

EBHA conference in Bergen, August 2008

Session: III.A. MARITIME BUSINESS

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Discussant: Hubert Bonin

**INCENTIVES, CAPABILITIES, AND
OPPORTUNITIES**
*- THE GLOBAL BREAKTHROUGH OF THE DANISH
SHIPPING INDUSTRY, 1985-2007*

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20 June 2008

Abstract

By the mid-1980s the Danish shipping industry was in deep crisis. The merchant fleet as well as revenues had decreased markedly and Danish maritime knowhow was gradually fading away. Now, two decades later, Denmark has become a leading European maritime nation; Copenhagen has become a world centre for shipping; and the self-confidence of Danish ship owners is sky-high. Three different perspectives can be identified for explaining this incident; 1) the industrial champion account, giving explanatory primacy to the influence of the Copenhagen-based shipping colossus A. P. Moeller-Maersk, 2) the cluster-based approach, which focuses on the presence of positive external economies, and 3) the pure institutional account, which explains the rejuvenation of Danish shipping as turning on the particular national-institutional feature of Denmark as a “coordinated market economy”. Through an embedded, multiple case study we argue that none of these explanations are adequate for explaining the recent success of the Danish shipping industry. Rather, the development is the result of a timely match between the privilege of booming markets (presenting opportunities), the Danish institutional set-up (providing incentives), and the strategies of Danish shipping companies (exploiting capabilities).

1. Introduction

Following upon the Second Oil Crisis the Danish shipping industry faced its deepest and most severe crisis since 1945. According to annual reports from the Danish Shipowners' Association the size of the merchant fleet went down from 8.7 million tons deadweight (dwt) in 1979 to 6.9 million dwt in 1986.¹ The drop in the number of ships was even more severe as the Danish merchant fleet was reduced from 909 ships in 1977 to 525 ships in 1989. The developments hit hard on the Danish economy. In the 1960s and 1970s the foreign currency income from the shipping industry had been an important contributor to the Danish balance of payments, but by the mid-1980s this was no longer the case. The economic imbalances and the aggravated situation for the shipping industry were serious issues and on June 3 1987 the Danish government published an important memorandum on shipping Policy. The conclusion was marked by the difficulties for the industry and the economy (Ministry of Industry 1987):

Since the Viking Age, ships have connected Denmark to the surrounding world. [...] There have been periods in the medieval times and after the wars with England when a large part of Danish shipping was taken over by others, but every time it has proven possible to reconstruct an efficient merchant fleet. Today we are probably meeting the largest challenge in our shipping history. [...] Future generations will rightly blame us if we do not understand that, to prevent the threatening extinction of the Danish merchant fleet, action is needed now.

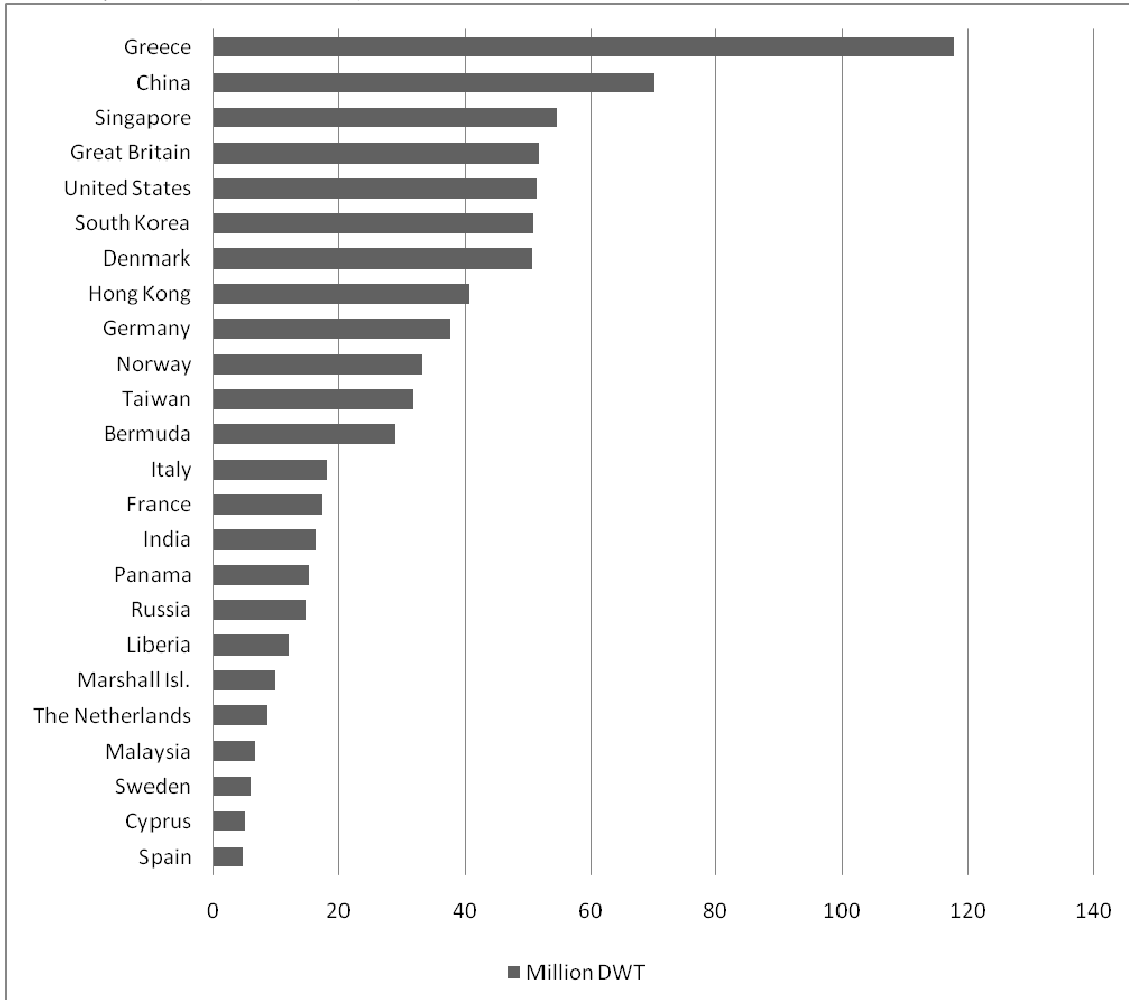
The merchant fleet did not die out after the crisis. Now, two decades later Lloyd's List (22 May 2006) has elected Denmark as a leading maritime country in Europe. The gross foreign currency income from the shipping industry more than tripled from around fifty billion DKK in 1999 to 160 billion DKK in 2006, or from nine to sixteen percent of Danish exports; the size of the Danish-owned merchant fleet has increased significantly over the past ten years; Danish shipping companies control about seven percent of the world's merchant fleet; and they carry almost ten percent of world seaborne trade (Danish Maritime Authority 2007). In terms of tonnage operated Denmark is now the fifth largest shipping nation in the world; in Europe on a par with Great Britain and only outshined by Greece, which is still the largest shipping nation in the world (see figure 1). The Danish container operator Maersk Line is now global leader, operating more than 500 container vessels and occupying above sixteen percent of the world market. With such developments, Denmark has become a new world centre for shipping (Danish Trade Council 2004).

These developments invite intriguing questions as regards the competitiveness of firms, industries and nations. How can we explain the global breakthrough of the Danish shipping industry? Why has it been so effectively able to gain from the opportunities of world trade since the early 1990s so as to obtain European maritime leadership? These are the kinds of questions, which the present article confronts. Through an embedded case study (Yin 2003) we demonstrate that the success of the Danish shipping industry is essentially a result of a timely and remarkable fleet

¹ The Danish merchant fleet is defined as all privately owned cargo and passenger ships, ferries, cruise ships and the like (but fishing vessels not included) of more than 100 gross tons (GT) capacity, where GT is a cubic measure for the total of all the enclosed spaces within a ship expressed in tonnes, each of which is equivalent to 100 cubic feet.

expansion, which has allowed Danish shipping companies to thrive in recently booming markets. The story is one of how competitive advantage results from a propitious matching of institutionally advanced incentives, historically evolved capabilities and present opportunities.

Figure 1. The commercially operated merchant fleet of the largest shipping nations, 2007 (million dwt)



Source: Lloyd's Register Fairplay

The article is organised along the following lines. In the next section we discuss the sources of industrial leadership and identify the three main accounts for the success of the Danish shipping industry: the firm-level capability explanation, the national-institutional explanation and the cluster-based explanation. We then go on in section three to analyse the development of the Danish shipping industry since the mid-1980s. This provides a historical context for the company case studies that follow in section four. We trace the recent developments of the Steamship Company Norden (Norden), the Steamship Company Torm (Torm), and the diversified shipping group A. P. Moeller-Maersk (Maersk), chosen partly to reflect the different dynamics across the liner and tramp shipping sectors and partly because they represent markedly different growth strategies. In the final section, we discuss the capabilities of the Danish shipping companies that, in combination with the changing formal institutions, can help explain

why and how the industry was able to overcome the crisis of the 1980s and later respond effectively to the opportunities provided by the rising global trade of the late-1990s and in to the new millennium.

Using industry statistics, interviews, archival records, various documents written by insiders and annual accounts we analyse the key developments of the Danish shipping industry over the period as well as the concomitant development paths of the three companies. With regards to the industry, we examine the major institutional, organisational and technological developments. As for the companies, we examine the ways they developed over the period, the significant strategic and organisational choices they made and the important formal and informal institutions and connections that had a bearing in the process.

2. European Maritime Leadership: Capability, Institutional, or Cluster Effect?

By the notion of “industrial leadership” we think of particular industries in which some initial advantage in organisation or technology gives firms a commercial advantage in world markets. Maritime leadership thus refers to the global competitive advantage of a national shipping industry, however defined.² A major dispute is whether the sources of such leadership are to be found within companies in the form of capabilities; at the country-level in the form of particular comparative advantages, whether natural or institutional; or at some intermediary level in the form of sector-specific, or industry cluster, mechanisms (Francis 1992, Nelson 1996, Mowery and Nelson 1999, Murmann 2003).

