. This is in contrast to the Norwegian fleet, which the specialized ships tend to be the newest, and most advanced ships. This could suggest that the Danes by mostly second-hand when they buy specialized ships. However, the statistics do not show a clear picture of the segments, and we therefore have to question this conclusion.

8.3.6 What does the future hold?

The growth for the world merchant fleet is expected to increase with 4-5 % in 2015 (*OECD, 2014).* However, there is currently an overcapacity in the market, due to the large investments in ships acquired right before the financial crisis in 2008, which has led to a decrease in performance in certain sectors. In addition, the reduction of oil prices in 2014 has resulted in a low demand of offshore-related activities, which has caused a downsizing trend in the offshore service sector. The Norwegian ship-owners association estimates that this might have a major impact on the Norwegian maritime cluster and the Norwegian companies. In fact, we have already seen a lot of shipping companies in Norway decreasing the number of employees or going bankrupt. Additionally, the environmental regulations are pressing the industry and future changes are bound to emerge. This is reflected in several other global industries as well[23]. Greece on the other hand has a rather unstable national economic situation, which also affects the shipowners' future. Denmark has had a positive

[23] The Volkswagen emission scandal in 2015 has been a clear example of international regulations regarding ecological footprint will have future impact.

growth in the industry and has set their eyes to tackle the future ecological problems that lays ahead. The below figure shows the growth in the world merchant fleet from 2000 to 2015.

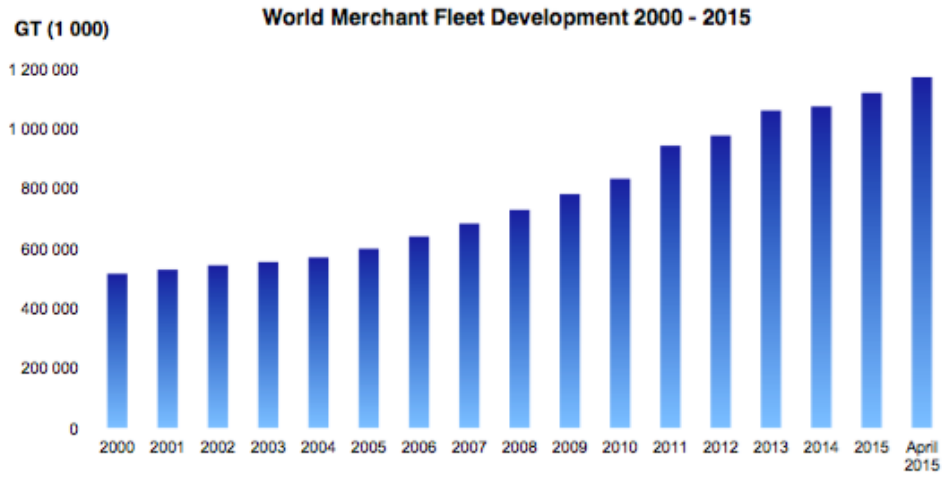

Figure 12- The World Fleet Development

Source: The Danish Shipowners' Association

From the above analysis, it came to light that one of the most important and influential factor of all the examined nations was the human resources. Therefore it is believed that changes regarding crewing and human capital in general will have an impact on the future of all market players. The manning strategies and decisions of the shipping companies worldwide are focused on cost cutting by crew selection from countries where labor cost is low. Theotokas and Progoulaki (2007a) observe that 80% of the world merchant fleet is equipped by multilingual and multicultural crews for more than 25 years. Based on the results of the latest BIMCO/ISF Manpower report for the year 2010 it is apparent that there are considerable increases in seafarer supply in countries such as China, Philippines, India and some European nations, mainly in Eastern Europe. The gravity of the seafarer manpower is steadily moving towards the countries in the Far East, the Indian Sub-Continent and Eastern Europe. Seafarers from OECD countries, which include most of the traditional shipping nations, constitute some 23,9% of the total global supply. This figure stood at 27,5% in 2000 and at 31,5% in 1995. Results indicated that in 2010, the market for ratings was in balance, while for officers there was a modest shortage of about 2%. The companies' survey indicates that there is a problem in recruitment and retention of senior officers and engineers in specific segments of the sector, namely tankers and offshore support vessels.

Table 2- Global seafarer Supply by Broad Geographical Area

Area	Current supply			
	Officers (1000's)	%	Ratings (1000's)	%
OECD Countries	184	29.4	143	19.2
Eastern Europe	127	20.3	109	14.6
Africa / Latin America	50	8.0	112	15.0
Far East	184	29.5	275	36.7
Indian Sub-Continent	80	12.8	108	14.5
All National Groups	624	100.0	747	100.0

Source: BIMCO/ISF estimates

9 CONCLUSION

The scope of the comparative analysis was to diagnose the major paths pursued by three leading shipping nations, Denmark, Greece and Norway. For this purpose we conducted interviews with industry players and we selected secondary data and previous studies.

We did not manage to come to clear pattern which each country followed, the capabilities it used and the way it confronted difficulties of embraced opportunities. We did however reach some impressive results. One of those was the realization that the countries examined although initially believed to be completely different had many things in common and followed strategies that converged during the years.

What can be argued eventually is that the success and business strategies are not simply a function of the individual company's past history and investments. Success is also determined by the conditions of resource supply within a firm's national and international environment. The competitive advantage derives from a favourable combination of historically evolved capabilities, natural resources, institutional incentives that are country-specific, present opportunities and the ability to seize them.

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11 APPENDIX

11.1 Transcribed interview with Ivar Hansson Myklebust, CFO Höegh Autoliners

Lead interviewer: Helena Eleftheriadis
Notes taken: Maria Leontari
Transcribed: Helena Eleftheriadis
Conducted through phone
Interview time: 48 minutes

Ivar: I
Helena: H
Maria: M

Introduction about us.
Ivar introduces himself.

Interview starts:
H: In you opinion what is the competitive advantage of the Norwegian shipping industry?
I: Right now it's probably the combination of a strong and a fairly complete maritime cluster, ideally we have all the necessary competences ready on hand, everything as in insurance, legal services, financing, technological abilities and still some operational abilities. The continues development of newer technology on the, that's particularly important on the offshore and oil service segment of course and that's also where Norway has been the most successful over the last few years. That hey have been at the technological forefront that offers services that there is a market in the oil exploration and production industry. So I would say an ability to combine these various skills that exist here and use them to maintain ability to produce competitive services, not the most cost efficient services but competitive solution services.
H: So, do you think that, that's why Norway is so different from Denmark and Greece or do you think that they have some common traits as well?
I: There are common traits but they are, in my opinion more differences then what people tend to see at first glance, and you can draw a comparison between Norway and Denmark, while the

Danish industry has been more trading oriented always. You have a..they have been suffering a bit over the last few years of course, but you have always had a pretty large environment of dry bulk operators ,small tanker operators, people are actually traders. Little capital used but lot of commercial color, sort of traders skills and human capital if you like.

H: OK.

I: But of course it's difficult to talk about Denmark without talking about Mærsk right?

H: Yes, exactly **M:** Of course.

I: So its almost like, but Mærsk also comes from that background. Its remaining probably only in Mærsk tankers as of now, but the ability to sort of build a large market presence they have in containers is really developed that market, initially came from a general cargo trading background, right. They had rights all over the world, there were a lot of company both in Norway and Denmark that had general cargo rights. And there is not as many left of them, its only one basically, and that is Mærsk. So their ability to train properly combined with a need of innovation in the, they were one of the first movers in the box designs that came into this market. But between Norway and Denmark I would say that that's the biggest difference still, in Norway there is more technology, in Denmark its more trader skills.

H: More trader skills, yes, ok.

I: Yes, so if you want the, if you are looking more for the headlines or the tabloid descriptions. While Greece, again this is highly personal opinions.

H: Yes, of course.

I: Back when Norway and Greece developed into large maritime nations they had one thing in common and that was cheap labor. They were both maritime nations in the sense that you have a lot of shoreline , so you have a sort of natural inclinations towards the sea in both countries and there were a lot of highly skilled seafarers as they were both poor countries, now I am talking about a 150 years back right.

H: Yes, yes, exactly.

M: We are studying for a long period a go in our studies so its good to know how it has developed.

I: Yes, and the..Norway was competitive as a source of labor probably up until the 50s, since then you had a period where you competed on skills, but now there is hardly any Norwegian operations, that are manned and run by Norwegian maritime operations I mean, because of cost. Its only in the offshore industry, that were sort of labor cost is not as important. Greece had this cost advantage for

quite a bit longer and have also developed and kept a much larger small to medium sized companies that thrive on that operational skill, basically.

H: Yes, exactly.

I: So they have still what Norway had back 50 years ago, e.g large undercurrent of basically entrepreneurs who are able to start smaller maritime business, buying a vessel or two, setting up limited partnerships, recruiting people from their neighborhoods or the village and soo, that's still possible to some extent at least in Greece has been until these days, but that disappeared in Norway 50 years ago. So operational skills and ability to exploit market opportunities, I think is tabloid headline for Greece. It is a very strong operational background there.

H: That's true. So, we talked about sizes for companies in Norway, how is that? (bad connection)

I: I lost that, one more time.

H: Is there mostly large companies in Norway? You said there were a lot of small, medium sizes in Greece but what about Norway?

I: There is not that many small and medium sizes left. Those who are left are there are in some kind of a niche. In the old days, in the offshore industries and in the oil service industries there are still some smaller companies with a handful a vessels, but they have a very specific niche to fill. They are not sort of general players in the market they are tonnage suppliers to the large high cyclical companies and specialized in that. That's an example. (13/14??)

H: Yes, exactly. So you talked a little bit about the maritime cluster when you said it was an advantage for Norway and do you feel that your company, especially use the cluster a lot to, it is important to have a network with the cluster, like the association for example and other companies in the industry?

