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Contents

Objectives	4
Target Stakeholders	4
Glossary terms	4
Maritime Transport Market General Description	6
Introduction.....	6
Overview of the International Trade.....	7
The Demand for Shipping Services	9
The Supply of Shipping Services.....	11
Shipping cycles	14
Market Structure in Maritime Sectors.....	17
Market Definition.....	17
Tramp Shipping	18
Liner shipping	21
Chartering	25
The process	25
Market monitoring	26
Types of Charter	26
Port Markets.....	28
Risks.....	30
Price of oil bunkers	32
Crewing.....	33
Environmental risk.....	34
The European Perspective.....	34
Overview	34
European Policy for Maritime Markets	37
Ports	37
Seafarers.....	37
Short Sea Shipping.....	38
The European intermodal transport market	38
Conclusions and outlook.....	41

Objectives

This study is aimed at providing an overview of the maritime transport market.

Specific objectives are:

1. To outline the distinctive features of the shipping and ports markets from a macro-economic perspective.
2. To highlight the operational risks and various aspects of chartering.
3. To explain the shipping market structure for both liner and tramp shipping.
4. To review the European maritime transport market and related policies.

Target Stakeholders

This study has relevance to the following groups:

1. Shipping management and chartering professionals interested in the holistic view of the shipping market.
2. Policy makers at a European and National level (e.g. ministries within EU countries in addition to affiliated countries, EU Policy makers) analysing policy strategies.
3. Shippers and freight forwarders in using robust models to support their decision making
4. Consultants and analysts, in constructing reports and in developing research material.

Glossary terms

1. *Fixing*: Chartering a Vessel
2. *Fixture*: Conclusion of shipbrokers negotiations to charter a ship - an agreement
3. *Bareboat charterer*: Charterer gets the ship, its hull, and machinery, and must hire a crew or the services of a ship management company. By contrast, a time charterer pays for a ready-to-go vessel.
4. *Time charter*: A charterer pay for the use of a vessel for a specified period. The charterer also provides and pays for fuel, port charges, and pilotage. The ship-owner retains responsibility for navigation and most operations aboard the vessel.
5. *Voyage charter*: A charterer pays for use of a vessel to carry cargo from one designated port to another, or one port range to another. The charterer is usually responsible for stowage, discharge of cargo, and pays freight passed on vessel capacity or cargo loaded.

6. *Freight rate* is the price at which ship operators agree to move cargo over particular routes
7. *Tramp shipping* refers to the movement of large bulk commodities of wet or dry cargo in which the ship is chartered by the cargo owner to move the goods at a time agreed on by both parties.
8. *Liner shipping* refers to services in which the operator determines a regular voyage schedule for the transportation of cargo which may be from a number of cargo owners. The ship sails according to the schedule even if it is not filled to capacity.
9. *Conferences* are cartel-like coalitions of carriers, having price-setting as their main objective
10. *Privatisation of ports* ports play a vital role in many EU economies by handling import and export tonnage (e.g. over 95% in UK). Privatization of EU ports is aimed to create strategic independence from government to increase the industry's strength and vitality. A good example is the UK ports which are not state funded or managed. The abolition of the National Ports Council in the early 1980s has resulted in UK ports acknowledged to be the most efficient and competitive in the world.

The Maritime Transport Market

Maritime Transport Market General Description

Introduction

Maritime transport, which includes both the shipping and ports industries, facilitates international and domestic trade by moving goods by sea. The shipping and ports markets, like any other markets, are dependent on supply and demand factors which interact to determine a price for the services provided. Demand for shipping and logistics services is very much derived from the demand for the goods themselves. As such the fortunes of the industry are inextricably linked to the state of the world economy which fuels the demand for goods. On the supply side, the maritime industry provides the capacity in terms of vessels and port infrastructure to facilitate this international trade.

The last decade has experienced high rates of economic growth particularly in the developing nations led by the so-called BRICs (Brazil, Russia, India and China). However, more recently the situation has become more challenging as a result of the global financial crisis which has weakened demand worldwide. The impact on the shipping industry has been dramatic with freight rates (prices of shipping services) plummeting from its all time highs in mid 2008 and set to worsen with increasing industry capacity.

A market brings together the demanders (buyers) and suppliers (sellers) of products or services. However, each market has different characteristics which explain how it will operate. The maritime market in fact comprises a number of different markets with different characteristics which can be analyzed by micro economic models. These markets reflect various patterns of cargo or passenger trade. Passenger shipping is a specialized sector including cruise ships and ferries. Freight transport is subdivided into liner or tramp trades. In the liner trades the ships are operated by companies which provide regular, scheduled, services to shippers or forwarders between specific ports. Tramp services on the other hand involve “any transport of cargo in ships which are hired wholly or partly for the carriage of cargoes on the basis of a voyage or time charter or any other form of contract for non-regularly scheduled or non-advertised sailings where the freight rates are freely negotiated case by case in accordance with the conditions of supply and demand.”¹

¹ Commission of the European Communities, 2008, p. 4

Freight transport can be further classified according to vessel and cargo type.

- Tankers which carry oil, oil products and chemicals
- Dry Bulk carriers which carry cargoes such as grain, iron ore and coal
- General Cargo vessels which carry dry cargo in packaged or bulk form
- Containers which carry goods in standard sized boxes usually finished manufactured products
- Ro-Ro (Roll on roll off) vessels which are designed to carry wheeled cargo such as automobiles, trucks, etc.
- Other specialist vessels including reefers designed for refrigerated cargo.

This study considers the market characteristics of the shipping and port sectors by examining these demand and supply factors. It begins with an examination of the demand side which discusses the link between maritime transport and economic growth and international trade. The supply side factors focus on the world fleet and its development. The markets themselves are analyzed against the background of economic theory. Finally there is an examination of European policy relating to the maritime markets.

Overview of the International Trade

As shown in Figure 1, the European Union is the most important exporter at world level and the second largest importer, closely following the United States. Goods with a total value of € 1,240 Billion were dispatched outside the EU-27, against imported products worth of € 1,425 Billion (Eurostat). The European Union's trade balance was in deficit by €185 billion, slightly reduced compared to a year earlier (€ 193 billion) but substantially more than in 2005, when the deficit amounted to € 127 billion.

The main factor that contributes to an increasing deficit is the value / volume mix of energy imports. However, the price tag for imported energy products in 2007 was slightly lower than in 2006 (€ 332 billion against € 340 billion respectively). The United States remained the main trading partner of the EU. In 2007, the trade volume (value of imports and exports) amounted to EUR 443 billion, a value similar to that of 2006.