Company capabilities

Scholars of strategy (Teece et al. 1997, Eisenhardt and Martin 2000), business history (Chandler 1977, 1990, 1992), or even economic geography (Best 2003) use the term “competitive advantage” in a way similar to our use of the notion of industrial leadership and call attention to firm-level factors and mechanisms, especially the capabilities that have evolved within the firms in an industry (including their ability to form and manage relationships with other firms).

The firm-level explanation seems especially relevant to the study of the Danish shipping industry, which is one of particularly long-term competitiveness of individual companies. It is dominated by companies that have been present in the industry since its inception in the late 19th century; such as the United Steamship Company (DFDS), Norden, Torm, the shipping group J. Lauritzen, and Maersk (see table 1). These companies have quietly built up their fleets over the 1990s with a huge raft of chartered in tonnage that has allowed them to successfully join the recently booming markets. A few new entrants, such as Clipper Group (the history of which dates back to 1971) and Atlas Shipping (founded in 1996), have also played their part in reviving the Danish

² Definitions of what constitutes a national shipping industry differ amongst maritime nation-states, reflecting the different institutional environments within which the maritime evolution of different countries has taken place (Metaxas 1985).

shipping industry in recent years. In this regards, it is clear that much of the cause for Danish maritime industrial leadership is located substantially at the company-level.

Table 1: The Danish registered tonnage of selected Danish shipping companies, 1885-2007 (1000 GT)

Company (founding year)	1885	1909	1924	1939	1949	1970	1980	1990	1999	2007
DFDS (1866)	47	151	211	176	174	154	128	91	245	
Norden (1871)	6	27	43	43	23	29	98	220	266	
Dannebrog (1883)	4	53	66	35	26	60	45	32	40	
Torm (1889)	-	-	-	41	39	109	163	132	357	
J. Lauritzen (1895)	-	-	26	73	53	169	134	170	139	
The EAC (1897)	-	44	133	182	200	265	591	189	31	
Maersk (1904)	-	-	56	178	207	1.650	3.302	2.939	3.064	
Total Denmark	129	635	912	1.093	1.054	3.446	5.241	4.872	5.726	8.483

Source: Compiled data from Holck and Simonsen (1983), Jeppesen et al. (2001) and Lloyd's Register Fairplay.

In the extreme case, industrial leadership may be determined by the capabilities of a single dominant player. It has been suggested that the strength of Danish shipping hinges wholly on the performance of Maersk (Jakobsen et al. 2004). Indeed, according to Lloyd's List (7 July 2004) the status of Denmark as a shipping nation is largely pinned on the fortunes of this "Copenhagen-based shipping colossus". The idea that a big company can be instrumental to industrial leadership is not entirely exotic.³ It should be noticed, however, that until around the 1970s DFDS and the East-Asiatic Company (EAC) were in many ways adjunct to Maersk. Furthermore, much of the recent success of Danish shipping has taken place within the dry bulk market, which is also where most of the boom in international trade has occurred in recent years.⁴ And with more than 250 Danish operated product tankers, of which Maersk only has a minor share, Copenhagen has become the major world hub in the liquid bulk market.

National resources and institutions

³ Similar accounts' can be found on the role of other big companies in small countries such as Nokia in the Finnish economy. See, for example, Ali-Yrkkö (2001) or Hirvonen (2004).

⁴ On a note, it is worth mentioning that Maersk, which has always been admired for its foresight, sold off its bulk division a few years prior to the bulk market boom.

The observation that newcomers such as Clipper Group and Atlas Shipping have become strong players in this industry and successfully compete against Danish as well as foreign shipping companies suggests that some important factors behind industrial leadership are located at the level of the nation state. Indeed, economists have long sought to explain the comparative advantage of nations as resulting from differential access to the critical inputs needed in different lines of economic activity. David Ricardo built his theory of endowment-driven comparative advantage around the observation that differences between Portugal and Great Britain in climate and soil could explain the pattern of trade between the two countries, and the traditional focus in the Heckscher-Ohlin factor-proportions model on across-country price differentials in otherwise homogenous factors of production is built around the assumption of a single market for every country. Product cycle theories of international competition and trade (e.g., Vernon 1966) similarly assume that country-level features determine any particular technological advantage of an industry and hence the cycles in international trade. The product cycle hypothesis was successful in explaining U.S. foreign direct investments in Europe and it has subsequently been effectively applied in explaining the dynamics of the internationalization of the shipping industry (Sletmo 1989).

While institutions may enter traditional economic theory in the form of given constraints, some economists have turned to institutional differences, such as those found in Marshallian industrial districts, for explaining industrial leadership. Indeed, a major analytical insight in the diverse literature on innovation systems (Lundvall 1985, Nelson 1992, 1993) is that the possibilities for establishing so-called “organized markets” based on strong social capital differ from one country to another (Sornn-Friese 2000). Such national institutional differences include, for example, the development of inter-firm and non-market relationships, the organization of financial markets, the interaction between universities and industry, the education and training system, and the kinds of interaction among specialists that are fostered by these developments. Analyses that focus on institutions see the supply of critical production factors as endogenous and hence comparative advantage as something that is both created (Nelson 1995, 1999) and constrained by past events (North 1990).

By invoking an image of particular Danish societal forces that have led to a so-called Danish miracle, a neo-institutional perspective explains the upsurge of the Danish economy after 1995 as a result of particular Danish “social corporatist” institutions such as a historically grounded ability to reach compromises and negotiate between various economic interests and a flexible and highly skilled labour force combined with a culturally and linguistically homogenous population (Hall and Soskice 2001, Campbell et al. 2006). These national-institutional, or “coordinated market economy”, characteristics have been shown to influence industrial relations in Danish shipping (Klikauer and Donn 2004). It is also worth mentioning that managers within the Danish shipping industry have pointed to a Danish ability to negotiate with partners worldwide and a good sense of responsibility as important factors for recent success.⁵ Indeed, the Danish mentality and the general gearing of Danish education to focus on problem solving and independence are ideal for developing outstanding ship’s officers, according to the former director of the Svendborg International Maritime Academy (Danish Trade Council 2006).

⁵ We often heard this insight expressed in personal interviews with executives from the Danish shipping industry (February—July 2007).

The institutions that may be the source of a nation's leadership in a particular area often pertain to particular industries or sectors. The Danish International Ship (DIS) register, inaugurated in 1988, or the more recent tonnage tax, are examples of sectoral institutions that may help explain the recent success of Danish shipping. Such sectoral institutions are importantly embedded in the broader national institutional set-up. It could thus be argued that DIS came about as a particular feature of the broader national-institutional character of Denmark as a coordinated market economy.

Industry clusters

It has been argued that international registers such as DIS, or its Norwegian equivalent NIS, will be most successful for countries with a "vigorous shipping milieu", that is, a strong network of qualified people working in the cluster of shipping activities (Sletmo and Holste 1993). Indeed, the kind of sectoral institutional underpinnings mentioned above are an essential aspect of industry clusters, the notion of which generally and rather broadly refers to a critical mass of firms and other organisations within a particular field of economic activity in a particular geographical location supported by a specific institutional set-up, including but not limited to the labour market, public infrastructure and rules and regulations (Porter 1990, 1998, Newlands 2003).⁶

Innovation (in products, processes, organisation and institutions) has become an ever more central process in the globalizing economy, placing renewed emphasis on the learning that goes on within and between firms.⁷ But the sources of innovation are generally not to be found inside a single firm, or even within an industry, since the often-incremental development of firms depends crucially on outside sources of knowledge (Nelson 1990). The locus of innovation thus remains importantly within wider networks of firms and other organisations. Indeed, Porter (1990) has suggested that clusters are the main source of industrial leadership.

The sources of maritime industrial leadership may thus have to be seen in relation to the rest of the Danish maritime cluster, which includes also shipyards, suppliers, and the offshore sector. It has often been argued that the success of Danish shipping owes generally to the fact that Denmark is host to a number of maritime industries interconnected through a web of pecuniary and social relationships and supported by a sector-specific institutional set-up, consisting of a maritime mindset and social norms; formal maritime and related organisations; as well as rules and regulations such as DIS or the tonnage tax. Indeed, the Danish maritime cluster (nicknamed *Blue Denmark*) is believed to foster innovation and represent a critical mass of maritime competence, thus providing an attractive setting for conducting maritime business (Bech 2006, Danish Maritime Authority 1999, 2002, 2003, Ministry of Economic and Business Affairs 2006, Ministry of Industry 1991, Sornn-Friese 2003).⁸ The growing numbers of foreign shipping companies locating their headquarters in Copenhagen, or placing part of their fleet under the commercial management of Danish operators, is witness to this effect.

⁶ For a critical appraisal of Porter's influence on cluster thinking in general see, for example, Martin and Sunley (2003)

⁷ Indeed, innovation has been the prime cause of the unparalleled economic growth of the past two centuries (Baumol 1986).

⁸ The cluster-based story has been told for other European shipping nations such as Sweden (Einarsson et al. 2004, Palmberg et al. 2006), Norway (Benito et al. 2003, Karlsen 2005, Midelfart-Knarvik and Steen 1997, Reve and Jakobsen 2001), and the Netherlands (de Langen 2002, van Klink and de Langen 2001).

Our analysis should consider the particular institutions of the Danish shipping industry. When it comes to this particular industry, however, institutions transcend national borders and we therefore need to take into account how sectoral institutions are embedded not only in the national institutional set-up, but also within the international rules of the game. More than 95 percent of the Danish shipping revenue originates from cross-trade (that is, trade between foreign ports). The shipping industry therefore depends on supra-national institutions and the competitiveness of the Danish shipping industry depends closely on its ability to innovate and influence the socio-economic development of maritime activities on a global scale. This includes setting the norms and standards in relation to the working and the natural environment as well as in the conduct of maritime business.

3. Danish Shipping from Crisis to Leadership

In the spring of 1986 the president of the Danish Shipowners' Association, Mr. Knud Pontoppidan, and 73-years old Mr. Mærsk Mc-Kinney Møller, CEO and chairman of Maersk, discussed the difficulties facing Danish shipping, which was in a deep crisis: the size of the fleet had decreased from 8.7 million dwt in 1979 to 6.9 million dwt in 1986 while the net currency income from shipping had dwindled from 6.1 billion DKK to 3.8 billion DKK. There were at least three important backgrounds for the crisis.