I: I would say yes, but to a lesser extent now than in the past and that is because we together with Wilhelmsen is almost they only ones out here now, because we are nor offshore/oil service related and we are still very operational focused. The only reason why our company and Wilhelmsen are still in Norway is because we do not depend on low cost labor, we depend on much more logistics skills. We are more of a, only mockingly we say that we have more in common with DHLS than with a dry bulk company. Because we do much more logistics, and logistics planning and conducting large logistics programs for the car manufacturing companies globally. It's not like one vessel, one cargo, one wage, not at all it's complex planning systems that has been set up here. So are we dependent on or do we have any specific advantages of being located in Norway now? Not as much as we used to, we still do but that's mainly in terms of accessing all the related service, like

financing and insurance and that sort of things. From a pure operational perspective, if the company were set up by scratch it would probably not be here. It's for historical reasons, the Norwegian and to some extent the Swedish were among the pioneers in developing the specialized car carries globally. And they are still here, companies like, Wallenius, Ugland, Wilhelmsen and Höegh were among those who actually developed this industry. And that's why we are still around basically. (16.27)

H: Yes, exactly.

I: It's systematic that the only newcomers in the industry for the last 45 years are to companies in Korea, which has been build up on the basis of the Korean car exports.

H: Ok, that's interesting.

I: UKOR and Globis?

H: Ahh, ok. So you are or you said that you are kind of dependent on the capital you get from Norway as well or do you get the capital from elsewhere as well?

I: I don't think that there is much argument about that proximity to some of the worlds largest shipping latters is an advantage for, not just the Norwegians but all the European segment per say. Both DNB and Nordea, both of the have leading globalized in under rising and structuring finances for the global industry. So companies located close to them have sort of a benefit of proximity compared to companies in South America for instance and Singapore. There is available capital that this is many places in the world, but you need a certain skill to avoid losses because it's a risky industry, right.

H: Yes, but in you opinion or to your knowledge do you know that Norwegian companies, their capital structure are mostly with financing from banks or is it more equity?

I: Eh, There is a overall higher leverage in the Norwegian and I would say the Nordic countries than you would se in companies in Japan, the US in particular and most of the Asian companies. So more availability to sort of call it qualified or risk willing debt capital. I think that's a pretty clear pattern.

M: Is it the same for Greece as well? Because most of the articles we read and when I also interviewed a guy from a Ro-Ro company in Greece he told me that they use equity mainly because, no of course our banks don't have that much liquidity, but even before its not that easy to find capital in Greece. So the Greek shipowners use mostly their own financing.

I: I think that's true. You were basically…That is definitely true now, and the Greek, the domestic Greek market they. We talk about Greek shipping, but there is two very distinct different markets;

it's the large international Greeks who have Greek names and they speak Greek but they have domicile outside in New York and to a large extent London, right.

H/M: Yes, of course.

I: And then you have the more domestic oriented smaller Greek Companies, for the latter group, availability for debt capital or financing from banks has clearly been and always been much harder than for instance in Norway but over the last year it has been even tougher, right. Because their main source of capital, have been local Greek banks expect that to the extent that they have been able to tap anything at all. They have been mostly not functionally for a few years now.

H: Yes, so we talked a little bit about technology earlier and do you know some innovations that have been done in Norway that you can mention from companies or from your company or in general?

I: Innovations? Ehhm..There is quite a few, from our companies the most obvious ones is actually the car carriers it selves, I mean the specialized vessels, the big ugly vessels that look like floating parking spots, they are designed and developed here out in Norway. The design was made in the early 70s, the main design, and that's what is still around, with sort of updates. The not so commonly known, but of course there are some software and programming skills behind it regarding the schedule regarding this vessels. The route planning, which is quite important. That was to a large extent developed by Norwegian and Swedish companies back in the 70s and some of this knowledge has been taken further into companies like, Apfel Leuthen?, Mærsk for developing the container route planning.

On the more pure technological side, the LNG carrier that today roam around the world, have two, they seek sort of designs, its either a, this bore shaped tanks that you have probably seen or they are more box shaped and the latter one is called meterain tanks and the first one is called bore or Moss tanks. This gives a pretty good indication on were it came from, it was first designed by an engineer company in Moss in Norway. And that design is still in use globally.

H: Wasn't Höegh the first company to use does carriers?

I: That's true. We were together with our French D?? partner (22.41), we were among the first, I am not sure if we ordered the first one, but we were definitely among the first rooster. And the old Kværner group seafarers were developing this.

Then we have a lot of thing, that other people are more qualified to talk about than me but a lot of things from the oil service sector and specialized offshore service vessels which that are dominated by or copyrighted by Norwegian designs all around the world. A lot of peechers on these ones, the

more pool where you can put down the small submarines, drilling technology where you are able to not only have a steal pipe that can drill down but you a flexible an umbilical cord like that call it, like a snake that can move around beneath the surface. That's developed in Norway, and that's basically the whole technology behind the shade gas revolution and the technology in there in North America. There is a long line, if you call some of the tecquies they will give you information for a while on that.

H: So would you say that the Norwegian industry has been characterized with the product innovation more than compared to organizational innovation, process innovation if you understand what I mean by that?

I: Partly, but I would call it concept development not just product.

H: Concept, ok..yes.

I: So, and another one, quite important one is of course in the chemical tanker industry the carsall tanker, a large tanker with a lot of compartments able to carry, able to carry a large number of specialized vessels, no specialized cargos. Which we used, before they were transported in barrels, with larges hazards and not very efficient, cost efficient or not even particularly safe for that matter, that's a good example of what I called concept innovation, right. Because then you were able to set up an industrial trade where you will not only trading one product, but you were offering a liner service that can carry 60 different products in one and the same vessel to a highly competitive cost.

H: So in you opinion is the industry choosing a differentiation strategy or more a cost leadership style?

I: I have a little bit of a problem hearing you, what did you say?

H: In your opinion do the companies choose differentiation strategies or more cost leadership styles? There are a lot of specialized ships, so I don't know, what do you think? If you know what I am referring to when I am saying this?

I: if you are, I would say**,** we are still talking about the Norwegian companies right?

H: Yes

I: I think that we have, there are hardly anyone left to try to do anything based on cost leadership. You have to have a differentiation strategy, or what the textbooks label differentiation strategies. Because you are simply not able to be competitive compared to a few other, but a why you can be cost competitive is where you change concepts basis, right? Where you offer solutions that bring value to the played, or cargo owners, will experience either a lower cost or a lower risk by choosing

a, your solution, so in a way, to that the extent its cost leadership, its not cost for the company but it is cost for clients what you see what I mean.

H: I see what you mean.

I: Cost saving solutions

H: Yes, I have studies a lot of companies in Norway now, and I see that everybody states exactly that they are trying to make it as less costly for the customers, and trying to customize their products for them.

I: yes, and again coming back to the oil service industries, that is where you find, you can find a stinger that offers that, that has the technology taking place within fairly small companies but aiming for special needs for the oil service industry, based on not even a contract, but the company belief that if we can develop a vessel or a product that can do so and so, we will get the contract. Right, so it's an often high risk product development, but it have been paying of more than ones. You find a long range on the list if you start searching. But again the more the old fashion, but still quite illustrative example is again emerging of the capital tanker registry that was basically invested by, Jakob Stolt Nielsen, he is the guy that came up with the idea of creating a partial tanker, a vessel capable of carrying many different things, many different cargos and one heel. Based on that you can set up a liner service, and take a lot of worry of the clients shoulders and keep the pricing as a part of you profits right, in our industry its also the same thing. Rather having a lot of cargo damage, by lifting the cars upon the deck in a old fashioned cargo ships, you develop these specialized parking garages so that there is hardly any cargo damage left and it is highly cost competitive so track large volumes over large distances. Which is also is a concept solution basically.

H: Yes, I did not catch his name, can you repeat the name?

I: Jacob Stolt Nielsen.

H: Ohh, yes, of course.

I: The founder pasted away earlier this year. So its not that long ago right.

H: Yes, so , what do you, how do you plan on coping with the challenges of the future and what do you think they are? Like the biggest ones for the industry.

I: In general?

H: Well, for the industry in Norway?

M: We mean like, if there is some challenges that are like Norway as a country, all the companies in Norway identify as a challenge, of course from your perspective, but you have experience from other companies, what problems do think and how do you think you would react?

I: Well, there is sort of this one over righting challenge, is that, yes we have a lot of maritime industry, but we don't have any large sources of cargo, we do not have any large producers of large volume goods, we don't have any big important, we are service provider to a global trade pattern where we as a country plays a small roll in the exchange of good but fairly role in actually transporting them around the world so sort of to understand global trends is a challenge. And there is always a risk that you will not be able to sort of follow those trends and developments, and adapt correctly that you will be not competitive going forward, that you will not be able to read the market probably. That's probably the biggest problem, and it as not becomes smaller.

M: I guess that the new regulations from the IMO to don't pose as a big threat on you because Norway always innovate and is ahead of the environmental changes and the rules that they pass, this would not be a problem, I mean Norwegian companies would not have to change their fleet in order to be compliant with the new rules?

I: That's, correct, that's almost like as you say, its almost a complementary, if coming to force radical changes that would require technological developments, technological change, that is where, that is one situation that our industry as a whole would be very well suited to cope with because I mean that's how we have survived for the last 50 years or so. By being in technological forefront on what's going on. But if you get in a market that is playing by overcapacity, and where you are not able to price services in a matter that will give you profit over time, you would come down to sort of bear knuckle competition on operating cost, that's a dangerous competition for our industry, because then we will lose out. We will not be able to be the lowest cost competitor over time, we need to be able to extract the returns from the capital and technology that we have.

M: And something else I guess, from the articles we read we did see that as a problem for Norway very much but it is for Greece and Denmark, the piracy issues, do you think it is not for Norway because you don't actually operate as much in those waters, you are more in offshore or you have different measures to cope with the problem?