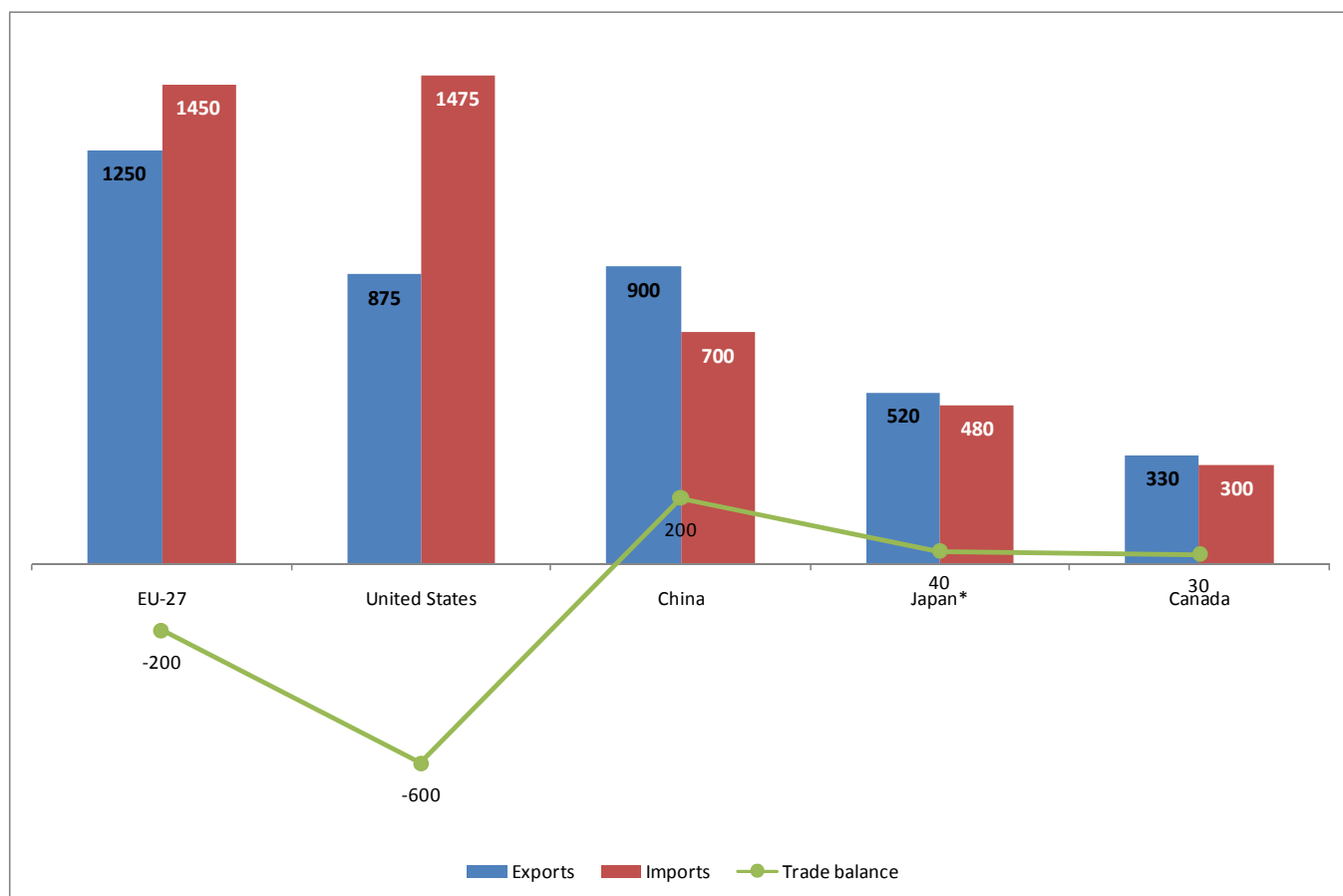


Figure 1 - The European Union and other major players in international trade, 2007 (figures in Bn€)
 Source: EUROSTAT, Statistics in Focus, 92/2008, External Trade by Gilberto Gambini
 *2006 data

The Demand for Shipping Services

Over the last 7 years the average growth of the world economy has been around 3%, with merchandise trade increasing at around 5.5%. The latest World Trade Organization figures indicate growth in trade of 6% and GDP of 3.5% for 2007. Such growth has varied enormously around the world. In 2007, for example, the growth of export trade in China was 19.5%, in India 11.5%, but only 3.5% in Europe.

In 2007, international seaborne trade was estimated at some 8 billion tons of goods loaded, which represents an increase of almost 5% over previous years. Dry cargo, including bulk, breakbulk and containerized cargo, accounted for some two thirds of goods loaded, with the balance being made up of oil. The major dry bulks are made up of iron ore, grain, coal, bauxite/alumina and phosphate where growth rates have exceeded those of the oil sector is due mainly to the growth of China's metal industries.

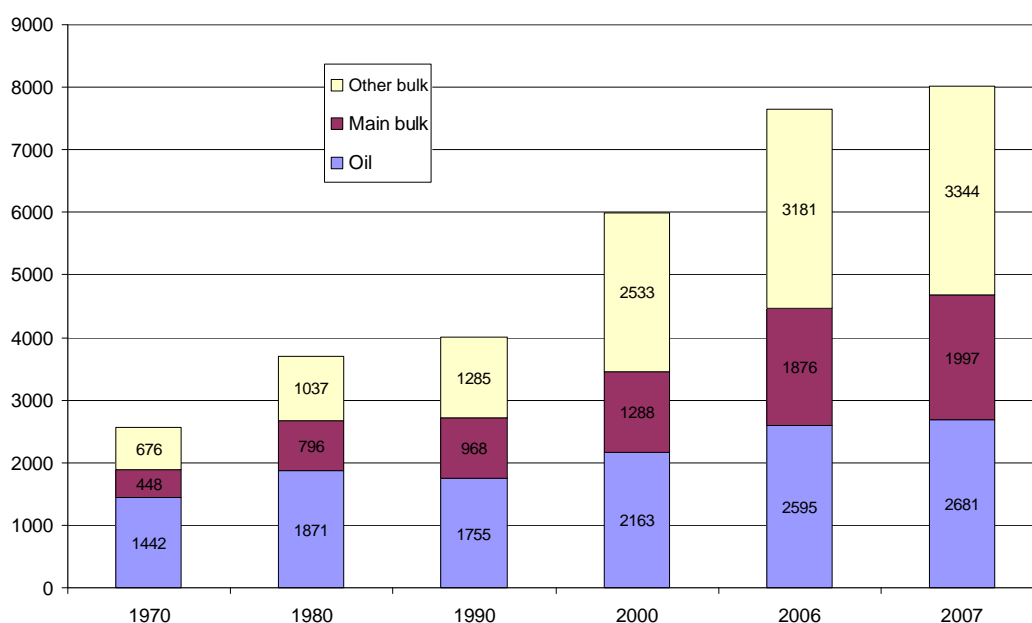


Figure 2: International Seaborne Trade for selected years 1970-2007 (millions of tons loaded)

Source: UNCTAD Review of Maritime Transport 2008

Figure 1 shows that the composition of seaborne trade has moved towards dry bulk over the years. Back in the 1970s and 1980s, these commodities accounted for less than 50% of goods moved by sea, but this has now increased to around two thirds of the total.