Firstly, there was world economic stagnation. Throughout the 1970s and most of the 1980s the shipping industry experienced the most difficult time since the Second World War. The 1970s saw several currency crises, increasing unemployment, constantly rising inflation and two major oil crises. The first oil crisis in 1973-74 hit especially hard on tanker shipping, but all segments of the shipping industry suffered. Some countries were hit harder than others; few were as severely affected as Norway (Tenold 2000, Thowsen and Tenold 2006). With the second oil crisis international shipping entered its most severe post-war economic crisis. Tanker transportation of oil peaked in 1978 and subsequently fell dramatically. Even more importantly, the world economic stagnation of the early 1980s resulted in a marked decrease in total seaborne trade. The crisis was strengthened by slow structural adjustment of supply to the difficult demand circumstances: Orders for new ships often ran over several years and labour intensive shipyards and prestigious national fleets continued to receive state subsidies. From 1979 the total size of the world fleet even increased from 413 million dwt in 1979 to almost 425 million dwt in 1982. The consequences were lower freight rates and a major drop in average annual time charter rates (Danish Shipowners' Association 1987). Tonnage stagnated after 1982.

The second important background was the increasing role of national protectionism and flag discrimination. After 1945 the tendency of individual countries to protect their own merchant fleet became more prevalent than ever. The US government decided that at least fifty percent of the transport related to the Marshall Aid should be carried by US vessels. More importantly, national protectionism was forged ahead by the developing countries wanting to build up their own fleets. These countries lacked the financial resources to subsidise and turned to other mechanisms, primarily cargo preferences that pulled the seaborne trade from foreign to domestic tonnage. The Latin-American states, pioneered by Argentina and Brazil, took the lead

with new flag discrimination that gradually, but dramatically reduced the number of foreign-owned vessels, including Danish, calling at Latin-American ports.

The new pressure was most evident in the United Nations Conference on Trade and Development (UNCTAD). From the establishment of UNCTAD in 1964 the developing countries, represented by the Group of 77, required that the industrialised countries would recognise the legitimacy of the developing countries' efforts to secure a larger share of their seaborne trade on own vessels. Also, they perceived liner conferences – where Western shipping companies collaborate on particular traffic routes – an unjust remnant of colonialism and therefore demanded that international liner shipping should be controlled by the United Nations (UN).⁹ In 1974 the UNCTAD Liner Code was adopted.¹⁰ A key element was its 40-40-20 division of cargoes between trading partners and cross-traders, reserving forty percent of the shipping for the exporting and importing country respectively and twenty percent for cross-traders. Denmark, Finland, Great Britain, Norway, Sweden, Switzerland and the United States voted against this compromise, “which minimized unhappiness and maximized nothing” (Sturmey 1986), and Denmark and Great Britain began lobbying within the European Community (EC) for a new shipping policy. In 1979 the European countries agreed that UNCTAD rules should apply within the Organisation for Economic Cooperation and Development (OECD) and that the developing countries would have preference of forty percent of their trade, while sixty percent would be subject to open competition. With this provision (a.k.a. the Brussels Compromise), the code was ratified in 1983. For the first time, the EC had become engaged in shipping policy, but it was only with the first Maritime Package passed in December 1986 that it adopted a real shipping policy that regulated competition and provided common action against third countries that restricted access to cargoes (Stevens 2004).

Table 2. Flags of convenience and their proportion of the world merchant fleet (million GT)

<i>Country</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1997</i>	<i>2007</i>
Liberia	11,3	33,3	80,3	58,2	54,7	60,5	66,5
Panama	4,2	5,6	24,2	40,7	39,3	98,2	151,8
Cyprn	-	1,1	2,1	8,2	18,3	18,3	19,2
Bahamas	-	1,0	1,7	3,9	13,6	27,7	39,1
Singapore*	-	-	7,7	-	-	-	-
Others	0,3	0,7	0,6	-	-	-	-
Total	15,8	41,7	116,6		125,9	209,7	276,6
Percent of world tonnage	12	19	28	27	30	40	40

* Singapore closed its open registry in 1981.

Source: Danish Shipowners' Association, Annual Report (various years).

The package did not solve the growing problem perceived with ships registering under flags of convenience (FoC). The first FoC's had been set up in Panama, Honduras and Costa Rica in the 1920s at the initiative of US multinational corporations seeking to reduce operating costs by employing cheaper shipboard labour (Koch-Baumgarten

⁹ The first formal liner conference was the “England-Calcutta Conference” formed in 1875 by the British steamship company leader Sir Samuel Cunard (Deakin and Seward 1973).

¹⁰ Sturmey (1986) and Cafruny (1987) provide excellent historical accounts of the UNCTAD committee on shipping and the development of the Liner Code.

1998). In 1960 only twelve percent of the world tonnage sailed under open registers but their importance grew substantially from 1970 to 1980, leading eventually to the erosion of the merchant fleets in traditional shipping countries (see table 2). During the 1980s, open registers turned out to be a real problem to European shipping. The French fleet alone had lost two-thirds of its tonnage and Norway and Denmark were also particularly hard hit. In 1980 only five percent of the Danish merchant fleet sailed under open registry, but by April 1988 it had grown to an alarming 47 percent.

Technological change constituted a third important background for the crisis. Prolonged loading times in ports and the struggles to exploit scale economies on general cargo vessels meant that the profitability of traditional liner shipping came under pressure in the late 1960s and early 1970s. Companies such as Maersk, the EAC, Torm and Norden had long traditions in tramp and liner shipping with rather small general cargo vessels, but through large investments in bulk carriers, product tankers and container ships this structure changed dramatically in twenty years from the mid-1960s to the mid-1980s. From the mid-1980s Danish shipowners made further strategic decisions with major investments in new technology and especially in quality shipping (that is, reliable shipping with technologically advanced ships and relatively expensive personnel), in which Danish shipowners were in many respects pioneers.

Table 3 shows a dramatic change in the relative importance of liner services to the Danish shipping industry, which rose from about one fifth to one third of the total fleet from 1980 to 1985, reflecting the huge investments in new containerships. In the same period, the average age of the Danish fleet fell from just below fifteen to above eight years. The problem was that, as late as in 1980, the Danish merchant fleet was strictly outdated, not only in terms of age but also in terms of specialisation (types of ships). The dominating tanker fleet was in a very difficult market in the early 1980s when total transport of oil decreased from 10.5 billion ton/sea-miles in 1979 to 5.2 billion ton/sea-miles in 1985.

Table 3. Structure of the Danish merchant fleet, 1965-2007 (percentage of G.R.T.)

<i>Year</i>	<i>Liner service</i>	<i>Dry bulk</i>	<i>Liquid bulk</i>	<i>Average age of the fleet (years)</i>
1965	34,3	25,8	39,3	n/a
1970	24,0	31,2	44,8	14,6
1975	19,4	25,8	54,8	14,7
1980	22,8	20,1	57,1	14,8
1985	33,7	14,3	52,0	8,2
1994	35,2	22,1	41,6	n/a
2007	67,2	6,4	24,4	7,1

Source: The Danish Shipowners Association, Annual Report (various years).

In the annual report from 1987 the Danish Shipowners' Association stated that the development within liner services was now characterized by "... transition to larger container ships, which now dominate the overseas routes, and a concentration on fewer and larger shipping companies". This development was mirrored in the structure of the Danish shipping industry, which became increasingly dominated by Maersk. The pioneer had been the EAC, which had received four large container ships in 1971 and 1972, but the company proved unable to exploit any possible first-mover advantages. This old trading company, which was still the largest enterprise in Denmark by the mid-

1970s, alienated its fleet in the early 1990s following a large but unsuccessful investment in small, flexible ships on the competitive trans-pacific market (Bjerrum 1993). The follower Maersk, which received its first fleet of container ships in 1975-1976, made huge investments in ports and onshore infrastructure and thus created a successful container trade system that linked North America with South East Asia.

A new strategy for Danish shipping

Against the historical background sketched above, Mr. Mc-Kinney Møller asked Mr. Pontoppidan to consider how to clear away any legal-political hindrances to the growth of the industry. The resulting report consisted of 35 concrete suggestions for legal-institutional improvements of the national shipping capabilities, including changing requirements to crewing and more flexible certificate procedures (Danish Shipowners' Association 1986). Only half a year later, however, they realised that much more radical steps were needed. With still more shipping companies registering under open registry the Danish merchant fleet was being rapidly reduced and at accelerating rate. At about the same time, the Norwegian authorities had established a second registry, the Norwegian International Ship register (NIS). Originally proposed in 1984 by Norwegian shipping industry icon, Erling Dekke Næss, it had been established in July 1987 and provided non-taxation of foreign shipowners, tax free salaries to seamen and less restrictive requirements to equipment and crewing. The overall objectives were to maintain the Norwegian shipping industry under the Norwegian flag and provide better competitive conditions for the Norwegian merchant fleet in world seaborne trade.¹¹

On June 3 1987 the Danish Ministry of Industry published the perhaps most important public shipping document in recent Danish maritime history: the Shipping Policy Memorandum of 1987. It laid out the first real suggestion for establishing a Danish International Ship register (DIS) with the purpose to "make it attractive to the shipping industry to continue operating under the Danish flag" as an accelerated reflagging would have "serious consequences for the Danish economy and society" (Ministry of Industry 1987). Among other things, continued reflagging would cause the loss of valuable shipping know-how, which would be impossible to suitably rebuild when freight rates would once again develop in a more positive direction.