I: Yes, That is largely a functional how you fleet is composed, that those companies that operate the smaller cable carriers and smaller tankers it is still a problem. There are not that many of them around in Norway, but I mean for our vessel we go through this pirate invested waters every day, but for us it's not a problem, that's just physics, our vessels have unique railings of 35 meters

straight up from the waterline before you can get aboard on our and a bulker is just a few meters, much easier to board right.

M: yes, of course, of course. That's physics yes, hehe.

H: So, what do you think about the introduction of the Norwegian International Ship registry? Do you think it has helped the Norwegian shipping companies, or do you think the industry would have survived without it?

I: It would have, if you haven't introduced that you would have a much larger portion of the fleet controlled under international flags, flags of convenience and you would probably seen some of the same tendencies that you have seen in Greece. That the owners themselves or the strategies headquarters for some the companies would have moved offshore to locations such as London or Singapore or yes..that would, so in a sense it slowed down, I would not say that it stopped it completely, but it definitely slowed down that development. It has been important to sort of maintain the maritime cluster to a large extent.

H: Yes of course, ok. And what do you think about the new maritime strategy that the government posted to change the strategy for the trade areas, do you think it will help?

I: Well, I don't think that there is as much enthusiasm in the industry, nice words but it doesn't change much probably.

H: So, if you would chose some names or a company who is a big influencer in the Norwegian industry, which would you choose?

I: A big influencer?

H: Yes, who had an influence on the industry or made some changing?

M: Or that is quite representative for the industry, because we would like some examples, we want to give some example on how the shipowners and companies act.

I: Then you could pick a couple to sort of show some differences, it is of course always tempting to pick your own company, but I think I have to say, it is hard not to mention the Wilh. Wilhelmsen group, because one of the main things that has been the key to success is the ability to adapt and to change and the Wilhelmsen group have now been around for more than a 150 years and they have been able to change completely several times over that time span. Even though you would always need to have a healthy level of skepticism when you read such stuff there, you should have a lock through their, I think there is 2-3 years ago that they had this big anniversary celebration that they published a book, a company biography, which is actually quite fun read to see how the industry has changes the sailing ships 1860s and up until today. So that's one company, and then is should

be, there is a company that today is called DOF, district offshore, one of the oil service or offshore companies on the west coast who's origin are, there are several of them, but DOF is a good example, origins are fisheries for a few generation, and they are one of the few companies that were able to ride the wave if you like really came to Norway and establish one of the worlds largest and most technological advanced suppliers of offshore service winkles. Within two generations they had gone from being a fleet of low tech fishing vessels to having a fleet of extremely high tech offshore services vessels.

H: I have had a lock at both of these two companies, and they lock like good representatives. What about Fredriksen and Frontline for example?

I: Yes, you asked about groups that have had an influence..

H: Yes, exactly

I: And Fredriksen for all his qualities he probably has not had such a big influence on the industry, he has been a very prominent player in the industry, but he hasn't changed it, if you see what I mean?

H: Yes, I know what you mean. He has just been in tankers all this years. Do you have some other examples, such as Erling Næss, with his introduction of the NIS of course. Do you know some other wants?

I: Well, you can always look into the Odfjell group or Stol Nielsen, Stolt Nielsen started with nothing and build up to a large industrial shipping company with also shore based activities all over the world, tank terminal. Odfjell came from a general cargo background and turned into another advanced chemical tanker company, so both of those are sort of good stories or illustrative stories if you like.

H: yes, ok. Another question about the ownership structure in Norway, I know that Höegh is a family owned company. How are other companies in Norway? Is it mostly family driven or?

I: More and more, the public market are more important as a group now than they were say 30 years ago clearly. The use of the stock exchange and the capital market is much more important. And has been important of the dynamics, if you like, for the development here. The average Norwegian maritime company today is probably a stock listed oil service or an offshore vessel company, while 30 years ago it was traditional family owned shipping company. It illustrates change for you.

H: You can still see a lot of the family funds represented in the ownership structure though.

I: Yes, you do, you do. But again, our company can be an example the Leif Höegh group, they been, they started out as many companies did, a string of limited partnerships back in the 1920s they survived the 30s and they survived the war and they are a family owned and controlled conglomerate but with a lot of partners on the vessel side or even in the operating entities. They been stock listed for a period in the 80s and were stock listed until 2003 and was taken private by the next generation and restricted and a lot of activities were sold off. Now the companies split in two, its our company that is still private that have a partner, and the other company is our LNG business which was taken public by the family a few years back. So yes, family brackets call it old capital or qualified capital, people that have a qualification from the industry or have made their money in this industry are still very prominent here. But there are much more diverse in how they structure and how they execute their ownership now than they were just a generation ago.

H: Do you feel that networking is important among companies in Norway or is it networking in general on a global level?

I: I would say both, it is little bit of where you work and which company you work for. But all the work that the ship owner association have been doing and all of these various forums are important for the, not necessarily for the owners or the ownerships, but for the retention of staff, for people to feel that they belong to an interesting industry a dynamic industry and also there is, and there should be some turnover of staff in the industry. You see much more turnover between companies within the industries that people are actually leaving the industry. So if we have to recruit somebody, most likely they have worked for another shipping company, either here or aboard. That is much more likely than, so it that sense to keep a educated work force, educated in the sense that they know what's going on in the wider industry, that's quite important, probably the most important of networking as a quality.

M: Has that changed over the years? Did it used to be stronger the connections, and now they are, because everyone is listed is less important? At least for Denmark we have been told that each one of the biggest advantages for the companies are so connected with the association that they can change the regulations and everything and the same Greece, like the companies collaborate all the time, in order to achieve lower price in suppliers or maybe because in Norway they are in different sectors so it is not as important any more?

I: Eh, nja, I would, I would not say I totally agree with that. I would say it is important and it has been put more emphases over the last few years. There has, there was a tendency and there will always be a tendency that people think they are so unique that people think they don't have

anything to learn from someone else, right. But, in my opinion it has become better and people and organizations have become more open to value of network it self.

M: yes, of course.

H: I think actually we are done with the questions we have? (asks Maria, Do you have any more questions?). You been of great help. It's so nice of you to take some time off to talk to us.

I: My pleasure.

H/M: Thank you so much.

The end of the interview.

11.2 Transcribed interview with Rasmus With, representative from The Danish Shipowners Association

Lead talker: Maria Leontari
Taking notes and transcribed by: Helena Eleftheriadis
Conducted at: The Danish Shipowners Associations locations
Interview time: 1 hour and 15 min

What do you think is the **competitive advantag**e of the Danish industry? I mean what makes it different and competitive towards the others?

Rasmus: I think the main thing with Danish shipping is that you of course have the net wage scheme and the tonnage tax regime but you also have a very close dialogue with the authorities the Danish maritime authorities or the ministry of growth and development and what not. So there is a lot of interaction between the government and the business. So we contently ping pong ideas and opinions, so that gives dansih shipowners a space were they can be very proactive.

Maria: So its like on part of the cluster, like when it comes to political environment supporting very much the industry and then I guess its also the fact that there are suppliers that act in Denmark so the shipowners have suppliers and they have all the layers in their market…

Rasmus: I think that you have that in lots of countries. Take China, Japan, the US, its not unique in that sense. I think what is really unique about Denmark is this **governmental business relationship** that we help facilitate as the organization representing ship owners, so that's the really…also in Denmark you have, we were discussing this earlier today, e.g you have Sweden that used to be a bigger shipping nation than Denmark. And then in Sweden shipping was seen as something catering

to the large industries, like IKEA or exporting industries. And not as an important business itself, whereas in Denmark you see shipping as something that is very important to the Danish country, because we represent 20% of the total export, 50 % of the service export. So we are very large on basically every parameter you measure. So there is this inherent feeling that shipping is important to Denmark, in you know, for politicians or the average citizens they all know about shipping that we actually relay on that for some of the economic growth.

Maria: Is there a bigger movement no, because also I know, because I was working for CBS on projects and they got a big funding from the maritime fund, so is there a movement trying to enforce more the education of people.

Rasmus: I think that over the last few years that there have been some development where you are trying to ,ehmm, integrate the academia in shipping. Whereas before Shipping took, e.g an economist or geologist or whatever they needed and then they plucked them into the shipping company and trimmed them or they had their own training system. Now we have the Blue MBA, I assume you know about that and the blue..the other one at CBS, I cant remember the name right know.

Maria: it's a bachelors in shipping

Helena: Its the maritime in…

Rasmus: Maritime Bachelors yes.

Maria: And there is the minor also for the master students.

Rasmus: So you have this were academia is trying to create a theoretical foundation for shipping that will later be …to the shipping companies. Of course since its in Denmark we have this focus that's we get the first hand advantage so to speak.

Maria: So, If you had to compare it with Norway and Greece, what do you think is the, what the Norwegians doing different than the Danes or the Greeks. I don't now much about the Greeks, I guess you compare more the Scandinavians, which are your closest.

Rasmus: No, we do abroad perspective analysis as well and of course we look to the Greeks and a lot of aspects. If we start by just comparing to the Norwegians. The Norwegians has all this oil and gas that there is very natural for them to go into the tanker business, ehmm, and their maritime agenda is very much focused against offshore and that tanker business and of course that's way there are very much of head of e.g. Denmark in offshore business conditions, however they don't have this same sort of network scheme that we have in Denmark. That's a comparative disadvantage for the Norwegians which is why we caught up to them and surpassed them with quite

a margin, and ehm..so that's a least one of the reasons. Ehmm.. for Greece I think, well I have to be careful how I phrase this …

Maria: Nooo..

Rasmus: But you both know that Greece is v..not..its very far from the Scandinavian mind set when it comes to shipping environment, CSR, taxes all that. So it s very different and the Greek rules reflect that, and so there is some very favorable conditions to having a Greek flag ship.

Maria: Yes, exactly

Rasmus: And of course that's way they are, I think number one flag in the world, ehh, not flag but ship owner and yeah, I think its very difficult to compare Denmark to Greece. Ehm, because there are so many different levels that you can compare them to; ship standards, ship safety, manning/ crew training, you name it. You..