The commodities trade can also be categorised into six groups according to industrial sector:

1. *Energy trades* comprising crude oil, oil products, liquefied gas and thermal coal for use in generating electricity.
2. *Agricultural trades* which include cereals such as wheat and barley, animal feedstuffs, sugar, molasses, refrigerated food, oil and fats and fertilizers.
3. *Metal industry trades*, a major commodity group, which includes raw materials and products of the steel and non-ferrous metal industries, including iron ore, metallurgical grade coal, non-ferrous metal ores, steel products and scrap.
4. *Forest products trades*, industrial materials used for the manufacture of paper, paper board and in the construction industry. This includes timber, wood pulp, plywood, paper and various wood products.
5. *Other industrial materials* which include a range of industrial materials such as cement, salt, gypsum, mineral sands, alumina, chemicals and many others.
6. *Other Manufactures* which comprises the remaining manufactures such as textiles, machinery, capital goods, vehicles, consumer goods, etc.

In terms of these commodity groups, the highest proportion of trade by volume is associated with the energy and metal industries, and thus the shipping industry is highly dependent upon developments in these two industries.

The Supply of Shipping Services

In 2008 the world fleet stood at 1.1 billion dwt, made up of oil tankers, dry bulk carriers, container vessels, general cargo and a variety of other specialized vessels (see Figure 3). Two important trends emerge. The first is that dry bulk carriers represent a greater proportion of the world fleet today accounting for 35% of the fleet compared to 27% in 1980; and second, the growth in the container fleet which stood at less than 2% of the fleet in 1980 and more than 13% in 2008.

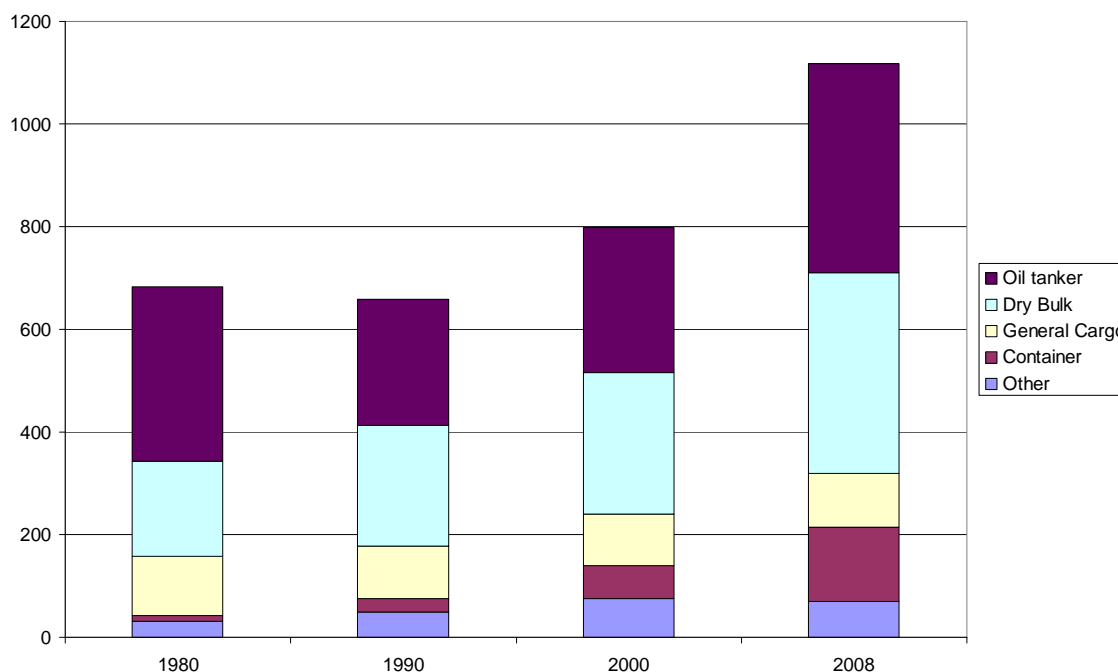


Figure 3: The World Fleet by Ship Type (DWT)
Source UNCTAD Review of Maritime Transport 2008

But who supplies the tonnage? Figure 4 shows the ten most important maritime countries in terms of tonnage owned. As can be seen, Greece is the largest owner with some 17% of the world fleet followed by Japan at 16%.

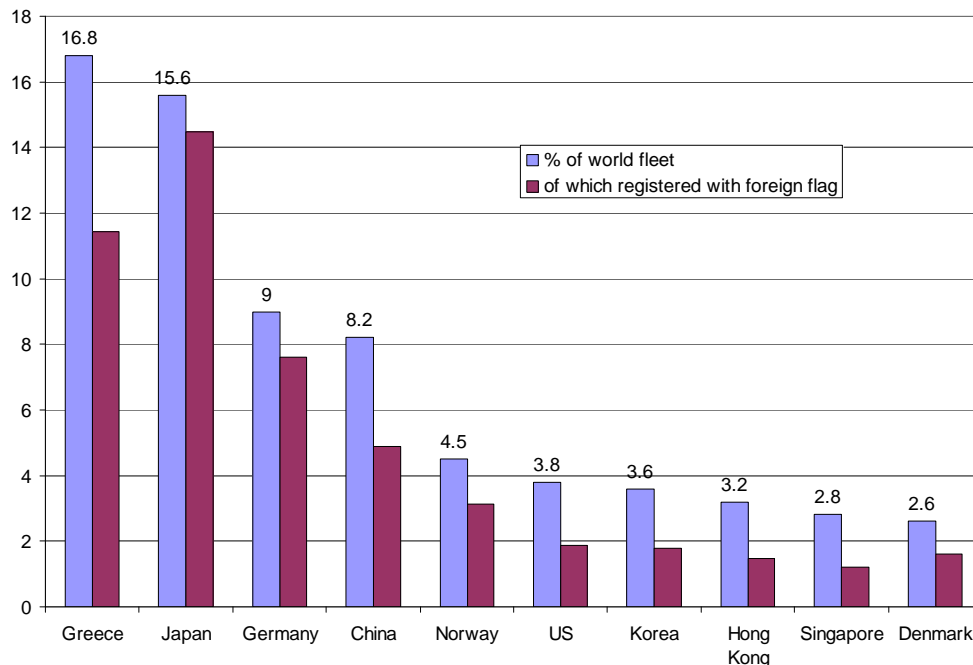


Figure 4: Ship Ownership by dwt 2007

Source UNCTAD Review of Maritime Transport 2008

Obviously ownership is not always transparent but the relative strength of ‘maritime nations’ as indicated above is probably realistic.