The DIS proposal was followed by a heated debate in Danish media. The trade unions and the Social Democrats opposed the proposal, as they were afraid that it would lead to loss of Danish jobs and lower safety onboard Danish ships. The shipowners and the conservative-liberal government, on the other hand, ensured that every ship would have a quota of Danish seamen and follow all standards agreed upon by the International Maritime Organization (IMO) and which Denmark had ratified. Mr. Pontoppidan (1987) wrote an interesting feature article in the Danish daily *Morgenavisen Jyllands-Posten*. Here, he introduced the term "Blue Denmark", arguing that a passive maritime policy would have consequences not only for the Danish shipping industry but also for the entire maritime cluster, including the shipyards, the specialized sub-suppliers and maritime research units. In the following years, several

¹¹ Similar initiatives were taken in Great Britain with a second register on the Isle of Man and in France on the Kerguelen Islands. Germany also introduced a second register (GIS), but resistance from German labour unions halted its effects and German shipowners kept on flagging out.

maritime reports referred to the maritime cluster, which was politically being enforced by the popularity of the concept.¹²

In March 1988, the Danish politicians were about to decide on the matter. The government needed the vote of the small but influential Social-Liberal Party, which was rather concerned with the employment effects of DIS. At first the Social-Liberals wanted written guarantees that DIS would mean increasing Danish employment onboard Danish ships under DIS, but they soon relaxed this requirement and instead would be satisfied with oral statements from the shipowners that they “would anticipate more Danish seamen, were DIS to pass through Parliament” (Politiken 1988). Several Danish shipping companies came to the government’s aid. J. Lauritzen announced that ten to twelve large ships would immediately be re-flagged in DIS. The EAC, Norden, Torm and a few smaller shipping companies followed suit.¹³ Taken together, these companies controlled more than 25 percent of the Danish owned fleet under foreign flag. The Social-Liberal Party voted in favour of the proposal, however, on the condition that the register should be due to revision after two years. DIS was passed through Parliament on June 23, 1988. In contrast to NIS, it was open for Danish owned ships only. Perhaps most importantly, the labour onboard Danish owned ships under DIS was now tax free and subject to new competitive labour agreements, and crewing regulations were relaxed (but still complying with the IMO security agreements).

In the annual report of 1988-1989 the Danish Shipowners’ Association stated that DIS had had the expected results. Almost all the relevant Danish registered ships plus around 50 ships, which formerly had sailed under FoC, had been placed under DIS. The shipowners stated that DIS was established in a strong collaboration between public authorities, shipping companies and the seamen.

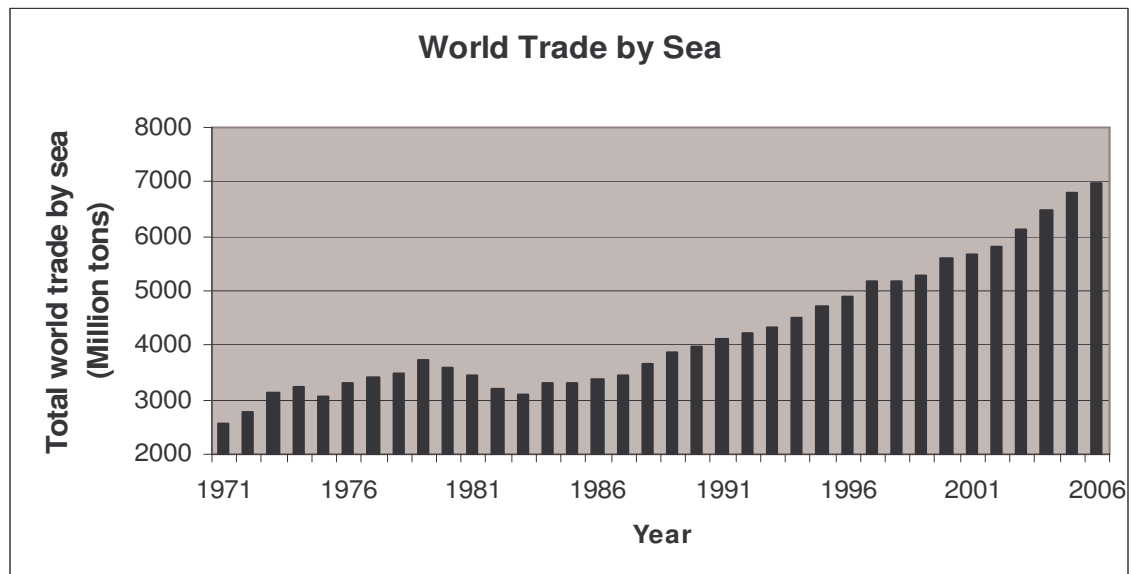
The subsequent development

Figure 2 illustrates that it took eighteen years to raise trade from three to above four billion tons (from 1973 to 1991), but from 1991 to 2006 world seaborne trade rose to seven billion tons. This growth mirrored three important developments: an extraordinary growth on the North American market from around 1994 to 2007; a large wave of outsourcing; and the opening of the East Asian (particularly the Chinese) markets after 2003.

Figure 2. World seaborne trade, 1971-2006 (million tons)

¹² In Denmark cluster studies originated even before Porter popularized the idea. In the early 1980s a number of studies of “industrial complexes” were carried out, paving the way for the more Porter inspired cluster analyses of the 1990s (Drejer et al. 1999).

¹³ Letter from the Danish Shipowners’ Association to the Social-Liberals’ spokesman on shipping, Hans Larsen-Ledet, dated 15 March 1988.



Source: The Danish Shipowners Association, Annual Reports, various years

From the mid-1990s Danish shipping has expanded in two directions: 1) a further specialization in container shipping, focused on building up comprehensive logistics systems, and 2) an increasing focus on operating rather than owning ships, entailing flexible chartering in and pooling of ships generally operated for particular large customers with whom a trustful relation is needed. Maersk has represented the first type of growth. One of the lessons that Maersk learned from the failure of the EAC was that to exploit the advantages of the container, substantial investments in logistics were needed. Based on its conglomerate incomes Maersk invested in container ports, onshore infrastructure and fast container vessels. At the turn of the millennium it operated about 250 containerships. An aggressive growth strategy has brought the number up to more than 500 ships by today.

The strongest proponents of the second direction were Norden and Torm, although by different means (see case studies below). Danish shipowners have increasingly entered into cooperative relationships with foreign shipowners, thus complementing classical shipowning with capabilities in commercial management. Among other things, this has resulted in significantly higher returns on capital in Danish shipping. This development has been noticeable since the late-1990s and was historically contingent on the fact that most Danish shipowners lacked the financial strength to buy the ships necessary to meet the opportunities of growing seaborne trade. The total tonnage controlled from Copenhagen has been almost doubled since 1998 and more than half the income of Danish shipowners today derives from operating foreign owned tonnage. It is generally held that the growth in commercially operated tonnage makes Denmark an international centre for knowledge intensive commercial operation of ships, and there is confidence that maritime know-how within this area is an important foundation for the future of Danish shipping.

The institutional structure of Danish shipping was marked by stability in the 1990s and 2000s with DIS continuing unaltered. Until 2002 Danish shipowners paid ordinary corporate tax (with advantageous rules of depreciations, however) but with the passing of the Danish Tonnage Taxation Act they started paying a relatively low flat-rate tax, based on the total tonnage they operate. According to the Danish Minister of

Taxation, this “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). The tonnage tax was not a peculiar Danish invention; important European shipping nations such as Norway, Greece, Great Britain and the Netherlands had already introduced tonnage tax. However, the Danish tonnage tax differs from those in other European countries in one important aspect: it includes tonnage owned by foreign flag but commercially operated by Danish shipping companies in the ratio four to one between foreign and Danish owned tonnage, thus reflecting the recent Danish specialisation in commercial management.

DIS and the tonnage tax, in combination with increasing world seaborne trade, have obviously created a shipping friendly Danish business environment, giving successful incentives for shipowners to register their ships under the Danish flag. In fact, the Danish shipowners’ Association has emphasised the institutional stability in the 1990s and early 2000s as a main reason for Danish maritime leadership. Shipping has always been marked by large, long-term capital investments and certainty on the stability of the legal environment is thus important.

4. Company Case Studies

In the following sections we examine three of the most important incumbent firms in the Danish shipping industry, presented chronologically as to the time of their founding; namely Norden, Torm and Maersk. The three companies are archetypical cases in the sense that they represent each their different growth strategy. Especially noteworthy has been an exceptional fleet expansion of all three companies from around the mid-1990s.

The Steamship Company Norden

Norden (founded in 1871 by M. C. Holm) is a successful tramp shipping company operating worldwide in dry bulk and product tankers. From start it engaged in tramp shipping, carrying homogeneous dry bulk in cross-trade worldwide on a “one ship, one cargo” basis and, although the company has developed significantly over the course of its lifetime, this principal business concept remained for more than a hundred years. From the mid-1990s, under the direction of CEO Steen Krabbe, it has become a strong global player in the dry bulk sector, with headquarters in Copenhagen and offices around the world. Over this period, the company has grown at an astounding pace so that today it ranks among the top dry bulk operators in the world. One analyst has described this remarkable growth as one based on “very good foresight and some luck” (Clemens 2005). This best translates into: profound knowledge of shipping markets, which has allowed the company to exploit, well in advance of competitors, opportunities for chartering tonnage (in and out) and to timely manage commercial risks by trading derivatives such as vessel buy-options, bunker hedging contracts, fixed-term contracts of affreightment (COAs) and forward freight agreements.

Mr. Steen Riddervold Krabbe was headhunted for president and CEO of the company in 1988. He came with 27 years of experience from Maersk where he had occupied several management positions and had been stationed abroad. From a number of years in New York and Tokyo he had gained international experience and formed important personal networks. Mr. Krabbe changed the company in a number of ways.

He diversified it into the tanker sector, thus leveraging existing capabilities and reducing market uncertainty, and he initiated a move away from spot charter market operations towards long-term COAs, increasing the planning horizon of the company and further reducing uncertainty. Most importantly, however, he established a firm conviction in the company that successful shipping is more about operating than owning ships. The recent developments of Norden have in many ways been based on company values echoing his personal values, which include a focus on attending customers and their needs, modesty, trustworthiness, respect for other people and other cultures, and professionalism.¹⁴ These are values carried on by the new president and CEO of the company, Carsten Mortensen (Lloyd's List 2005).

From its inception in the late nineteenth century and well into the 1990s Norden focused exclusively on the dry bulk sector. However, the way in which it has approached the dry bulk market has changed markedly over time. By 1971 the company's fleet was down to four ships and the employees were pessimistic about the future. To secure its survival as a shipping company the board of directors needed to decide on fleet renewal. At a critical meeting in April 1972 it was decided that Norden should continue owning ships. With the development of a new, large bulk carrier built by the Japanese Mitsui Engineering & Shipbuilding Company (MES) some of the directors saw an opportunity for Norden to expand. The company contracted its first bulk carrier, a 34,000 dwt Handymax vessel delivered from MES in 1973.