Maria: Yeah, I think that you at least when it comes to crew that everyone is trying to target the Asian countries, so I think that, that is kind of the same?..Or I don't know if I am wrong I mean..

Rasmus: What I am thinking about the crew requirements, so for the number of crew

Maria: But aren't there, because, I was in Greece two weeks ago and the ship owner I was talking with, he told me that all the regulations have changed with them International Labor Organization (ILO)

Rasums: Yes, the ILO, yeah you have the …. You have the mpc and all that. But, of course that's what we have been trying to do for a lot of years, because we have/had this very strict rules in Denmark for Danish flagged ships. And of course they were strict because they had to with basic human rights and how you treat people for example. And, so Danish ship owners had to intere to that, whereas for example Greece or Cypriot ship owners did not. And that's why we and others made a push at the IMO, to have this global regulation. Because we cant have a competitive business in Denmark with so much stricter rules than everybody else. So we have been pushing this internationally agenda, do dismay of the Greek shipowners for just to mention one country. There are a lot of people that don't like this. So that's something we have been pushing among others. So, so, but it is still not to the point were you can just, you cant really compare Greece to Denmark in that perspective. At least not now, you might be able to if we can, well over the coming years, if we can work towards this global consensus implement or ratify the Hong Kong convention and agree on emissions and hull design, efficiency and all this different things that play a crucial role for ship owners. So if we can continue to work towards some kind of consensus on that then you will be able to compare them.

Maria: Ok

Rasmus: But right now, they are not really comparable and of course there is much cheaper to have a ship registered in Greece than it is to have it registered in Denmark.

Maria: But, I mean, at least the, it's the 20% of the Greek fleet, the Greek owned fleet that is registered in Greece, like most of them is also registered in Marshall islands, or Liberia, and I think that the Danish also have some.

Rasmus: Yes, very much, I think its like in Denmark its 50/50 %. So you have about 50% in Danish flags and 50% in on in other flags as Singapore, Panama the most prevalent. And then you have an other portion, which is chartered in. So that's the operating tonnage. And they are usually also non-Danish flag vessels that they charter in, they are typically German ship owners, greek ship owners, and they register in the Bahamas or Maderia.

Maria: yes, of course. Ok, ok, soo yeah. It could be a little bit more, kind of like. What we read at least in the articles, but of course academia and real life are not always going together

Rasmus: Ehh, No. Laughter

Maria: My question is, what I was expected to hear from you would be like Norway focuses more on in like from what we read in innovation when it comes to technology and like offshore as you said and then focuses innovation in the organizational level like management and having better practices and exactly what you said about the networking ehhm, like the country supporting the industry. While Greece is more they are trying to identify, like opportunities in the market. Kind of like, see that the LPG is going up and so they invest there.

Rasmums: Greek Ship-owners are known arbitrages. They are know to be arbitrageres. So they spot the trends the movments and then they invest heavily in second hand of them. For example, tankers, crude oil carriers, product tanks, lpg and they are very good at that and they have been doing it forever.

Maria: Yeah, forever

Rasmus: Yeah, Laughter. And they are really good at that. So you definitely say that, but also in Denmark there is this large focus on technology, we have the Danish University (DTU) that also has a maritime education.

Maria: DTU?

Rasmus: Yeah, and so we also focus on that, ship design and beyond offshore. I mean , we can say that offshore, oil and gas. Of course Norway is as a leader, of course and we have offshore windpower, were Denmark is the leader. Denmark is also on the forefront of the wave energy

harvesting and ship design creating the bubbles bowl? and the hull so it glides smoother through the waters. And all sort of, actually Mærsk has something called Mærsk maritime technology

Maria: Yeah, they have. Well Mærsk has everything, they have a department for everything

Rasmus: Yeah, actually they do. And there is the green ship of the future and this inner ship. There are a lot of, there is a lot of research going on in Denmark towards

Maria: Do you know any of, I mean we were in an event last weak and they told us about the ballast water, a company that has made this technology for that and has patented it but is still waiting to put it practice. Do you know other example of this? Or, kind of like Danish inventions? Danish innovative ideas in shipping?

Rasmus: Yeah, I know this some different companies that have made their own versions of the scrubber systems. To clear the emissions of, especially sulfate particles but also nox, you know nitroocids, so you know. I think they are located in northern part of jylland and svenbord? and of course you have man bnw, so it's a, they were both by man diesel, the German trunk producer that produce ship engines, so they have a very large research facility and back search facility hear in Copenhagen. Of course vatsila?, which I think is finish, they are also present in Denmark. Alphalevel is Swedish is present I denmarks as well. So the cluster is pretty complete when it comes to that. Of course Ballast water is a very interesting case, because is it not yet decided upon which solution you have to use. So there is a very risky business to be in right now

Maria: Yes, Especially since you have invested in R&D so much and are just waiting and waiting..

Rasmus: Yes, exactly.

Maria: … and the technology is going down, and other people are just waiting to get the same technology

Rasmus: Its going to be a boiling head ultra virus, light, what's it going to be filtering,. Yeah nobody knows.

Maria: want to take out the questions we have done, so I don't ask the same.

So, I think you kind of covered it a little bit, but If you know, I guess it's the government connection, but in general the value creation from all the actors. Do you know which are the most important factors that consist in Denmark, and don't exist somewhere else in that, like better infrastructure, better organization, of course from Greece, but in general I mean.

Rasmus: I don't think as anything that unique about the Danish cluster in that aspect. I think the fact is that we have a pretty complete cluster everything from finance, to legal to R&D, manufacturing, shipping education is all here and that's of course there will be a lot of interactions.

And I think that the fact that Denmark is so small and you will have all this interaction and migrations, one person goes from working in the manufacturing to the R&D and then from the R&D someone goes to shipping and all that. This is a merely go around of talent in Denmark that sort of integrates the cluster in it with itself. I think in it self the cluster is not specially, but I think that the dynamics of the size of Denmark and all that makes it special.

Maria: I mean, we know this when we compared sizes, we have Mærsk that is huge and is larger than any other company we compare in Norway or Greece or anywhere else, and the other Danish companies are very very very small so there is a very big gap, so

Rasmus: I think that Norden is a top 25 company based on operating tonnage and because they have their dry bulk, and then they have the tanker business. And the tanker business is operated from something called Nordic Nordian pool, which is not only nordic ships but primarily. So when you look at that its top 25, and then you have Torm, which is right outside I think. So they are pretty big, and you have Louristzen of course, pretty big in gas. So there is a gap because Mærsk is as you say huge, in well a lot of segment, they are not in dry bulk anymore, they sold that right before the boom in 2003 I think, great timing, so then they went out of the gas tanker business right before that boomed in 2010/11, whenever that was, great timing once again. Then last year in January, they sold of there crude oil carrier fleet, right before the boom.

Helena: Do you know why they make those kind of decision, right before?

Rasmus: I have no idea, basically the booms we saw in each of these fleets were not anticipated and they came after long period of low freight rates, so they basically say, this is barley profitable we can spend the money better elsewhere. And so, the three times they did it, it just coincided with the booms right after. Yeah..

Maria: pretty unlikely

Rasmus: Other than that, they are in every thinkable segment, so they are huge.

Maria: So you think that they are, because we were trying to find and use as case companies, what to analyze of course Mærsk is the biggest and is it the oldest as well?

Rasmus: NO, Actually, svitse? Which is no own by mærsk. Is from 1833 and I think DFDS is from 1871, Norden 1884 ,Torm from the 1880s (89) I think. And Mærsk is from 1903.

Maria: It just because it is the most famous, yeah sometimes. I was planning to ask we talked about companies. We were trying to ask which companies to analyze, which is more representative of Denmark, Mærsk Torm.. Torm is actually in a little bit of a problem right now..

Rasmus: They have actually solved their problems, they came to an agreements with their creditors I think about a month ago. Or something like that

Maria: Because I was reading something yesterday in the Lloyd's list but maybe I did not focus so much, also because many of there people left and went to Hafnia Tankers to make this new..

Rasmus: Well yes, then the head of the tanker division gone to Bw group in Singapore, yeah so that's the downside of being very good, because actually Torm has a huge amount of debt, right? 10 billion DKr, I think it was. Which is quite a lot. Especially consider their fleet was not worth even, I don't know, more than a few billions, ehmm.. but they actually I think they had positive EBITDA, so the operation was actually profitable but the g expenditure, servicing the debt made them going to a negative, red territory every year. So they are actually pretty good at what they do, they just had to much debt and that has no been solved. So

Maria: Yeah, we have a question about the capital structure in the Danish companies? Because I know that the biggest Greek ship owners, at least angelicousses, refuses to go public and many other prefer to stay family owned and they are using equity, or especially him, because he is so big he has good connection to the bank and can get access to capital but in general because there is no much money in Greece of course, it was not that much that was available for the shipping industry, the ship owners used equity. I think that in Norway they have a lot of capital and we were wondering what the Danish people are doing? The hedge funds? private equity? The new finance trends? How do they use them or if they use them? Negative or positive towards them?

Rasmus: I don't think, ehh.. I think what Mærsk is actually basically family owned, I think they contribute to 40 somethin %

Maria: From funds

Rasmus: Yes, exactly. But beyond that the rest is public, and Lauritzen is also controlled by the fund. Ehhm.. I think that in Denmark the usual way of raising funds would be through a bank or has we have seen a few examples of Mærsk has issued bonds. Which was on the raise last year and this year it has been a little more subdue because the market hasn't devolved as people though they would. Soo, you used to have family owned businesses, and you still have a lot of smaller shipowners in Denmark that are family owned businesses. But when you go and reach a certain size I think its more common in Denmark to be a listed entity.

Maria: And they are usually listed in the Copenhagen Stock Exchange, right?