According to the annual survey conducted for the Greek Shipping Cooperation Committee (GSCC), based on Lloyd’s Register database, Hellenic ship owners controlled – as of the end of February of 2009 – a total of 4,161 vessels of more than 1,000 gross tonnage, with an aggregate capacity of 263.6 million dwt. These numbers represent an increase of approximately 1% in terms of capacity, since at the same period of 2008 and means the Hellenic-owned fleet remained in top spot. Importantly the average age of the fleet has been drastically reduced at 11.9 years, when at the beginning of the decade (2000) it stood at 20.3 years, while the average age of the world’s fleet is higher, now at 12.9 years old.

It should also be noted China is busily building a fleet of the largest container ships the world has ever seen to support export trade and economic efficiency. The Chinese have plans to build several (Twenty Feet Equivalent Units).* In an agreement announced in

November 2004, Chinese shipbuilder Hudong–Zhonghua Shipbuilding (Group) Co., Ltd. announced it will deliver 4–5 90,000 ton–plus container ships capable of carrying 8,530–TEUs to the China Shipping Group by October 2008. Further, Chinese shipping companies are expected to order up to 65 supertankers worth an estimated \$7.1 billion by 2012, according to transport analysts.

This maritime capability is not necessarily trade related. Indeed there is little correlation between the top maritime nations and the top trading nations although maritime transport does complement trade. Figure 5 shows this phenomenon by illustrating the trading importance as percentage share of world trade generated in value and maritime capability as the percentage share of the world fleet (in terms of ownership not flag registration). Europe and the major trading countries of Asia – Japan, China, Hong Kong, Korea stand out as nations with significant maritime services. Japan owns 16% of the fleet but generates 5% of trade. The US on the other hand is an essential user of shipping services while maintaining a lesser ownership.

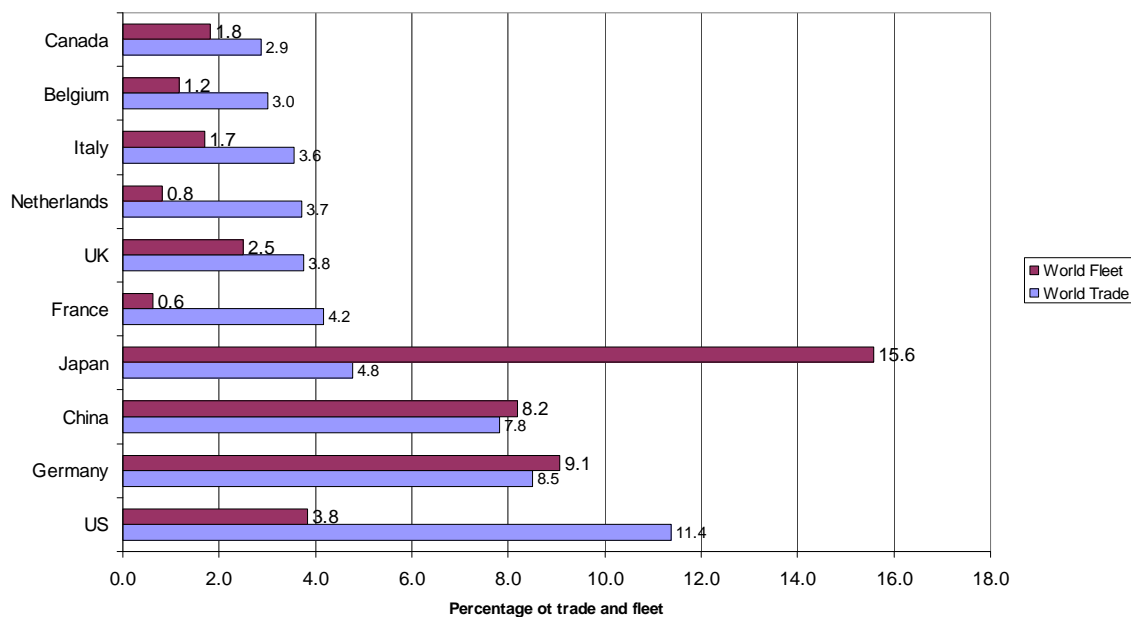


Figure 5 Maritime Engagement of Top 10 trading nations 2007

Source UNCTAD Review of Maritime Transport 2008

Shipping cycles

It is the interaction of supply and demand which determines the price at which the shipping services are supplied. This price or 'freight rate' is established at the 'equilibrium point', the point at which supply and demand are equal. Freight rates will therefore fluctuate with changes in demand and or changes in supply until a new equilibrium is reached.

Whilst such fluctuations occur on a day to day basis, it is possible to identify trends which reflect longer term adjustments of supply and demand and produce a cyclical pattern. Cycles are common to all industries but history has shown that in shipping they can be dramatic and notoriously difficult to predict. Stopford² describes the characteristics of the four stages of the cycle – trough, recovery, peak/plateau and collapse.

During the **trough** there is surplus shipping capacity which causes freight rates to fall to the operating costs of the least efficient operator. Sustained low freight rates lead to tight credit. Shipping companies are short of cash and forced to sell ships at distress prices. Since there are few buyers, the price of old vessels falls to scrap price.

In **recovery** supply and demand move towards equilibrium as excess supply is reduced. This has a positive impact on the freight rate. There is a fall in laid up tonnage and second hand prices begin to increase.

At the **peak** or **plateau** all the surplus capacity has been absorbed and freight rates remain high. Banks are keen to lend and the order book expands.

The market begins to **collapse** when supply exceeds demand often as a result of delivery of vessels ordered. Freight rates fall and there is a lot of uncertainty.

The average length of the cycle in the period 1872 to 1989 was just over 8 years but this falls to around 7 years when considering the more recent period 1947 to 1989. The uncertainty creates risk in the sector and threatens investment in the industry.

² Stopford M (2009) Maritime Economics, Routledge, London

Table 1 summarizes the supply and demand balance since the 1970s³. Column 1 shows the period; Column 2 the extent of demand growth (i.e. whether fast or slow); Column 3 the status of supply; and Column 4 the freight market conditions during the period.

Period	Demand Growth	Supply Tendency	Market Tone
1973-1988	1% pa	Over-capacity	Depressed
1988-1997	4% pa	Soaking up surplus	Low returns
1998-2008	4% pa	Shortage of ships	Prosperous

Table 1 Shipping cycles fundamentals

Over the last 30 years the fundamentals shown in the table above, suggests that each stage formed part of a long drawn out recovery from the 1970s market crisis.