This marked a new era for Norden with the switch from traditional tramp shipping by general cargo vessels to modern bulk shipping – a switch that, in retrospect, happened quickly and smoothly (Falkenstein 1996). As part of this development, the ownership relationships that had existed since 1970 (with the Steamship Company Motortramp as majority shareholder of the Steamship Company Orient and Orient as majority shareholder of Norden) and manifest in a limited partnership was made official.¹⁵ Between 1974 and 1985 MES delivered five more bulk carriers to the partnership, which now carried the name “Nordtramp I/S”. The subsequent investments in bulk carriers positioned Norden well as a serious and committed participant in the bulk sector.

Since the end-1990s Norden's dry bulk fleet has grown considerably and at a strongly accelerating rate, but most of this growth was now obtained by chartering-in bulk carriers with buy-options. 1997-1998 had marked a paradigm shift in which Norden got advantageous access to a number of Japanese owned Handymax bulkers on long-term charter with purchase options.¹⁶ This happened at a time when the outlook for the dry bulk sector was bleak, hurt particularly by the commotion in the important South East Asian dry cargo market that created a devastating slump lasting into the new millennium. The timing, however, proved exceptional since the control over Japanese

¹⁴ In line with its customer orientation, the company has developed three guiding business principles to achieve customer satisfaction. These are reliability (delivering on promises), flexibility (matching time, location and operation) and empathy (respect and understanding of the local culture and traditions of the customer).

¹⁵ In 1994 Orient and Norden merged and continued under Norden's name, but with Orient as the operating company. Motortramp continued as Holding Company, owning the majority of shares (about 26 percent) in Norden.

¹⁶ The company has been very active in entering into buy-options and this has proven highly profitable in recent years, where the surge in second-hand values has translated into high option values. This asset play policy has given Norden a competitive edge and nowadays we see shipping companies worldwide trying to imitate it.

owned tonnage prepared the company for the Chinese-led boom in dry bulk shipping in 2002.

The company was able to charter-in tonnage at much lower than expected rates and thus acquired an extraordinarily inexpensive fleet. This has to be seen in light of the financial crisis in Japan in the mid-1980s. The Japanese shipping industry had been hit hard by the rapid appreciation of the value of the yen and the concurrent weakening of the US dollar between 1985 and 1987 (doubling the value of the yen against the US dollar). Japanese shipping companies therefore faced skyrocketing costs and plummeting earnings and they continued to face hardship up until the latter part of the 1990s, fighting intense competition, a weak domestic economy, a strong yen, and a general slowdown in international trade. But that is not the whole story. Norden was in a particularly privileged situation for engaging with the relevant Japanese companies, a privilege that owed to its ability to bring long-standing maritime traditions, personal and trust-based relationships and empathic leadership to bear. Although the company's success in East Asia owes much to Mr. Krabbe, it has had close relationships with Japanese trading houses, shipbuilders and shipowners throughout its lifetime. Norden's very first steamer, the "S. S. Norden", which served in Chinese and Far Eastern coastal trade during 1875-1877 and soon became an important forerunner for the company's later overseas traditions, had called Nagasaki as early as 1876.¹⁷ In the interwar period, the company's ships were engaged in cross-trade between the US West Coast and Japan. And since the early 1970s, Norden has bought a number of large bulk carriers at Japanese shipyards. But when it comes to personal and trust-based relationships and empathic leadership, the significance of individuals for the subsequent development of the company cannot be overstated.

Norden also operates Aframax oil tankers and Medium Range (MR) and Handysize product tankers. The Aframax tankers carry crude and fuel oil and navigate the North Sea and the Far East, while the product tankers mostly carry refined oil products in the Atlantic region and the Far East. The company's tanker business is much smaller than its dry bulk business, but expansion in this sector has high priority. On a small scale, Norden had been active in the tanker market since 1984, when it had bareboat chartered in two Aframax product tankers only to further bareboat charter them out to the Norwegian A/S Uglund Rederi. Also in 1984, Nordtramp I/S bareboat chartered one Aframax vessel and Nordic Shipping I/S – a partnership in which Nordtramp via a subsidiary held a ten percent share – bareboat chartered three Aframax vessels, all of which had been ordered by two Difko K/S companies and were delivered from the Burmeister & Wain Shipyard (B&W) in 1986 and 1987. The four product tankers were to fly the Danish flag, be technically managed and crewed by Norden and commercially managed from Norway.¹⁸ This diversification was a natural development for the company, since its small-scale tanker activity had given it the relevant financial and technical capabilities in this sector. While the diversification extended the operating scope of the company it also increased its robustness against cyclical changes in the dry bulk market.¹⁹ Norden now has its own tanker department, which operates the

¹⁷ "I think that having a long historical tradition means a lot. When we go to Japan and tell them that our first ship called Nagasaki in 1876, they lend an ear" said Mr. Krabbe to *Reuter Finans* (2004).

¹⁸ Three of the vessels were later to enter the world's first product tanker pool, established jointly by Torm and BurWain Tankers International (see below).

¹⁹ Indeed, it has been demonstrated that, at least since the 1980s, the tanker and dry bulk markets have to some extent been isolated from each other (Stopford 2003). Recently, the present CEO of Norden,

company's Aframax tankers. Its product tankers are engaged in the spot market and commercially managed by the Norient Product Pool A/S, which was founded in 2005 by Norden and the Cyprus incorporated Interorient Navigation Company Ltd.

The Steamship Company Torm

Torm (founded in 1889 by Captains C. Schmiegelow and D. E. Torm) has also experienced a massive expansion in recent years, resulting in strongly increasing revenues and a huge increase in operated tonnage. The first three quarters of a century Torm remained a traditional tramp and liner shipping company, carrying goods on general cargo ships, but by the mid-1960s it ventured into the modern dry bulk market. Since the mid-1970s Torm has invested heavily in modern bulk carriers and advanced product tankers (Aframax, Panamax and Handymax vessels). 1974 was a landmark year for the company in which it merged with the so-called "66"-Company (Bornholm's Steamship Company of 1866). This meant an almost complete replacement of the board of directors and the plotting out of a new course for the company (Eriksen 2005). Mr. Kai Engell-Jensen became the new chairman and he strongly believed that the company should change into a tanker operator. To carry out this vision, he headhunted Mr. Erik Behn from Maersk to become CEO of Torm. That was in 1976, the same year that the company received its first two product tankers, sold its five oldest bulk and liner carriers and dismissed a quarter of its seamen. Today, Torm is one of the world's leading operators of product tankers, carrying refined products such as gasoline, jet fuel and naphtha. It is still active in the dry bulk Panamax sector, carrying major bulk such as coal, iron ore, grain, bauxite and fertilizers.

Growth through fleet expansion is a stated aim of Torm, not least as a strategic response to the consolidation that currently takes place in the oil and chemical industries. It is pursued by organic growth, company acquisition and networking in product tanker pools. Via three pools (the LR1, the LR2 and the MR Pool), each of which centres on a particular class of ships, the company currently manages 94 product tankers of which it owns 55 and long-term charters-in 22, thus controlling some thirty percent of the global tonnage in the LR1 and LR2 product tanker spot markets, according to analysts (Lund and Christensen 2006).²⁰ From a recent company acquisition, Torm also has 28 tankers operating outside the pools. On top of this, it has an extensive new-building program with 20,5 new ships to be delivered over the period 2008-2010 (its partners have an additional thirty new ships on order to be delivered to the pools over the coming two-three years). In the dry cargo area, the company operates a fleet of around fifteen bulk carriers of which it owns six and has an order book equivalent to thirty percent of the existing fleet (delivery 2008-2011).

The recent success of Torm has been achieved under the direction of Mr. Klaus Kjærulff, who succeeded Mr. Behn as CEO of the company in September 2000. Having

Carsten Mortensen, defended this diversification strategy, noting that for the dry bulk and tanker segments the company uses the same shipyards, there is customer overlap and overlap of suppliers of ships and partners in Japan, the people ashore have the same training, risk management is the same, there are significant financial arbitrage advantages between the segments, and the business model is almost the same.

²⁰ Torm has also engaged in bulk carrier pooling as part founder of the International Handybulk Carriers (IHC) Pool. Torm's membership of IHC lasted until April 2006 when it sold its remaining two vessels in the pool.

been trained in the EAC, Mr. Kjærulff came to Torm in 1976 and in 1981 became the manager of Torm’s tanker department, which at that time operated two tankers. During his years in the EAC he had gained significant experience with shipping markets, but most importantly he had learned to collaborate with partners worldwide. Especially, he had been transferred to a position in the well-known ScanDutch consortia, where he gained key knowledge on how to build and manage a shipping pool.²¹

This experience proved vital to the growth strategy of Torm by which Mr. Kjærulff, first as director of its tanker department and later as company CEO, worked to dramatically expand its tanker fleet. The pooling concept, which he developed in collaboration with leading shipping companies around the world, has been instrumental to this expansion and has given Torm global leadership in the Panamax (tanker vessels between 75-85,000 dwt) and Aframax (90-110,000 dwt vessels) product tanker segments. Torm was the first shipping company to apply the pool concept to the product tanker market and it has been highly successful with this strategy, the stated aim of which has been to achieve critical mass, increase unit income for owners and provide better services for customers.

Together, the pools form a vast horizontal collaborative network within the clean product tanker segment, comprising Danish ships as well as many foreign ships owned by some of the world’s largest shipping companies (see table 4). Through the pools, Torm provides spot charters for a number of regular customers, primarily major oil companies and Japanese and Korean trading houses with whom Torm over many years has built up relationships based on trust. The pools have the competitive advantage of operating modern tonnage subject to strict pool specific requirements regarding fleet, crews, safety management and quality control (including environmental protection), and customer relations. A main challenge for Torm, as commercial manager of the pools, is to ensure a high level of quality and credibility.