Rasmus: Yes. Except from Hafnia that is listed in Oslo. And is trying to get listed in New York as well.

Maria: Greek companies are, like all the one that are listed are listed in New York.

Rasmus: Yes.

Maria: Good choice. Laugther. Copenhagen stock exchange is not so good.

Rasmus: I am reading a lot about Greece these days. I have been following them since right about the answer of the crisis, it was early 2010 and it actually started in 2009.

Maria: It was actually even before then.

Rasums: Yes, but you know the current debt crisis so my master thesis had to do with that as well. Yes. Not only crisis, but credit ratings and all that. And you are looking at 12 very very interesting hours in Greece right now.

Maria: Yes, I know. However, I always read articles about the Greek shipowners that they are doing really good no mater the situation back home.

Rasmus: Yes, it is an international business. In Denmark you have a local business cycle, and you have a regional business cycle and then you have global business cycle right, and the global business cycle is more calm than the regional and the national is like this, right. (shows a less cyclical movement with his hand). So they profit of a less volatile business cycle basically. That's the great thing about being a shipowner that you can plan a head. However, that also attracts a lot of money especially in volatile time switches that we have seen, so now we have overcapacity because people have too much money to spend and they wont get any interest on it. The sovereign bonds and the stock market are inflated so they go to shipping. And that actually a problem for shipping right.

Maria: Yes, that's, I mean at least when I was reading the interview with this angelicousses guy he was very negative towards these hedge funds and private equity funds that interfering with shipping.

Rasmus: Exactly

Maria: He wants to keep it like family oriented or more like he does not want this new ways.

Rasmus: You want liquidity for shipping, but you don't want excess.

Maria: Yes, exactly. Alright. Ehmm.. I wanted to ask something but what did I want to ask. I can continue with the next question. I asked about innovation right, so the inventions, soo.

Helena: Do you feel like the innovation strategies for the Danish companies after the introduction of DIS have been consistent?

Rasums: The introduction of..?

Helena: DIS..the Danish International Ship…

Rasmus: Ohh.

Helena: Yeah, if it has been consistent after the introduction that they have had the same strategies or if they have changed a lot during those years?

Rasmus: Well, every shipping company has changed a lot since 1988 because we have had several revolutions in shipping. But of course when oil prices goes from 20 dollars a barrel to less then that 12 I think to over a 100 dollar a barrel and stabilizing at a 110-115, that of course when bunker prices increase with that much over a period of time of course people will seek to innovate to cut their consumsion and I think, I don't think the creation of DIS has any influence on that. The influence it has had is its enabled Danish Shipowners to sail with Danish flags, so it makes sense for them to invest their R&D funds in Denmark, basically. So it's a secondary effect of it.

Maria: So what do you think is. Why is the Danish Shipowners flagging out and what is the government trying to do in order to discourage them. Make better the situation here to make them stay here.

Rasums: Well, Danish Shipowners are not flagging out. Its actually seen tremendous growth these last years.

Maria: So they are coming back?

Rasumus: No, it is newbuldings. They also have new building delivered to other flags it has to do with diversification. Of course plays example oil rigs is much better business conditions if they have a Singapore flag than a Danish flag. So they go to Singapore, but it is also about, you don't want to lose the local contact when you are a global business so you cant just have oil ships in Denmark and then expect to have an international business with good dialogues with the other origins and other businesses.

Helena: So it is much about relationships?

Rasmus: Exactly.

Maria: Networking yes. Ok.

Rasmus: I think we grew 15% last year the Danish flag in tonnage, so..

Maria: Yes, we read the statistics from you. So in your website there are some challenges, like the new regulations and the oil price, piracy. Do you want to tell us about how the companies are dealing with and how the association helps them to deal with them. How do you forecast, or whatever..?

Rasums: Yes, so about piracy. We are very active with piracy because of previous deputy director general ..Hansen, he was the chair of the European piracy task force. So we helped design the

solution of the coast of Somalia. And we are very activity with that, and we have a security advisor working for us, Morten (Glamsø), who takes care of every security rated issue. And we, the shipowners use him very much to ask what to do and what to not to do, and who can I contact about this. And Morten is an intermediary, so he has a lot of, the navy and the IMO and the EU and these kinds of facilities. So we help facilitate the dialog.

Maria: So you have a person who is an expert in that and then shipowners can take your advice via him. Ok. The environmental changes?

Rasums: So we are the annoying guys in the class, we..

Maria: you are the one who are pushing the most, yes..hehe

Rasmus: Well, maybe not the most, I think the Norwegian are pushing more.

Maria: Yes, they push more because they invest so much in that, so its also good for them, because then it cuts the competition.

Rasmus: So we are pushing for emission controls, because if we are pushing for it being proactive instead of being reactive you can help formulate the policies that you have to adjure to. If you are just being defensive and reactive you don't have a say and you get some solution draft upon you and you have to comply with that. So you basically eliminate yourself from influence (36.07).

Helena: I have read that Greece is actually pretty active as well, but they are mostly active for the reason that you just said, to be able to formulate the policies that they want to.

Maria: Both the ministry and the shipowners association they are like working very much in like exactly doing provisions and everything, because they don't want to get fines in international ports. Actually I was in a conference with my job and they were saying that right now, that Greece are complying somehow, and Norway is pushing the most and Denmark. But actually if you take it as a game theory it is a better strategy for a shipowner to not comply with the rules and being caught once and pay the fine than investing in and changing all his fleet.

Rasmus: Yes, and that' something we are very aware of and we have an ongoing discussion with the European commission about this, because you can say going from Rotterdam to Copenhagen and back and you don't comply with the emission rules you can save one million dollars in bunkers. And if you get caught, what's a fine, 10 000 euros or something, its peanuts. So that's something the enforcement part of it that we are very aware of.

Maria: Are you pushing for bigger fines or can you push for bigger fines? Or different ways of..

Rasmus: For starts we have to push for better surveillance. We don't really know, I don't think we are pushing for bigger fines least not right not, its more bout having this surveillance in place so we can catch those who are not complying with the rules.

Maria: How can you do it in an open sea? I mean I was reading about it a drone and bridges.

Rasmus: Yes, drones, aircrafts and you can place something called sniffers on bridges.

Helena: Ahh, ok, so they are inventing technology for that as well?

Rasmus: I think the technology is there but it's another way of using it.

Helena: Yes yes

Rasmus: And of course drones that's and aircrafts are great solutions, because if you don't comply with the rules you can just switch to the other fuel.

Helena: Who will take the cost of this surveillance?

Rasmus: That will be a national issue, I am assuming this, because there is nothing concrete right now. I would think that would be a national issue.

Maria: yes, exactly also for the company in ballast water. You invest and then you don't know how it will be used or if it will be used.

Rasmus: We have known about these ISAs in control areas, we have used, we have known about this since 2008, I think. So a lot of shipowners prepared for that, do they installed scrubbers and said we are ready for this. And then the other half said, we are not doing anything, we are waiting and then we can get this proponed. And then 6 month before the panicked so there is a lot of trouble there. Stems from people not being proactive.

Maria: yes, exactly. But I think that at least that the three nations we are seeing, I don't know if they are doing it with the same strategy, but they are all trying to be proactive to the market and what are changing.

Rasumus: I do think that there is a difference between the Scandinavian countries and the Greek, is that the Scandinavians they are pushing a head and the Greeks are trying to hold back. So they are to opposite forces, but the same tactic.

Maria: Yes, of course.

Rasmus: And I think that as always been the case, but its just..

Maria: Because actually, when I was reading, it was a paper from Mr. Harlaftis and Candavas? From DTU, and they where talking about slow steaming, actually the whole implementation of the new technology, its not really making, its not enough, it doesn't make enough less emission that it

is worth the saying we are doing slow steaming or whatever, in the end its not a big difference in the environmental impact.

Rasmus: Weeeell, that's one opinion.

Maria: Well, I mean, it was the numbers saying it.

Rasmus: But we have been collecting Co2 data since 2008 and there is in the shipping statistics as well and we have cut emissions on bunker use by 3 million tons, going from 14 million tons per year to 11 million tons per year. In the same time the Danish fleet has expanded fleet has expanded. The tonnage adjusted reduction in co2 has been, I think its 40 something percent, an that's party due to slow steaming.

Maria: But they are all burning the same thing, they are all burning crude oil.

Rasmus: They are burning bunkers fuel. So now we do have some newbuildings coming in next year that's going to be LNG part, and that will be the next wave I think, because when you. One thing is now you have the low sulfur bunkers but you still have the nitro oxide problem that gets removed with the LNG as well so now you, so you are only left with the co2. The co2 emission from LNG is slightly higher than from bunkers, but you dont have sulfur oxide and you don't have nitro oxide which is far worse for the atmosphere than the Co2. So ..it is still net benefit burning gas than it is burning oil.

Maria: I mean are there infrastructure for this ships, because I mean if you leave from Denmark and want to go to Singapore where will get fuel if there is nowhere to get fuel

Rasmus: No, and that's what's holding it back right now, because rally want to be the first mover here. We just opened a LNG terminal in Hirtshals, I think it was, in Denmark. And there are several difference places within the EU that has been granted money from the connecting Europe facility to create LNG facilities. So slowly its, it has to reach critical mass before, so we are working towards that, but still in its infancy.

Maria: Yes, because we are trying to evaluate, like the innovation, if its actually innovation, like its very nice to have in a paper that we will not burn so much, how can you actually implement it. So that's why I am asking.

Rasmus: Basically, when you look at innovation, some innovation comes from business perspective when you want to optimize something. That's something tangible. Other innovations comes from regulations, because there will always be externalities by doing business. And some of these externalities have to be regulated and that creates innovation as well. Its not like that all innovation is bad, some is, you can regulate to much but some regulation are also necessary both in

the sake of reducing externalities but also for innovation in the climate. Which is something all of us are very concerned about these years. 44.37

Maria: Who do you think is the biggest influence in the Danish industry? Like is it the government or Mærsk?