More recently, however, the cycle has been downward. The turmoil in the world-wide banking sector triggered by the exposure to sub prime markets in the latter part of 2008 has lead to a global recession. In many developed economies, unemployment and under-utilization of capacity continue to rise, putting downward pressure on the global economy. According to the latest World Bank estimates, the world economy will decline by close to 3 percent in 2009, a significant revision from a previous estimate of 1.7 percent. Even China's economy has continued to suffer the impact of the global crisis and have used very expansionary fiscal and monetary policies to keep the economy growing. Although it is too early talk about a sustained recovery, the prospects for China are looking better and the World Bank is forecasting growth of 7.2% in 2009.

The impact on the shipping industry has been devastating. The fall in volumes of trade has hit the demand side at time when significant new tonnage has come on stream resulting in a dramatic fall in freight rates. This has been further exacerbated by the reduction in bank lending both for vessels purchase and operation, resulting in cargoes being stranded and ship repossessions. The Baltic Dry Index measuring rates for coal, iron ore, and grains, and other dry goods plummeted below 1000 since peaking in June 2008 around 11700. The daily rental rates for Capesize vessels have dropped from some \$234,000 to less than \$7,000 in weeks, leaving operators stuck with heavy losses on long leases. Many new

³ Challenges For Global Shipping In the wake of the great shipping boom 2003-8; Martin Stopford, MD Clarkson Research Seminar of the Danish Ship-owners Association, 20th January 2009

orders for tankers have been cancelled at Chinese and South Korean shipyards⁴ and it has been estimated by that 50% of tankers scheduled for 2011 delivery would be cancelled (E A Gibson Shipbrokers – Jan 2009).

According to JP Morgan the situation in the container trades is unlikely to get much worse, but no improvement is expected during 2009. Freight rates on the Asia-Europe are below the variable costs and the freight rates in transpacific are only slightly better.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Demand	10.7	2.4	10.5	11.6	13.4	10.6	11.2	11	4.7	-5.5
Supply	7.8	8.5	8	8	8	10.5	13.6	11.7	11	11.9

Table 2: Growth of demand and supply in container shipping

Source : Clarksons Container Intelligence Monthly.

Note that figures for 2009 are forecasts

The demand supply gap is illustrated in Table 2 which shows the growth of demand and supply in container shipping since 2000. From 2002 to 2005 demand growth has outstripped supply. In 2006 and 2007 there was a slightly higher increase in supply but not enough to create overcapacity. However, the forecast for 2009 shows a growth in supply of 11.9% which is coupled with a decrease in demand of 5.5%. This massive oversupply is responsible for the dramatic fall in freight rates.

This situation is set to continue through to 2010 until a demand recovery narrows the demand-supply gap and improves the level of profitability in the sector. According to Drewry⁵, a combination of measures ranging from outright cancellation, agreed delays, order deferment and increased scrapping, should slow down newbuild deliveries. This will not, however, provide the whole solution to the surplus tonnage problem, which will also require all actors, shipowners, financiers etc to work together.

⁴ Analysts from Drewry Shipping said at least 30 tanker new building orders have been cancelled globally in second half of 2008. Their research indicates 29 tanker new building cancellations at Asian yards alone, including orders for four VLCCs and 10 Suezmaxes.

⁵ Drewry's World Shipbuilding Annual Market Review and Forecast 2009/2010

Market Structure in Maritime Sectors

The market brings together the buyers and sellers, i.e. the operators and shippers for the purposes of making transactions. The shipping industry comprises a number of different markets each with its own distinct market characteristics and structure. This market structure is determined by a number of factors namely supply of service offered, type of product, number of operators, number of consumers, barriers to entry or exit.

Market Definition

The main purpose of market definition is to identify in a systematic way the competitive constraints faced by an undertaking. The relevant product market comprises all those products and services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use. The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those areas. A carrier cannot have a significant impact on the prevailing conditions of the market if customers are in a position to switch easily to other service providers.

Three basic market structures can be defined. These are perfect competition, monopoly and oligopoly. Perfect competition is characterised by the existence of many buyers and sellers, the provision of a homogeneous product or service, free entry and exit and perfect information (or symmetric information) between suppliers and consumers. In such a situation the operators or suppliers are **price takers** in that they individually cannot influence the price but have to accept what the market dictates.

Imperfect competition encompasses both the monopoly situation where one supplier dominates the market and oligopoly where few players have the largest market share. There are a number of other variations on these basic structures but here the focus is on oligopoly. The characteristics include few suppliers, barriers to entry which are often due to existing players having exploited economies of scale, and product differentiation in that products or services are not perceived to be the same.

In a monopoly or oligopoly situation the suppliers are more **price makers** in that they can influence the price due to their domination of the market and collusive behaviour. Another crucial characteristic of oligopolistic markets is that there is interdependence between suppliers. This concept implies that when one supplier decides to change the price needs to take into account the reaction of the remaining suppliers in the market.

The shipping markets can be broadly categorised as tramp or liner. Tramp shipping refers to the movement of large bulk commodities of wet or dry cargo in which the ship is chartered by the cargo owner to move the goods at a time agreed on by both parties. Liner shipping refers to services in which the operator determines a regular voyage schedule for the transportation of cargo which may be from a number of cargo owners. The ship sails according to the schedule even if it is not filled to capacity. These markets are discussed in more detail in the following sections.

Tramp Shipping

Tramp shipping uses very large carriers, such as tankers and bulk-carriers, to transport goods in bulk on a contract basis. The service requires minimal infrastructure and in this respect it resembles a taxi service whereby the contractual relation between passenger and driver (cargo owner and ship-owner) expires upon the completion of the trip. The industry is highly competitive with prices (freight rates) fluctuating wildly even in the course of a single week- see e.g. Haralambides H.E., 2000.

The tramp shipping sector displays a high degree of dependency on the trade patterns. Tramp ships are supposed to call at any port to carry whatever cargoes are available. The transport service follows the cargo, not vice versa. That means that the supply side is highly dependent upon the developments, movements or possible disequilibrium of the demand side- see e.g. Athanasiou Lia, 2008.

The environment in which tramp shipping takes place is close to the model of perfect competition, and pricing is very much governed by the law of supply and demand.

The major elements which influence the fixing of a specific freight rate are:

(a) ship specification, (b) trade and route, (c) general market conditions, (d) terms of charter party, i.e., distribution of costs between ship-owner and charterer, (e) duration of charter, (f) the urgency of the charter, and (g) the convenience of the charter to the ship-owner- see e.g. Peters Hans J., 1991, Transport No. PS-3.

Tramp ships transport large parcels and when the parcel size increases the same happens to the size of the vessels. This allows economies of scale to be achieved.

The structure of the shipping business is very fluid, allowing free entry and exit of companies- see e.g. Athanasiou Lia, 2008.