Table 4: The Torm Pools and their partners

<i>LR1 Pool</i>	<i>LR2 Pool</i>	<i>MR Pool</i>
Torm	Torm	Torm
Difko	Primorsk Shipping Corporation	Primorsk Shipping Corporation
Rederi AB Gotland	Rederi AB Gotland	Rederi AB Gotland
Nordic Tankers	Maersk Tankers	Sanmar Shipping
Mitsui OSK Lines		
Skagerack Invest Limited		
Waterfront Shipping AS		

In 1991 Torm established a joint chartering venture in collaboration with the Danish shipping company BurWain Tankers International.²² The resulting chartering office was

²¹ ScanDutch (a pool for container shipping between Europe and the Far East) was established when the Dutch liner company Nedlloyd, the French CGM and Malaysia International Shipping joined the Scandinavian Joint Service consortia – an existing partnership between the EAC, the Norwegian Wilh. Wilhelmsen Line, and the Swedish East Asiatic Company (Ostasiat). ScanDutch was formally dissolved in 1992, after more than two decades of operations. For a historical analysis, see Poulsen (2007).

²² The year before, BurWain Tankers International had been established as a merger of three operating companies Nordic Shipping I/S, Scandic Tankers I/S and DanTankers I/S, which had been owned partly by BurWain Shipholdings; Difko Shipping A/S; the Norden subsidiary Nordtramp I/S; the Global Finans A/S subsidiaries Overseas Tankers A/S and Domestic Tankers A/S; and the Steamship Company Torm.

a limited partnership created to manage the two companies' own as well as chartered-in product tankers and staffed by representatives from both companies. The agreement served to achieve the coordinated employment of the companies' vessels – making the venture one of the three major operators of tonnage in this sector on the world market – and to strengthen the opportunity to develop new market areas, which is an important element in spreading risk. The partnership has subsequently been renamed the LR1 Pool (operating Panamax vessels) and today includes eight shipping companies contributing ships under the commercial management of Torm. The pool is the world's largest operator of Large Range vessels and a considerable market player controlling an estimated thirty percent of the world's total LR1 tonnage. In 1998 Torm established two additional tanker pools, the LR2 Pool (Aframax vessels) and the MR Pool (45,000 dwt). Torm is commercial manager of the MR Pool, while it shares the management of the LR2 Pool with the Maersk subsidiary Maersk Tankers.

In collaboration with three foreign shipping companies Torm is currently establishing an MR Ice Class Pool to service mainly Russian oil companies (the expanding exports of which during winter seasons has to be carried through icy waters). Torm has ordered six A1 Super Ice Class MR vessels, which together with pool partners' vessels will make the new pool a very strong player in an emerging, highly specialised niche market. The pool will be under the management and operation of Torm and is a direct spin-off from the LR1 Pool. It was born out of LR1 member Gotland's close relationship with the Chinese Guangzhou Shipbuilding International (GSI), where Gotland in the spring 2005 had ordered two ice class A1 super tankers. It followed up with additional orders and furthermore passed on to Torm the opportunity to build identical vessels and thus establish itself in the ice class tanker market (TradeWinds 2006).²³ This serves to illustrate the additional advantage of pools that new opportunities and ideas emerge through long-term collaboration with other companies.

In its deliberate growth strategy Torm combines the pool concept with organic growth – currently manifest through long-term chartering-in of vessels as well as an extensive new-building programme – and acquisition. In June 2002 it bought a third of the shares in Norden (after deduction of Norden's own ten percent shares) and in July presented a voluntary public tender offer to the shareholders of Norden to acquire all the remaining shares of Norden. The stated purpose was to merge the two companies and carry on the combined tanker activities under the name and flag of Torm and the combined bulk activities under the name and flag of Norden. The management in Norden perceived the offer to be an attempt at a hostile takeover and they declined. In April 2007 Torm sold its shares in Norden, making a profit of 643 million US dollars.

Only a few weeks later, Torm – together with the Teekay Corporation – announced the acquisition of the entire share capital of the OMI Corporation with fifty-fifty ownership between Teekay and Torm. Besides from taking over 26 product tankers from OMI, Torm takes over OMI's technical organisation in India and part of its office in Stamford in Connecticut, thus building up a presence in the U.S. tanker shipping centre. Torm will continue its American activities under the name of OMI, since this is a well-recognised and respected brand in the U.S., not least among institutional

In 1995 BurWain Tankers International was sold to the Norwegian shipping company Tschudi & Eitzen Tankers.

²³ It is interesting to note that the vessels in the MR Ice Class Pool will fly the Danish DIS flag and that the vessels ordered by Gotland are constructed to meet the requirements of DIS, see Davidsson (2007).

investors. Torm has decided to transfer the major part of the ships acquired from OMI from their present Marshall Island register to DIS and the Danish Maritime Authority has complied by giving Torm a three years exemption from the DIS requirement that officers have to be Danish. The exemption concerns fifty Indian captains onboard twenty of the ships acquired from OMI.

Maersk

In 1904 Mr. Arnold Peter Møller and his father Mr. Peter Mærsk Møller founded the Steamship Company Svendborg and, to facilitate expansion independently of the original investors, the young Møller founded the Steamship Company of 1912 eight years later. These two companies constituted the core of the A.P. Moeller Group until June 2003 when they were merged into A. P. Moeller–Maersk A/S (Maersk). Six months later, the chairman of Maersk since 1965, 90 years old Mr. Mærsk Mc-Kinney Møller, resigned.²⁴ Today, the company is in a historically unique situation with a relatively recently appointed top management that has only little shipping experiences. Mr. Nils Smedegaard-Andersen left Carlsberg to become CEO of Maersk by December 2007, and the former president of the insurance company Topdanmark, Mr. Michael Pram Rasmussen, was appointed chairman of the board in June 2003. This duo now leads a global conglomerate involved in a diverse range of industries: 1) Container & related activities (57 percent of 2006 revenues), 2) Energy (sixteen percent), Shipping and offshore (eight percent) and 4) Retail and other business (nineteen percent). By the end of 2007 the Group employed about 110.000 people and its 2006 revenues was 44.5 billion USD (equivalent to about fifteen percent of the Danish GDP).

As most other large and old conglomerates Maersk is complicated to analyse and it is difficult to review the market processes, development patterns and substance of the Group. Until 1998, Maersk did not publish any total figures of the Group accounts and the historic size of the company is still only measured through rather uncertain approximations (Binda and Iversen, 2007). Despite these difficulties, two key concepts seem to cover the development of the Group well: Diversification and acquisitions. Growth through diversification (related as well as unrelated to the original operation as a tramp shipping company) is essential for understanding Maersk's development from 1965 to 1993, while the ensuing period has been marked by massive mergers and acquisitions activity.²⁵ Diversification characterized Mr. Mc-Kinney Møller's long-term conglomerate regime from 1965 to 1993, whereas Mr. Jess Søderberg's regime from 1994 to 2007 was marked by a focused acquisition-based growth strategy.

When Mr. Mc-Kinney Møller took over as chairman of the board in 1965 the company was still relatively focused on shipping, although the initial steps towards diversification had been taken. As other Danish shipowners at the time, Mr. A. P. Møller had invested in a shipyard (in 1917), the company possessed blocks of shares in several Danish manufacturing firms and a bank, and in 1962 it had signed a concession for oil exploitation in the Danish underground. These initial diversification steps were

²⁴ Maersk has been characterised by an extreme degree of managerial stability with only three chairmen and four managing directors over a period of more than a century.

²⁵ This development seems to mirror general corporate developments in Europe over this period. According to Whittington and Mayer (2000) diversification was an important growth strategy in Europe at least until the early 1990s. Others have shown that focused strategies, often through mergers and acquisitions, took over as main growth patterns in the 1990s (Markides 1995).

accelerated and already by 1970 the company could be regarded as a conglomerate: Besides from shipping it now controlled Roulund's Factories producing components for cars; the Maersk Refinery; fifty percent of the retail chain Dansk Supermarket; Maersk Oil and Gas; and the aviation company Maersk Air. By 1993, when Mr. Mc-Kinney Møller resigned as CEO, the so-called associated companies (outside the core interests of shipping and oil) consisted of five manufacturing companies, a medical company, Maersk Air, Maersk Data and the retail businesses.

In contrast to Norden and Torm, unrelated diversification has thus been an essential aspect in Maersk's development. At the same time, however, related diversification has been an essential aspect of its development as a shipping company. As most other incumbents in the industry Maersk began as a tramp shipping company. In 1928 Mr. A. P. Møller decided to acquire a tanker and to set up a liner service between the United States and South East Asia. This service was expanded in 1932 with investments in four general cargo vessels above 8000 dwt. Maersk thus established three pillars of shipping, which would later constitute its post-war growth. Already in 1949-1952 the company invested in thirteen new tankers followed by sixteen more from 1953-1956. Most of these were built at the company's own shipyard, which in the long term established a core competence in the construction of tankers.²⁶ Maersk also created important capabilities in relation to long-term contracting with oil companies, which helped compensating for business fluctuations. In the annual report of 1975 it was thus stated that "most of our tankers are employed in formerly agreed long-term contracts ... the long-term contracts, however, will gradually expire and still more of the ships will be submitted to the open market."

In the early 1970s Maersk set for the next crucial related diversification; namely investments in container shipping. Already in the annual report of 1970 Mr. Mc-Kinney Møller predicted the importance and requirements of container shipping:

The company is cautiously following the development, particularly on the routes where it is expected that container ships will be introduced in the following years; a development which will imply a certain restructuring of the shipment methods and enhanced competition. It is considerably demanding to establish profitable activities of large, expensive container ships, including not least the effective management of the many containers. It must be expected that the company will be engaged in such ships.

In 1975-1976 the company bought nine fast container vessels for the transpacific line, the largest investment in the company's history. As predicted by Mr. Mc-Kinney Møller large investments in land-based transport facilities followed the container operations. It also provided new opportunities for related diversification such as the establishment of Maersk Logistics in 1977, which provided new systems for the handling of container traffic, and Maersk Container Industry in 1992, which produced containers at a factory in Denmark. During the shipping crisis in the mid-1980s Maersk initiated a forceful growth strategy within the container shipping industry. In 1985 Maersk introduced a new transpacific route connected to an exclusive 1.8 km long Maersk train from the US west coast via Chicago to New York. In 1986 new routes between Europe and the Middle East were established together with a new terminal in Algeciras in the south of

²⁶ As a consequence the yard received the order of three super tankers to the Saudi Arabian shipping company Vela Marine International in 1992 – the largest foreign order ever received by a Danish shipyard.