Rasmus: From a technology standpoint?

Maria: In general, if you like to tell us for the technology view or which guy or what makes the changes, what forces for change. Right..?

Rasmus: I would say that we are the biggest influencers actually. Basically we have the different committees in the association, business committee, the board we have the legal committee, the environmental committee, technology, everything. And so, the members here, which is basically every major shipping company in Denmark and lots of smaller ones as well. They get together there an discuss whats, what would we like, and then we take those key message and go to the authorities, and of course some of them will have bilateral discussions with the authorities, but a lot of it comes from us actually.

Helena: So, you feel that the government takes you opinion into consideration a lot while they make the regulations.

Rasmus: Yes

Helena: Ok, and also do you feel that the association is able to affect the IMO as well. Or are you able to influence them.

Rasums: Well, we try.

Helena: Yes, Exactly.

Rasmus: Example, Morten, the security or Per Owe Kristiansen from a technology standpoint, Marie Brynskebø, who are director from the environmental standpoint. All try to, they have a seat at the IMO as well, oh, they don't have a seat, the Danish government does, but then you have backseat that you try and influence that. So I think that every weak someone is at the IMO and try to influence. So we try to have an influence, but basically the influence comes from the Danish Maritime authority and the differences ministries of environment and of course we have an ongoing dialog with them as well here in Denmark. So you can say that in a

Helena: An indirect way you have a big influence.

Rasmus: Yes, kind of a meta influence right, so it's the way it works. Hopefully will get Andreas Nordseth as a new IMO secretary general here the 30th this month so lets see about that.

Maria: Are the unions strong in Denmark and if you know about the other Scandinavian countries as well but I mean unions for seafarers or if you actually have a lot of seafarers, because I know that in Greece for example there is not so many people neither in Norway. Basically seafarers come from other countries.

Rasmus: In Denmark we have I think almost 8000 Danish seafarers on Danish flagged vessel, it might be others out there right, and then you have of course, and that's excluding fishermen and all that, so that's commercial shipping. Ehmm, we do have very strong unions in Denmark. Beside the seafarers you have f. ex when you construct an offshore wind farm then the people constructing those are not seafarers they are electricians, engineers, welters and all this. They come from a) not a maritime background, and they get sailed on to side and they get to work. They are members of f.ex 3F or Dansk Metall, Danish Metal, workers association and then you have the seafarers union, sjøfartens ledere?, C/O sjøfart and there are tons of them. And we are actually both a trade organization and a priers organizations so our employers organization people here. They actually do collect bargaining agreements for the owners, so they do the negotiations. Yes, there have a fund the association share. I am not familiar with the conditions on the labor markets in Norway or in Greece.

Maria: yes, of course.

Helena: The unions in Norway are strong as well.

Maria: Yes, I think they are strong in Greece as well, especially with this government now. But at least before they got elected they said that they would not surprise the shipping industry with something. But of course we take into consideration that the political environment is not as stable into account in our analysis, so not so big changes have happened yet so..

Rasmus: When that gets turned of towards the end of the interview Ill tell you something about Greece. Laughter

Maria/Helena: Looking forward to it. Laughter.

Maria: Maybe we could find the information in the dataset you have but do the Greek, no not the Greek, the Danish shipping companies have mainly their own ships, is it 50/50 their own ships and chartered or how do they. What is the ownership structure they prefer? Like do they do a lot ship management or do they just operate their own?

Rasmus: Well, In Denmark we have a Danish flagged vessel, you can chatter in four vessels, we have this ¼ ratio. That's the rule. And so of course when times are very good we are very close to that. Right now, we are not so close to that. So we have Danish Flagged vessel, foreign flagged

vessels and total Danish vessels. I am just going to see if I find the Danish Shipowners associations statistics. Leaves the room to find it.

…

Comes back with statistics review.

Rasmus: So if you just look at page 3. So you can see the fleet composition. So we have. This is DWT. States a lot of numbers from the statistics.

It just to be a larger share of charted, you can find the older one on the web site as well. The chartered in vessels 40 something million.

Maria: So when the times are good you have more under Danish flag or more chartered in?

Rasumus: More chartered in. 53,41

Maria: How do you get this data? Are there company's disclosing it. Because I mean we can find some data for Denmark and Norway, but for Greece is so so hard. What are you thinking we should trust and how should we do the statistical analysis, since you have done this for Denmark.

Rasmus: We pay to get access to various databases,

Maria: Clarksons?

Rasmus: For example, I chose Seaweb, which is more precise when it comes to ship data. If you send me an email about what you want to know about Greece and the Greek fleet you can have a look at this, I think you can see what they operate in table 2.10 right, and then you know they own, you can see that in table 2.8 and from that you can get the ownership ratio to the operating ratio. They actually they own a bit more than they operate.

Helena: Yes, according to these numbers.

Rasmus: Yes.

Maria: Example this number, world merchant fleet. Because I used this and we tried to use the united nations data and for Greece I found a report from Lloyds list together with Greek co-operation committee in London, and I mean now the numbers are not that different, but for vessels are 4500, but not only, it says like it's a Greek fleet owned, but it can be under different flags or under different relationships.

Rasmus: So this is regardless of flags (point to the statistics), table 2.8. This is based on seaweb data.

Helena: I also looked at numbers and compared them to the Norwegian shipowners association (NSA) they did not coincide exactly but they were still pretty much the same, so they probably get it from some similar source. Or they get it from.. Do the companies disclose information to you?

Rasmus: They do, basically they pay a membership fee to us. And that is based on their Danish flag tonnage. So they whenever they get a ship delivered, they tell us and we have a database and its not exactly comparable, but it is pretty close, and we use that for some purposes e.g tables on page 4 and 5 I think are based on what we get from the members at the shipowners association.

Helena: I think that the NSA do the same, or somethink like that.

Rasmus: Yes, they do collect a lot of data from there members.

Helena: Ok. Just so we know that what we are comparing are somewhat similar.

Rasmus: As I said, it you need anything, send me an email, I am here until June 26th, then I am of for two weeks, doing absolutely nothing, turning of the phone.

Helena: That's good.

Rasmus: So if you get in touch before that Ill do everything I can to help.

Helena: That's great.

Maria: We have our meeting on Monday with our supervisor, so we can see what we would need for this from the Danish. And try and ask you to find the respective Greek numbers so that we at least we have it from the same source. Thank you so much.

Rasmus: Who is you supervisor?

Maria: Henrik Sornn-Friese. He is the CBS maritime director.

Rasmus: I know him, but I have never meet him, but I know him by name so might be doing business with him this fall I think. We have a report that we need to have some outside people to..one of them would like to use them.

Helena: I am also wondering, I did not find it when I was skimming through it and you might know it, the average age of the fleet?

Rasmus: Yes, we took it out a few years back. Basically my previous boss did not like the numbers, so he asked me to take it out. Now it is sort of much better again, but I have not put it in. Cant remember it, but it is pretty young.

(says something about the age that he don't want on record)

Rasmus: The new ships are larger than the old ships, so basically following the trend.

Maria: We found for Greece, its like 10 and we had made the assumption that Greeks have a lot of second hand so they have older ships, so like the Greeks ships are around 10 years and the Norwegians are around 11. So that's..

Rasmus: The Greeks by second hand, but they buy relatively new second hand so e.g. when they go to the second hand market it is vessels build in 2012 and 2013, so.. and whereas in Norway you

have a different ownership structure they build a ship and then they use it for 15-20 years. In Denmark we do it a bit different again, because we build our ships and then we use for a period of average 10 years maybe and then we sell them of and we have newbuildings come in and take over and they are more efficient and have a larger capacities.

Maria: Alright, we didn't, I mean this is something that we cant really find in a paper.

Rasmus: Yes, exactly, it comes from talking to people.

Maria: Yes, also because they are trying very much to pay of the investment very fast because it's a sector that is not very safe. If the freight rates go down you don't have a chance to..

Rasmus: Exactly, and of course its like. Have any of you both a car ever?

Maria/Helena: No.

Rasmus: I you buy a new car, the moment you leave the dealership the value goes down 20%, its sort of the same with the ships. It's very smart; it's very savvy to buy a new used ship. Its not quite 20%, but it is some.

Maria: Yes, of course.

Rasmus: I think a Danish shipowner recently both a product tanker from 2012, its new builder price was 50 millions and they both it for 30 million dollars. And it is still a new ship right, it has twenty years left so.

Maria: Yes, that's way I was saying it's a good technique that the Greeks are doing, why are not the other ones doing it as well?

Rasmus: It has to do, I think philosophy and what people are custom to do. In Greece you have been doing this dealing forever. In Denmark and in Norway we have this tradition that we need this ship and we will order it and have it delivered and then we use it and yeah.

Maria: Ok, but that takes more time also.

Rasmus: Takes more time and move some of the flexibility, but you get that back from chartering to ¼ ratio.

Maria: Yes, of course. So , I mean I found an article on Bloomberg that says that the Greek fleet is worth 106 billion, and then Helena found one in NSA and they sayd 160 billion. What should we trust? I mean its because it's a big different..

Rasmus: I can tell you that the Greek fleet is worth substantially more than 1 billion dollars. Its probably closer to the Norwegian number. If I were to trust one of the numbers it would be the Norwegian. However, there are tons of ways to do these evaluations

Helena: Yes, exactly. That's why we are considering being consistent and taking everything from the Norwegian or everything from the Danish or…

Rasmus: I think the Norwegian use vesselsvalue.com

Maria: Yes, but this is where I found the number as well.

Helena: Yes, then we have to double-check that.

Rasmus: We don't have any numbers one that, simply not something that we are concerned about. Because the valuation move with the freight rates so it changes every day,

Maria: Of course, yes, it says that it has descriptions on how it makes the valuations, but there is so many ways. Maybe you could tell us which companies you think we should see. Such as Mærsk..