In April 2004 the deep-sea merchant fleet (including bulk and liner fleets) was owned by 4.795 companies. Only 16 of these companies (0,25%) owned more than 100 ships and the average shipping company had 5 ships. The ships of the tramp sector are often spread over several market segments. Consequently the bulk ship-owners are generally in the position of price takers, being too small to influence the overall market. An analysis of 7.000 Dry Cargo fixtures found that 97% of the owners had a market share of less than 0,5 per cent of the fixtures. However pools and other ways of joint actions towards the shippers by pools, agents and brokers control the supply of substantial aggregated fleets. *These issues as well as the market consolidation trends in the maritime sector will be expanded in the next version of the study.*

Tramp shipping has relatively few barriers to entry. New investors require equity, but commercial shipping banks will provide loans to acceptable credits against a first mortgage on the ship.

There is a comprehensive network of support services to which new investors can subcontract most business functions. Ship management companies will manage the ships for a fee. Chartering brokers arrange employment, collecting the revenues and dealing with claims, sale and purchase brokers will buy and sell ships, maritime lawyers and accountants undertake legal and administrative functions, classification societies and technical consultants provide technical support.

These services make it easy for new investors to enter segments of the tramp shipping markets during profitable periods. In addition ship-owners in one segment will move into new markets if they see an investment opportunity. However, it should be noted that some specialist sectors require specialist expertise which is difficult to acquire quickly.

Competition is also promoted by the homogeneity of the service. However, the homogeneity is within the sectors of tramp shipping, i.e. wet or dry cargo rather than tramp shipping as a whole.

Information systems in tramp shipping business are very open, giving buyers and sellers of ships, operators and charterers a timely flow of commercial data. Data on revenues and asset prices are published daily and widely circulated in the industry to both ship owner's and charterers by the ship broking business and information publishers. These information services ensure a high degree of transparency. In addition the costs of operating different types of ships are well known (several companies publish reports documenting them) making it easy for potential investors to estimate prevailing profit levels.⁶

Tramp Shipping Pools

Shipping pools operate in every sector of the tramp shipping business. A "pool" is a collection of similar vessels, under different ownerships, operating under a single administration. The pool managers market the vessels as a single, cohesive fleet unit, collect their earnings and distribute them under a pre-arranged "weighting" system. The main reason for creating a pool is the possibility of undertaking large contracts.

Joint ventures between pools are also common. An example can be found in the joint venture between the Norwegian Western Bulk Carriers pool and the also Norwegian Uglund Bulk Transport. Together, the two groups manage to have an effective world-wide operation given that the one is specializing in the Atlantic and the other in the Pacific Ocean.

Joint marketing may be the single most important characteristic of a bulk pool. In most pools the fleet is marketed as a single entity, with the ships painted with the name of the pool on the side and traded in such a way that the charterer identifies the ship by that name. He is not interested, nor has reason to be interested in who actually owns the vessel.

Bulk pools are mainly created so that individual ship-owners are able to respond to the changing demand requirements of modern shipping. Arrangements such as those of a shipping pool offer shippers greater reliability and less dependence on freight market fluctuations. Furthermore, as a result of environmental concerns - especially in the oil and gas transport markets - many shippers are in search of dependable partners with good reputation and high quality operations, who can guarantee reliability and good customer

⁶ Clarkson Research Studies, 2004, p. 4

service. Given the cargo volumes and the timing considerations involved in the fulfilment of a contract, many small to medium-sized ship-owners might feel that they either do not have the required capacity (physical or managerial) to bid for such business alone. If they do, they may feel that the risks involved may be higher than they would otherwise be prepared to accept.

Strictly speaking, economies of scale cannot be seen as a major reason for creating a pool alliance, especially in bulk shipping. The main benefit is in the strong negotiating position of a pool and marketing synergies.⁷

Liner shipping

Liner services provide transport for cargoes that are too small to fill a single ship. The ships operate a regular advertised service between ports according to timetables, carrying cargo at fixed prices for each commodity. Such services have developed with the advent of the container which makes possible the shipping of a variety of products, usually manufactured goods, on the same vessel. While it is possible in exceptional circumstances for some substitution to take place between general cargo and container transport, there is little possibility of substitution from container to general cargo. Once cargo becomes regularly containerized it is unlikely ever to be transported again as non-containerized cargo.

However, many commodities such as waste paper, scrap metal and some forest products are moved in containers due to the virtually free rates on ballast routes. Once better balance is achieved, these commodities should go back to bulk or break-bulk.

The relevant geographic market consists of the area where the services are marketed, generally a range of ports at each end of the service. The main routes for these services are 'East- West' between Asia and Europe, Asia and North America (Transpacific) and US and Europe (Transatlantic).

Route	West	East	Total
Asia Europe	17.7	10	27.7
Transpacific	4.83	15.4	20.23
Transatlantic	4.4	2.7	7.1

Table 3: Container Trades 2007 (million TEU)

⁷ Haralambides H.E., 1996, Maritime Policy & Management, vol. 23 No.3, p.221-237

Source: UNCTAD Maritime Review 2008

Table 3 shows that Pacific and European trades are the biggest growth areas with large flows out of Asia. Such trade is booming due to the location of US productive capacity in mainland China. The Asia Europe trade shows a similar picture and was experiencing an even higher growth rate of some 16% in 2007.

The European end of the service has been identified as a range of ports in Northern Europe or in the Mediterranean. Since liner shipping services from the Mediterranean are only marginally substitutable for those from Northern European ports, these have been identified as separate markets.

The freight rates which are charged are based on the shipping company's tariff or if the company is a member of a liner conference, the tariff of that conference (however under new EU competition regulations conference ships are no longer allowed calling European ports.).

It has been observed that the shipping industry is one of the most capital-intensive fields of economic activity, and liner shipping tends to be more capital intensive than bulk shipping due to the large fleet of vessels required in order to provide the regularity and frequency of service desired by shippers. *A comparative analysis of fixed versus variable costs of bulk and liner shipping will be provided in the next version.*

Even though the demand for this industry is relatively inelastic, each individual operator faces an elastic demand curve as any of its competitors could capture the cargo by charging lower freight rates. Further, liner shipping is a multi-product (or multi-service) industry, carrying many different types of cargo. If all operators wanted to compete on price for the most lucrative cargo, it could frustrate shippers of lower valued goods who may not find the requisite liner service for their trades.

The seasonality of global general cargo movements and the uncertainty associated with international business cycles could also contribute towards a tendency to limit sailings to periods of economic benefit to operators. But the carrier status of liner services makes it

essential that the sailing schedule be maintained under all circumstances to maintain a market presence and the reputation of their service.⁸

Entry barriers are high in liner shipping market and they usually take the form of economies of scale and scope. The emergence of alliances (which is a form of ship pooling amongst liner companies) reduces the odds of success for new entrants and may create the perception among potential entrants that market prices are not sufficient to cover the high fixed costs of entry.⁹

Another aspect which must be taken into account when analyzing the market's competitiveness is product differentiation. Product differentiation permits individual firms to raise pricing above marginal costs by differentiating themselves from the competition. However the container shipping industry serves what is essentially market with little room for differentiation of service. The only areas where differentiation can occur are service call frequency and cargo security and services in the hinterland part of the transport chains.