Spain. The worldwide connection was strengthened in 1988 through a new route from Northern Europe to the United States and Canada.

From 1986 to 1995 Maersk's container fleet increased from 36 to 96 vessels. This expansion was related to the growth pattern of the next phase of Maersk's development: acquisitions.²⁷ In 1993 Mr. Sjøderberg succeeded Mr. Mc-Kinney Møller as CEO. In the same year, the company acquired all the shipping activities of the EAC. Nine large containerships and, perhaps even more importantly, a strong position on the Europe-East Asia connections followed, making Maersk the world's largest container shipping company. While the previous decades had been marked by related and unrelated diversification, the 1990s and 2000s were marked by a focus on specific industries and specific shipping areas. Particularly, specialised gas tankers, super tankers and container vessels were in the focus, while the fleet of Panamax bulk carriers with cranes was divested in April 2002 to the Norwegian Klaveness Group.

The focus on the container enterprise led to an extreme growth in the size of the company's container fleet from the mid-1990s to the mid-2000s, a decade marked by a vigorous macroeconomic environment. Maersk was able to exploit the growth opportunities caused by increasing consumer demands in the United States and high growth rates in South East Asia. This exploitation built on the liner shipping alliances that the company had established from the mid-1980s and was enforced first by the acquisition of the EAC's fleet in 1993 and later by the large acquisitions in 1999 of first the South African container shipping company Safmarine and later the American container shipping company Sea-Land Corporation. The integration of Sea-Land into Maersk was eased by the long-term operational cooperation that had existed between the two companies, particularly on the transatlantic routes. In 1993 Maersk had also initiated an alliance with the venerable British shipping company P&O Containers, but this alliance had been terminated in 1996 when P&O merged with the Dutch shipping company Nedlloyd. By the late 1990s a strong concentration process was thus taking place within container shipping, caused by a combination of large infrastructural and cash demanding demands and the obvious need for smoothing out business fluctuations in a ways different from the old liner shipping conferences.

The pursuit of growth through mergers and acquisitions has also come to characterize other business areas within Maersk. In June 2001 Maersk took over the entire Dutch Smit-Wijismuller salvage company in a deal equivalent to its acquisitions of Sea-Land and Safmarine. This new arrangement would be operated through the Maersk subsidiary Em. Z. Svitzer, one of the oldest towage and salvage companies in the world. The merger with Smit-Wijismuller made Svitzer one of the world's largest towage and salvage with a diverse marine services organization. Nowadays, it operates a diverse fleet of more than 500 vessels in 35 countries.

In May 2005 Maersk acquired P&O Nedlloyd, which at the time occupied about six percent of the container market against Maersk's twelve percent. The new company, now named *Maersk Line*, became by far the world's largest container shipping company, but integration costs proved unexpectedly high. Maersk Line lost market shares and in 2007 the top management of Maersk was replaced with outsiders, thus putting an end to the company's long-standing policy of inside recruitment. The diversifications of the 1960s and 1970s made it possible to continue with high Group

²⁷ No new business areas has been added since the 1980s and the last known substantial unrelated diversification attempt by the company was an unsuccessful attempt to establish a new telecommunication company in Denmark through a state based concession in 1990.

profits, but the focus on container business in the 1990s and 2000s had created a corporate colossus. Maersk Line is likely to become a world leading facilitator of enhanced globalisation, but risk is that it might turn into an unruly corporation caught between rising fuel expenses, declining US growth rates and aggressive competitors unaffected by the costs of integration after acquisitions.

3. Discussion and Conclusion

This article has attempted to explain the remarkable success of the Danish shipping industry since the mid-1990s. The responses of Danish shipping companies to the economic and institutional changes that have evolved over the past couple of decades are paramount to the accomplishments of Denmark as a major maritime nation-state, but the responses entail a complex process in which various economic, technological, political, and other institutional factors have interacted. In the present analysis, we have sought to comprehend this complexity by taking into account the long-term organisational dynamics of individual shipping companies as well as the dynamics of the shipping industry, focusing on the period following from the mid-1980s.

Our analysis has been positioned within a large and diverse literature – spanning economics and management theories as well as economic geography – that seeks to explain the sources of industrial leadership. According to this literature, which is fundamentally concerned with understanding the reasons why an industry might evolve differently in different countries, there may three broad explanations for why Denmark has obtained European maritime leadership. The first of these would stress the natural or institutional particularities of Denmark compared to other traditional maritime nation-states. It is an established tradition in economics, as well as an important development in new institutionalist theorising, to conjecture country-level causes of comparative advantage. The second explanation would soft-pedal the causal influence of any broad national features and instead call attention to the importance of the capabilities of the companies that historically entered the Danish shipping industry and gained ground. According to this firm-level explanation, Denmark is a strong maritime nation-state because its shipping companies are highly competitive players in the international merchant shipping industry. Finally, the third explanation identifies the sources of maritime leadership in structures smaller than the nation-state, but larger than the individual firm. Such structures can reside in local geographical areas (e.g., Copenhagen), inter-organizational networks and institutions that have evolved to support an industry (e.g., shipping) or sector (e.g., the maritime sector). According to this between-level explanation, Denmark has obtained maritime leadership because it has a well developed maritime cluster (the Blue Denmark).

In our analysis structural aspects at all levels have been identified as sources for the current stronghold obtained by Denmark in the international merchant shipping industry. The real issue is not, however, whether the sources of maritime leadership are to be found squarely within the firms, at the level of the nation-state, or somewhere in between. Rather, company capabilities interact with sector-specific characteristics and national features, so that both adaptation and selection are important forces. In the literature on the sources of industrial leadership this insight is now emerging under the conceptual umbrella of co-evolution. The historically contingent combination of institutionalised incentives and distributed company capabilities in a national industry at

any particular point in time has to match the parallel demands and opportunities of the market. A co-evolution perspective would help explain why Danish shipping companies were better able than their rivals in other traditional maritime nation-states to exploit the opportunities of booming shipping markets from the late-1990s and into the new millennium. Some notion of history, time and timing seems crucial here and should be explored much further. Why were competing maritime nation-states with similarly long-standing maritime traditions, evolved maritime supporting institutions and internationally competitive firms not as able to exploit these opportunities? What were the consequential events that allowed Danish shipping to outdo their previously superior rivals in other countries?

Our analysis has pointed to the important role played by a few individuals in devising individual company strategies as well as strategies for the entire Danish shipping industry, the latter legitimated within the frame of the shipowners' association in Denmark and through the mobilization of its members in the political process. It furthermore demonstrated how the developments and countermeasures taken in another country, namely the neighbour and rival Norway, inspired the efforts of these few individuals. This part of the analysis reminds us that we cannot understand the sources of industrial leadership without taking into consideration the generative role of individual and collective agency. Agency does not figure prominently in the literature on the sources of industrial leadership, the dominant explanations of which are instead markedly focused upon structures at different analytical levels.

Of importance with respect to enactment and the timing of behaviour is the notion of foresight on behalf of the people in command. Even if Maersk was a laggard in the container shipping market its massive venture into container shipping around 1985-1988 is an example of the importance of foresight. At that point in time, the shipping industry was in deep crisis and the global economy was still fragile and highly uncertain. Maersk nevertheless invested in the new liners, fleet modernization and infrastructure (such as the important Spanish port Algeciras in 1986). Also, the paradigmatic change in Norden's strategic orientation that took place in 1997-1998 profited from the preceding and continuing downturn of the Japanese economy and furthermore coincided with a beginning general slump in the dry bulk markets, which kept competitors from making similar moves. But it prepared Norden for the later Chinese-led boom in the dry bulk markets. Uncovering the circumstances under which such foresight depends on true entrepreneurship and the visions of key individuals, grows out of either internal organizational slack and excess resources or of informal and trust-based external relationships, or simply happens as a struck of random luck is a promising topic for research on the sources of industrial leadership. Going even further, an important question would consider national differences in the entrepreneurship patterns of an industry, thus taking into account the subtleties through which the natural or institutional endowments of a country may determine the strategies and capabilities of its firms.

These insights open up for a plethora of dynamics concerned with path dependencies, the unfolding of national industrial trajectories, the individual and collective enactment of relationships between organization and environment, and the timing of behaviour. In conclusion, what we may learn from our analysis is that in order to understand the sources of industrial leadership, we should focus on the interplay between 1) demand and supply side structural aspects such as capabilities, routines, resources, norms, incentives schemes, consumption patterns and income; 2) agency in

the form of individually and collectively devised strategies, actions and conceptions; and 3) the circumstances under which the historical embeddedness of structure and agency matters. In terms of methodology, the first of these calls our attention to across-level research, the second to the study of enactment, and the third to the incorporation of historical methods.