Rasmus: Mærsk is of course an interesting company, I would you say, it depends on what is you focus, if its traditional shipping, is it innovation, is it management, what is it.

Maria: What we want to understand is what is more representative from each country. I mean Greece is more traditional or is more in bulk, so if we focus more on bulk, we leave out a big part from Denmark, who don't have so much bulk, and more containers, so we are trying to adjust in each country, so take the most important representatives. The biggest influencers.

Rasmus: I would of course take Mærsk, DFDS, a2sea, eswagt, actually that is a subsidiary of switsøe, which is a subsidiarity of Mærsk but…, and I would o Torm or Norden, either of them would suffice. And that would give you everything, except gas. And if you needed gas, well I think Mærsk is somewhat in that, yeah. But other than that you can do Ultragas or Hafnia or whatever.

Maria: Hafnia doesn't have, because its so new, because it was created with a little bit of fleet from here and a little bit of own fleet and a little bit of capital. And it is a little bit hard yet to analyze it. They don't have so much disclosed data, I have searched.

Rasmus: No, yes exactly. 1,06

Maria: This is a little bit of a theoretical question and maybe we have covered it a little bit but exactly what we said before, that Greece is gong with cost leadership a lot. Do you think that Denmark is trying this way or is more with differentiation? And trying to create the market and not just trying to cut cost?

Rasmus: I think everybody is trying to cut cost right now and that's. Mærsk is the most profitable container company because they have been very good at cutting cost. I think

Maria: Very good, by having everything inside?

Rasmus: Of course they have a vertical integration, probably more so than any other company

Maria: In the world?

Rasmus: yes. Others are cutting cost as well. But I think its multifaceted in the way that they look at "how can we optimize the route network, how can we decrease our bunker use" so that's interconnected. And then you have " how can we optimize the management, how can we have more efficient ships and that's R&D and you have all this kind of activities they are looking into.

Helena: You can say that this is part of innovation as well, its organizational innovation.

Rasmus: Yes, its managerial innovation.

Helena: I have hypothetical question for you. If you would remove Mærsk from the Danish Shipping industry, would you think that Denmark would still be a great shipping nation? Do you think it would be developed be such a leading nation as it is today?

Rasmus: ehm…that's a though question. I do think that, shipping is something that is ingrained in our national identity all the way from the Vikings, they were more merchant than they were rapist and what not. So I think it's very much a part of the culture I Denmark, but it is very hard to say what would have been without them. It is. Because would some of the others just have taken over and went into that business, you never know so it very theoretical and I would say probably no, if you just look at removing them and not taking any of these dynamics into play you wouldn't, but the world is dynamic, and I do believe that something else would have occurred. Before Mærsk we had an east Asian company UKO? Who, that was the biggest shipping company until the early 80s I think. Then again, they had some difficulties and eventually were both by Mærsk.

Helena: Because its dominating the industry so much in Denmark so its just interesting..

Rasmus: Yes, but it is a relatively new dominance.

Helena: Yes, ok?!.

Rasmus: In the 80s UKO was the largest I think.

Maria: Its because before I asked that there is a huge gap between Mærsk and e.g. in terms of turnover and value and return to the other companies. I mean, we were just thinking is this just driving the Denmark up in the stats or is it dynamics in general in other companies. Maybe if there were not the other companies, Mærsk would not have been as strong either.

Rasmus: I think that's very true, it comes back to what I said earlier that we have this complete cluster, which is not unique. But the geographical distances in Denmark are very small and you only have a handful of universities were the people can study and all that so people now each other so this is dynamic in business and you not necessarily have that in Norway or Greece or anywhere else.

Maria: Now that Mærsk has closed down there biggest shipyard, is it still a complete cluster, do you have other big shipyards? I mean Norway are making their own ships, is Denmark mainly making it here or ordering it from China or..?

Rasmus: Denmark has have some fairly specialized shipyards left so we have Felyard?, and you have Carstensens. So Felyard is where the old Mærsk Liner was in Mungeby. And then you something in Skagen, you have Fredrikshavn and Fornbo. So we have some smaller shipyards, they don't build these big containerships, they build offshoreships primarily. So the cluster is still complete, but when you lose something as big as Liner, it takes something away from it, but what we have seen is that the Liner Facilities are now, instead of one big company something like seven companies related to ship building, offshore you name it have taken over with huge success basically.

Maria: Ok, so maybe in some years it will be even better than it was before.

Rasmus: Certainly something to, because you had the facilities that helped drive innovation and helped create new business opportunities in Denmark.

Maria: Are there other seafarers' academies that train them here?

Rasmus: Yes, we have in Svenborg and Ery, it's a little island south of Fyn

Maria: Ah, yes, I have heard of it.

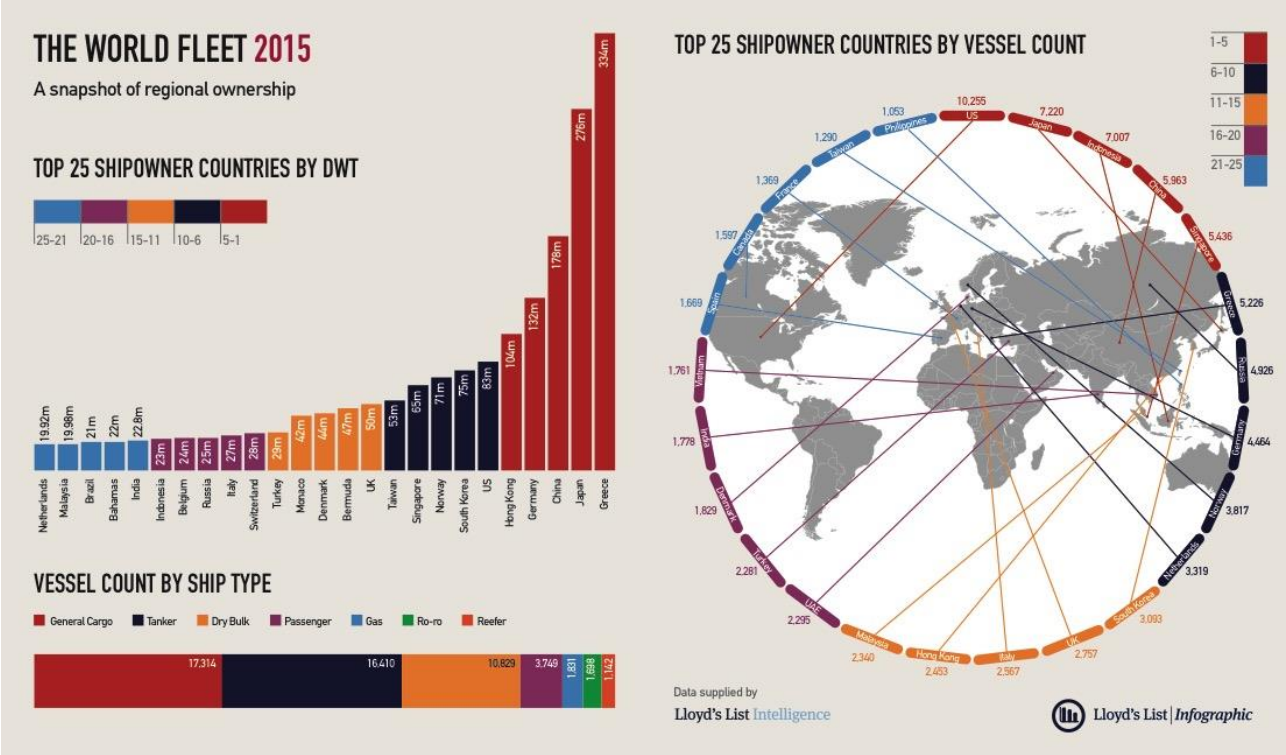
Rasmus: So that's the two main, but there are also some in juggland? So we do have the entire educational range in Denmark as well also the machine officers are from primarily Århus and Copenhagen. So…

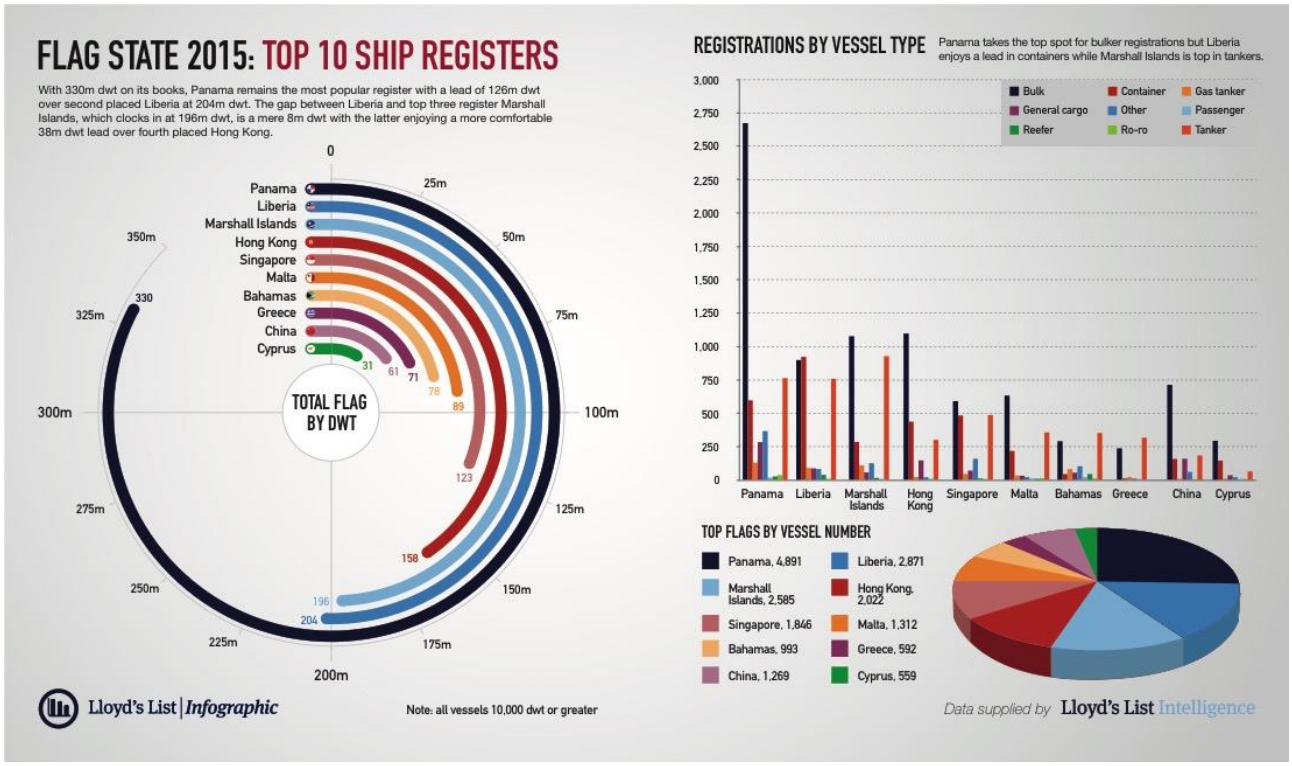
Maria: So you are trying to keep the crew, maybe not all Danish, but some people?