Today liner cargo is carried in containerships, and in specialist vessels such as Ro-Ro vessels (Roll on Roll off), PCCs (Pure Car Carriers), which are primarily designed for and operated in the motor vehicle trades, or reefers (Refrigerated ships) designed to convey goods at specific temperatures.

In many European countries Ro-Ro is the predominant mode of freight transport. For Sweden and Britain, for instance, ports handle 3-4 times more RoRo than container goods. In the UK Ro-Ro goods vehicle movements have generally increased by some 240% since 1985. The fastest period of this growth was between 1985 and 2000, particularly in SE of England and in the Irish Sea with passenger traffic becoming a sub-set of the ro-ro market.

Liner Conferences

Perhaps one of the most important characteristic of the liner shipping industry is its high level of fixed costs. In order to keep its pre-advertised time-schedule, a ship must leave port whether or not it is at full capacity. Thus the costs become fixed, i.e. independent of the amount of cargo carried. Discounting of price in order to fill up the vessel could not be done otherwise the competition among the operators would push freight rates down to the level of short-run marginal costs and consequently the liner service would not be sustainable in the long-run.

⁸Shashikumara N., 1995, Transport Reviews, vol.15, p. 3-26

⁹ Evans J.J., 1994, Maritime Policy & Management, vol. 21, No. 4, p. 311-329

A solution to the pricing problem was found in the 1870s in the formation of ‘conferences’, which are cartel-like coalitions of carriers, having price-setting as their main objective.¹⁰ In the UNCTAD Code of Conduct for Liner Conferences (UNCTAD, 1975), the term conference or liner conference is defined as ‘...a group of two or more vessel operating carriers which provides international liner services for the carriage of cargo on a particular route or routes within specified geographical limits and which has an agreement or arrangement, whatever its nature, within the framework of which they operate under uniform or common freight rates and any other agreed conditions with respect to the provision of liner services’.

Internal competition, i.e. forces within the conference moving in different directions, and, the endeavour of liners to eliminate fellow carriers within the conference, provided sufficient incentive not to set monopolistic freight rates. It was important to bear in mind that the members of a conference were once competitors uniting to avoid extinction, but competition never completely disappeared. Indeed, at times the rules of the agreement aiming at regulating the behaviour of the members were broken as a result of competition amongst members. Breaches of the agreement can be used to attract shippers, by, for example, calculating the freight rate upon weight instead of volume to give the shipper a lower rate.

Even with the conference system, there was competition between the different conferences and indeed between the conferences and independent liners. In terms of pricing, there is a realistic presumption that the conference, which dominates the market, is a price leader and independent liners are the followers. If there are a large number of independent operators competing in this way, the conference price will be lower and vice versa. It is likely that the price will be somewhere in between the case of full conference membership and the fully competitive case (i.e. without conferences).

Conferences have been the subject of much discussion and over recent years, with many arguing against any special exemption from normal competition rules. The EU has now outlawed the conference system and so container lines calling at European ports are banned from discussing freight rates and other fees such as bunker and currency surcharges and from publishing common tariffs. Carriers must now negotiate rates individually with

¹⁰ Haralambides H.E., 2000

shippers.

Carriers will, however, be allowed to exchange trade data, a task that will be handled by the Brussels-based European Liner Affairs Association, an industry lobby group that is transforming itself into a trade association to manage the exchange of information.

The EU still exempts container alliances from competition rules. These alliances allow carriers to cooperate through vessel-sharing and slot exchange agreements, and other issues that benefit shippers so long as they do not collude on prices.

Chartering

Chartering is the arrangement made between a ship owner (seller of shipping services) and a cargo owner (the buyer of shipping services) for the transportation of goods by means of one or more ships, normally facilitated by a broker. The charter arrangement is the process by which the price is determined for tramp shipping.

The process

Upon emergence of a transportation need, a charterer broker is notified to post an order. The order comprises the description of the charter, i.e., port of departure, port of arrival, lay cancel (transportation deadline), cargo description, quantity, stow factor, transportation vessel requirements, etc.

The orders are posted to the charterer offices, where the charterers report, within very strict time constraints, to shipping companies on all orders found to be of potential interest to them. Shipping companies contact independent chartering agencies, by means of their own agents, namely charterers or owner brokers. The task of owner brokers/charterers is to evaluate the information gathered from charterers and proceed on placing an offer for a specific order. Finally, through a bidding process based on information from various sources, the order for the shipment may be given to the shipping operation represented by the owner broker. The decisions made by the owner broker include the selection of the vessel(s) to be chartered, the cost claimed, the type of chartering, etc. All aforementioned entities involved in chartering gather diverse information by means of a variety of sources, i.e., telephone, fax, telex, Internet, Reuters, etc.

Market monitoring

Market monitoring involves following *past*, *current* or *future* positions of competing vessels in the region of interest, the time window of interest and the cargo. The *past* and *current* data are given by the fixtures and are enhanced by the tonnage lists. The *future* positions are extracted from current fixture obligations and the expected competitors are vessels capable of carrying equivalent cargoes, which will be located at a port of interest.

The key information needed by shipping companies in chartering decision making are:

1. The activities of the competing vessels and their credentials (Shipyard, Management, Ageing, approvals by oil companies in Tankers' cases etc.).
2. Fixture lists of competing vessels for the area, vessel type, cargo, date.
3. The list of cargo orders in the specified region. The system is aware of that information, via user and Internet sites.
4. The *past* and *current* freight indices as well as time charter averages to cover the routes of the three main sizes of dry bulk cargo vessels: Handysize, Panamax, Capesize. The past and current bunker prices for all bunker types.

Types of Charter

The centre of the chartering business is the Baltic Exchange in London, where brokers representing shippers meet with ship-owners or their representatives to arrange the agreements. Freight rates fluctuate according to supply and demand. In times of low freight rates a broker representing cargo interests may charter a ship for a future date, while having no cargo in prospect but expecting to resell the contract when rates have risen.

Charter parties are of four kinds, namely, the voyage charter, the time charter, the bareboat charter and the contract charter.¹¹

The **voyage charter**, in which a ship is chartered for a one-way voyage between specified ports, with a specified cargo at a negotiated rate of freight, is most common. The charterer agrees to provide the cargo for loading within an agreed range of dates. Once the cargo has been delivered to the port or ports of destination, the ship is free for further employment at the owner's discretion. Sometimes, however, the arrangement is for a series of consecutive voyages, generally for similar cargoes over the same route.