References:

- Ali-Yrkkö, J. (2001), The Role of Nokia in the Finnish Economy, The Finnish Economy and Society, 1: 72-80.
- Binda, V. and M. J. Iversen (2007), Towards a 'Managerial Revolution' in European Business? The Transformation of Danish and Spanish Big Business, 1973-2003, Business History, 49 (4): 506-530.
- Bech, M. S. (2006), The Danish Maritime Cluster, in N. Wijnolst (ed.), Dynamic European Maritime Clusters, Amsterdam, IOS Press BV.
- Benito, G. R. G., E. Berger, M. de la Forest and J. Shum (2003), A cluster analysis of the maritime sector in Norway, International Journal of Transport Management, 1(4): 203-215.
- Best, M. H. (2001), The New Competitive Advantage. The Renewal of American Industry, Oxford and New York, Oxford University Press.
- Bjerrum, C. (1993), ØK i uvejr. Da ØK's aktiekapital sank i Stillehavet, Copenhagen: Børsens Forlag.
- Lund, H. B. and P. Christensen (2006), Danske Equities Company Report: Torm, Copenhagen, Danske Bank.
- Campbell, J. L., J. A. Hall and O. K. Pedersen (2006), National Identity and the Varieties of Capitalism. The Danish Experience, Copenhagen, DJØF.
- Chandler, A. D., Jr. (1977), The Visible Hand: The Managerial Revolution in American Business, Cambridge, MA, Belknap, Harvard University Press.
- (1990), Scale and Scope: The Dynamics of Industrial Capitalism, Cambridge, MA, Harvard University Press.
- (1992), Organizational Capabilities and the Economic History of the Industrial Enterprise, Journal of Economic Perspectives, 6(3): 79-100.
- Clemens, M. (2005), Equity Research - Company Report: D/S Norden, Sweden, Handelsbanken Capital Markets.
- Danish Maritime Authority (1999), Det Blå Danmark 1999, Copenhagen: Danish Maritime Authority.
- (2002), Den blå landevej, Copenhagen, Danish Maritime Authority.
- (2003), Søfartspolitisk Vækststrategi. Kompetencer og vækst, Copenhagen, Danish Maritime Authority.
- (2007), Facts about shipping 2007, Copenhagen, Danish Maritime Authority.
- Danish Shipowners' Association (1986). Dansk Skibsfarts konkurrencevilkår, Copenhagen, Danish Shipowners' Association.
- (1987), Skibsfartsberetning 1986/1987, Copenhagen, Danish Shipowners' Association.
- (1989), Skibsfartsberetning 1988/1989, Copenhagen, Danish Shipowners' Association.
- (2007), Dansk skibsfart 2006, Copenhagen, Danish Shipowners' Association.
- Danish Trade Council (2004), Copenhagen – world centre for shipping, Focus Denmark, September: 4.
- (2006), World-class training behind quality shipping, Focus Denmark, No. 1: 24-25.
- Davidsson, F. (2007), Gotland Carolina: Built for ice, Scandinavian Shipping Gazette, April 20.
- Deakin, B. M. and T. Seward (1973). Shipping Conferences. A Study of their Origins Development and Economic Practices, Cambridge, UK, Cambridge University Press.
- de Langen, P. W. (2002), Clustering and performance: the case of maritime clustering in The Netherlands, Maritime Policy and Management, 29(3): 209-221.
- Drejer, I., F. S. Kristensen and K. Laursen (1999), Cluster Studies as a Basis for Industrial Policy: The Case of Denmark, Industry and Innovation, 6(2): 171-190.
- Einarsson, H., B. Johansson, C. Karlsson and D. Nilsson (2004), Sjöfartens roll i den svenska ekonomin – en klusteranalys, Jönköping, Institutet för Näringslivsanalys, Internationella Handelshögskolan i Jönköping.
- Eisenhardt, K. M. and J. A. Martin (2000), Dynamic Capabilities: What are They?, Strategic Management Journal, 21(10/11): 1105-1121.
- Eriksen, E. (2005), TORM i 115 år. Fra dampskibsselskab til globalt rederi, Copenhagen, TORM
- European Commission (1996), Towards a New Maritime Strategy, Brussels.

- Falkenstein, J. (1996), Dampskibsselskabet "NORDEN" 1871-1996. 125 Years on the High Seas, Copenhagen, Norden.
- Francis, A. (1992), The Process of National Industrial Regeneration and Competitiveness. Strategic Management Journal, 13: 61-78.
- Hirvonen, T. (2004), From Wood to Nokia: The Impact of the ICT Sector in the Finnish Economy, ECFIN Country Focus, 1(11): 1-7.
- Holck, J. and J. D. Simonsen (1983), Frit hav – Dansk skibsfart i 100 år, Copenhagen, Danish Shipowners' Association.
- ISL (2007), Shipping Statistics and Market Review, 51(1/2). Bremen, Institute of Shipping Economics and Logistics.
- Jacobsen, E. W., A. Mortensen, M. Vikesland and A. W. Cappelen (2004), Attracting the Winners. The competitiveness of five European maritime industries, Oslo, Kolofon.
- Jeppesen, H. et. al. (2001), Dansk søfarts historie bind 7, 1960-2000, København, Danmark: Gyldendal.
- Karlsen, A. (2005), The dynamics of regional specialization and cluster formation: dividing trajectories of maritime industries in two Norwegian regions, Entrepreneurship and Regional Development, 17(5): 313-338.
- Klikauer, T. and C. Donn (2004), Varieties of Labor Relations in the Shipping Industry: A Comparison of Two Anglo-Saxon Liberal Market Economies and Two European Coordinated Market Economies, New Zealand Journal of Employment Relations, 29(1): 39-61.
- Koch-Baumgarten, S. (1998), Trade Union Regime Formation Under the Conditions of Globalization in the Transport Sector: Attempts at Transnational Trade Union Regulation of Flag-of-Convenience Shipping, International Review of Social History, 43: 369-402.
- Lloyd's List (2004), Maersk white star shines bright on Blue Denmark, July 7.
- (2005), Norden continues its vision of growth alongside tradition, July 15.
- (2006), Insight & Opinion: Scandinavian Paradox, May 22.
- Lundvall, B.-Å. (1985), Product Innovation and User-Producer Interaction, Industrial Research Series No. 31, Aalborg, Aalborg University Press.
- Martin, R. and P. Sunley (2003), Deconstructing Clusters: Chaotic Concepts or Policy Panacea?, Journal of Economic Geography, 3(1): 5-35.
- Metaxas, B. N. (1985), Flags of Convenience. A Study of Internationalisation, Aldershot, UK, Gower Publishing Company Ltd.
- Midelfart-Knarvik, K. H. and F. Steen (1997), Self-reinforcing Agglomerations? An Empirical Study of the Norwegian Maritime Industry, SNF Report 57/97. Bergen, SNF.
- Ministry of Economic and Business Affairs (2006), Danmark som Europas førende søfartsnation, Copenhagen, Ministry of Economic and Business Affairs.
- Ministry of Industry (1987), Skibsfartspolitisk Redegørelse, Copenhagen: Ministry of Industry.
- (1991), Det Blå Danmark, Copenhagen, Ministry of Industry.
- Ministry of Taxation (2005), j. nr. 2005-618-0052.
- Mowery, D. C. and R. R. Nelson (1999), Sources of Industrial Leadership. Studies of Seven Industries, Cambridge, Cambridge University Press.
- Murmann, J. P. (2003), Knowledge and Competitive Advantage. The Coevolution of Firms, Technology, and National Institutions, Cambridge, MA, Cambridge University Press.
- Nelson, R. R. (1990), Capitalism as an Engine of Progress, Research Policy, 19: 192-214.
- (1992), National Innovation Systems: A Retrospective on a Study, Industrial and Corporate Change, 1(2): 347-374.
- (1993), National Innovation Systems: A Comparative Study, New York, Oxford University Press.
- (1995), Co-evolution of Industry Structure, Technology and Supporting Institutions, and the Making of Comparative advantage. International Journal of the Economics of Business, 2(2): 171-184.
- (1996), The Evolution of Comparative or Competitive Advantage: A Preliminary Report on a Study. Industrial and Corporate Change, 5(2): 597-617.
- (1999), The Sources of Industrial Leadership: A Perspective on Industrial Policy, De Economist, 147(1): 1-18.
- Newlands, D. (2003), Competition and Cooperation in Industrial Clusters: The Implications for Public Policy, European Planning Studies, 11(5): 521-532.
- North, D. (1990), Institutions, institutional change and economic performance, Cambridge, UK, Cambridge University Press.

- Palmberg, J., B. Johansson and C. Karlsson (2006), Den svenska sjöfartsnäringens ekonomiska och geografiska nätverk och kluster, Jönköping, Institutet för Näringslivsanalys, Internationella Handelshögskolan i Jönköping.
- Politiken (1988), De radikale bøjer sig for rederne, Politiken, March 8,
- Pontoppidan, K. (1987), Nyt dansk skibsregister vil stoppe tonnage-flugten, Morgenavisen Jyllands-Posten, September 30.
- Porter, M. E. (1990), The Competitive Advantage of Nations, New York, Free Press
- (1998), On Competition, Boston, MA, Harvard Business School.
- Poulsen, R. T. (2007), Liner Shipping and Technological Innovation: Ostasiat and the Container Revolution, 1963-75, Scandinavian Economic History Review, 55(2): 83-100.
- Reve, T. and E. W. Jakobsen (2001), Et verdiskapende Norge, Oslo, Universitetsforlaget.
- Reuter Finans (2004), Dansk søfart frem, sejler med 10 pct af verdenshandel, December 1.
- Schumpeter, J. A. (1947), The Creative Response in Economic History, The Journal of Economic History, 7(2): 149-159.
- Sletmo, G. K. (1989), Shipping's fourth wave: ship management and Vernon's trade cycles. Maritime Policy and Management, 16(4): 293-303.
- Sletmo, G. K. and S. Holste (1993), Shipping and the competitive advantage of nations: the role of international ship registers, Maritime Policy and Management, 20(3): 243-255.
- Sornn-Friese, H. (2000), Frontiers of Research in Industrial Dynamics and National Systems of Innovation, Industry and Innovation, 7(1): 1-13.
- (2003), Navigating Blue Denmark. The Structural Dynamics and Evolution of the Danish Maritime Cluster, Copenhagen, Danish Maritime Authority.
- Stevens, H. (2004), Transport Policy in the European Union, Hampshire, UK: Palgrave Macmillan.
- Sturmey, S. G. (1986), The Code of Conduct for liner conferences: A 1985 view [1], Maritime Policy and Management, 13(3): 185-221.
- Teece, D. J., G. Pisano and A. Shuen (1997), Dynamic Capabilities and Strategic Management, Strategic Management Journal, 18(7): 509-533.
- Tenold, S. (2000), The Shipping Crisis of the 1970s – Causes, Effects and Implications for Norwegian Shipping, Ph.D. Thesis, Bergen, Norwegian School of Economics and Business Administration.
- Thowsen, A. and S. Tenold (2006), Odfjell. The History of a Shipping Company, Bergen, Odfjell ASA.
- TradeWinds (2006), Partners in thick and thin, March 3.
- van Klink, A. and P. de Langen (2001), Cycles in industrial clusters: the case of the shipbuilding industry in the Northern Netherlands, Tijdschrift voor Economische en Sociale Geografie, 92(4): 449-463.
- Vernon, R. (1966), International Investment and International Trade in the Product Cycle. Quarterly Journal of Economics, 80: 190-207.
- Yin, R. K. (2003), Case Study Research. Design and Methods, (3rd edition). Thousand Oaks, London and New Delhi: Sage Publications.