Rasmus: Well, we value the expertize of Danish seafarers, basically because the educational level, if you compare to the average is much higher than it is on average, so that of course it eases the communication there are danes. But I think now a days practically all ships have Philippines' , Ukraine's, polish crew on them, and that is very common. So the working language now is English.

Maria/ Helena: That's it. We think we have covered all. Thank you so much for your time.

11.3 Fleet statistics provided by Lloyd´s list





Fleet composition by ship type per country

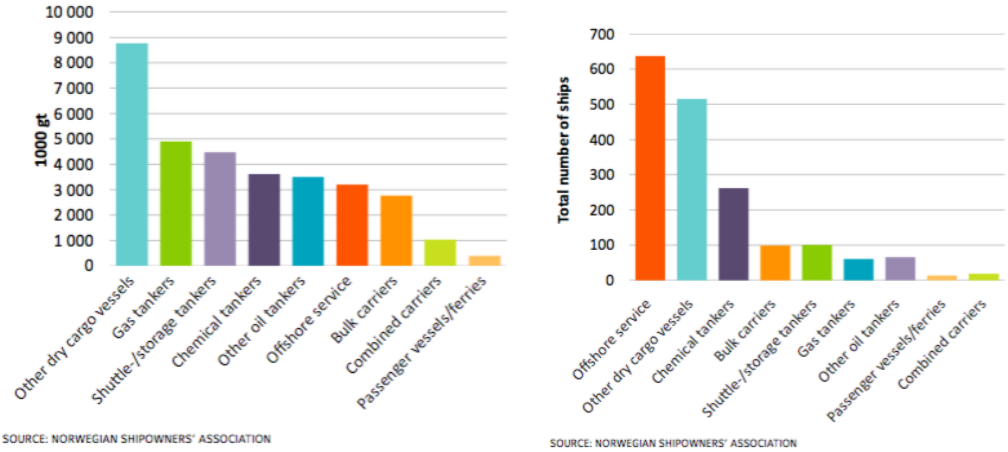


Figure 1- Composition of the Norwegian Fleet in gross tonnage
Figure 2- Composition of the Norwegian fleet in number of ships
Source: The Norwegian shipowner's association. (2015)

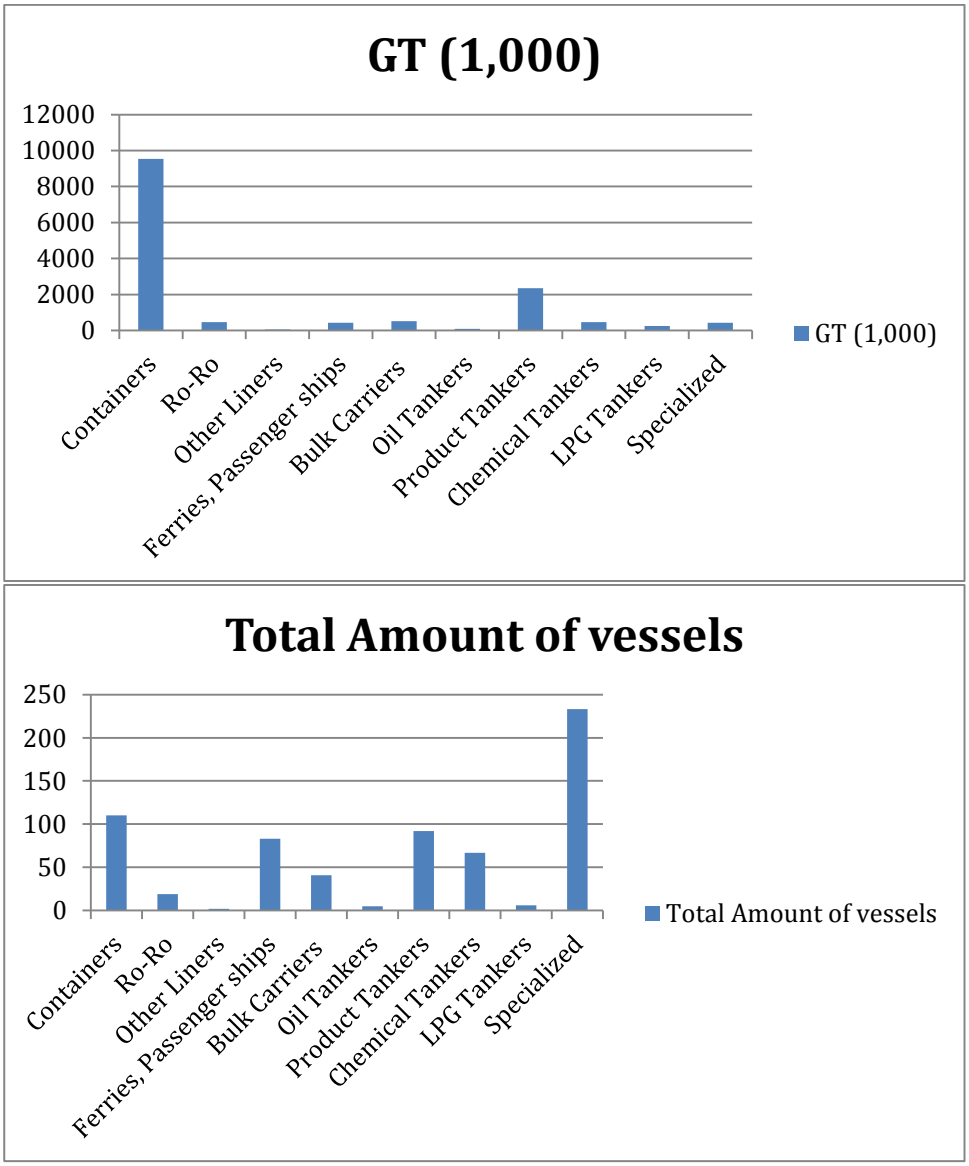


Figure 3- Composition of the Danish Fleet in gross tonnage
Figure 4- Composition of the Danish fleet in number of ships
Source: The Danish Shipowners Associations Statistics (DSA). (2015)

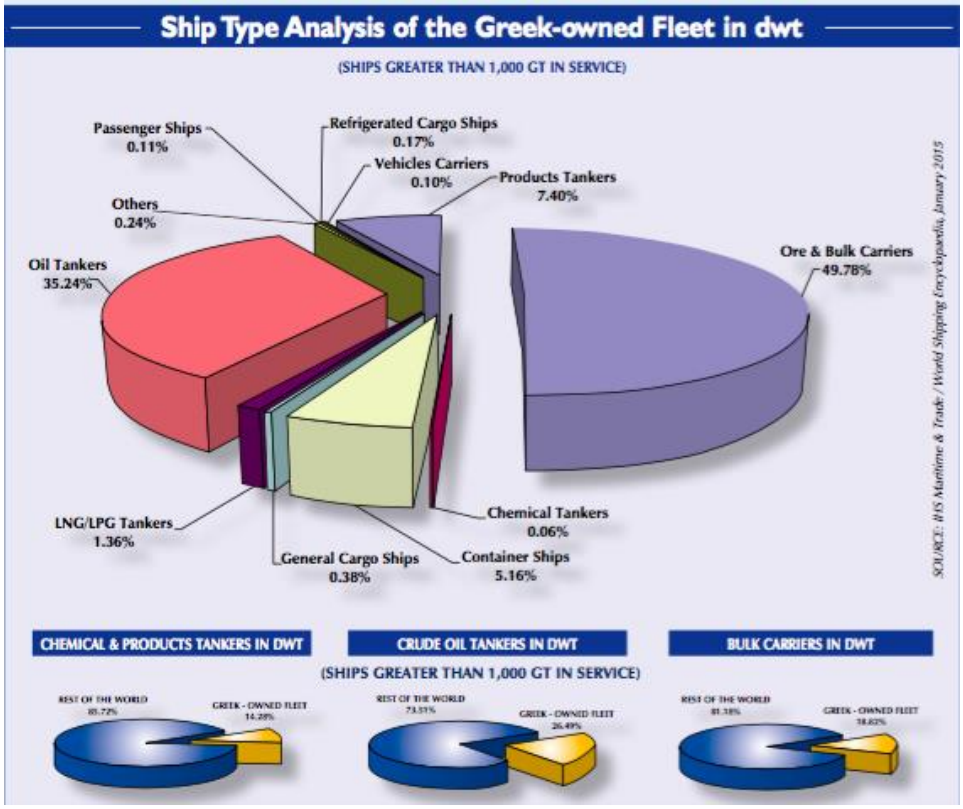


Figure 5 - Composition of the Greek Fleet in dwt
Source: The Union of Greek Shipowners. 2015