On **time charter**, the charterer undertakes to hire the ship for a stated period of time or for a specified round-trip voyage or, occasionally, for a one-way voyage. Whereas on a voyage

¹¹ Funk & Wagnall: New Encyclopedia, 2006

charter the owner bears all the expenses of the voyage (subject to agreement about costs of loading and discharging), on time charter the charterer bears the cost of fuel and stores consumed.

On **bareboat charter**, which is less frequently used in ordinary commercial practice, the owner of the ship delivers it up to the charterer for the agreed period without crew, stores, insurance, or any other provision, and the charterer is responsible for running the ship as if it were his own for the period of the contract.

A **contract charter** is usually employed when a large amount of cargo - too much for a single ship on a single voyage - is to be moved over a period of time. The ship-owner agrees to undertake the shipment over a given period at a fixed price per ton of cargo, but not necessarily in any specified ship, although he generally uses his own ships if they are available. The question of substituted ships, however, often leads to disputes, and the terms of the contract may make special provisions for this eventuality.

Port Markets

Thus far, the discussion has focussed on the markets for shipping services. Ports are clearly an essential part of this service provision and operate within their own market structure. Ports charge vessels to enter the port and for the use of the various port facilities relating to loading and unloading of goods. The models of port structure and ownership are a reflection of the way in which ports are perceived in particular countries and regions. Some are seen as a public utility, playing an important role in regional development and others as a private entity operating in a ‘free market’ environment. Four basic models of port administration can be identified, ranging from a pure public sector to a pure private sector model. Most adopt a mixed approach with the majority maintaining regulatory control in the public sector. These models are illustrated in Table 4.

	Models	Land Ownership	Port Functions	
			Regulation	Cargo Handling
1	Pure Private	Private	Private	Private
2	Private/ Public	Private	Public	Private
3	Public/ Private	Public	Public	Private
4	Pure Public	Public	Public	Public

Table 4: Four basic models of Port Administration

Source: Baird 1995

Many ports around the world broadly fit into Models 2 and 3 where regulation and or land ownership is in State hands as described by Baird 1995¹² but cargo handling services have been privatised. The UK in terms of its major ports is the only jurisdiction which operates the fully privatised Model 1 in which market forces are allowed to determine the operations.

This level of privatization has led to a number of UK ports have moving into foreign hands, with finance and investment companies becoming increasingly involved in the sector.

¹² Baird A (1995) Privatisation of Trust Ports in the United Kingdom: review and analysis of the first sales, Transport Policy, 2(2), 135-143.

The changes in ports ownership have raised some strategic issues of safeguarding port areas. There is nothing to prevent port companies with foreign interest from prioritising investment outside the UK on commercial grounds or indeed to seek greater return by selling off port land for property development. In addition recent developments in the US with the takeover by DP World of P & O Ports raised concerns over security.

Regardless of who owns the port itself, private involvement in ports has been increasing on a global scale. According to Drewry Terminal Operators Report 2007, state throughput in 2006 was only 19% compared to 42% in 1993. The increase in private participation has been a conscious decision in an effort to increase efficiency and lower costs. This greater level of privatization has been achieved largely by offering ‘concessions’ or leases to terminal operators. These global terminal operators now account for some 60% of total port throughput (see Table 5).

	2005	2006	2007
HPH	13	13	14
PSA International	11	12	11
APM Terminals	10	10	12
DP World	9	10	9
Cosco Pacific	7	7	8
Eurogate	3	3	3
SSA Marine	3	3	3
Total share of world throughput	56	58	60
World throughput in millions of TEU	387.7	434.3	485.0

Table 5: Global Terminal Operators - % share of world container throughput

Source UNCTAD Review of Maritime Transport 2008

Despite the financial crisis the medium-term prospects for the industry as a whole remain strong as terminal operators benefit from government investments in transport links.

According to HSBC Global Research, port capacity is forecast to grow globally at 5% to 2013 and throughput will rise by 6% over the same period, suggesting some efficiency gains.

In the next version a market analysis differentiating container terminals, RoRo ports and bulk/industrial ports will be undertaken.

Risks

The maritime sector, like any other industry operates against a background of uncertainty. Financial inflows are connected to the freight rates, which, as previously discussed, can exhibit considerable volatility. Financial outflows are linked to the price of bunker fuels which are a function of the oil price. The value of the fleet fluctuates according to state of the market or stage of the shipping cycle which dictates the future earnings potential. New building prices are dependent on factors such as steel prices and scrapping costs (see for example, Vlachos [2002], Giziakis [2001], Goulielmos [2001]).

Additionally, risks associated with unforeseen maintenance of vessels, accidents, and situations of liability are important determinants of the revenue/cost structure. Furthermore, the maritime / shipping company operates internationally and is thus exposed to risks of foreign exchange, interest rates, and political circumstances.

A list of generic risks that affect the logistics sector in 4 broad categories, namely economic, technological, political and environmental is given in the following table¹³.

¹³ SULOLOGTRA project Effects on Transport of Trends in Logistics and Supply Chain Management FP5/6

Level	Risks
Economic, industrial, management	Changes in GDP Interest rates Intra and extra European trade levels Fuel rates Manpower supply Concentration of industry / services Globalisation of industry / services Shift from industrial to service sector Proliferation of product types Organisational re-structuring Supply chain integration Mass customisation and customer integration Outsourcing of non-core activities Increased use of information and communication technology
Technological	Information technology advancement ICT integration and development of logistics decision supporting software Evolution of data transmitting technologies Network infrastructures Data interchange standards Identification systems Telematics Standardisation of loading units Increase of capacities in intercontinental transport Drive and vehicle technologies Automation of warehouses Automation of in-house transport
Political	Privatisation of tasks and financing Growth of an agreement culture Harmonisation and regulations of laws Introduction of circular flow economy acts Transport industry deregulation
Social	Increase in the total population in the EU15 Changes in working hours and leisure time Changes within and between social hierarchies Increase in ICT use in the society
Environmental	Environmental management Increased number of vehicle kilometres Increased attention for re-using (raw) materials

Table 6 - Risk factors in the logistics industry (based on SULOGRTRA project)

As can be seen, the number and types of risk are considerable. The following sections focus on three risks which are very pertinent to the shipping industry, namely the volatility of bunkers prices, availability of seafaring labour and environmental risks.

Price of oil bunkers

The price of bunker fuels is directly related with the price of crude oil. The cost of bunkers is one of the major elements that make-up voyage costs. Volatility in bunker prices therefore represents a major risk for the profitability of shipping operations.

Worldwide consumption of “bunker” fuel is estimated to be around 150 million tonnes annually¹⁴. For shipping companies, the price exposure is enormous, with a medium sized tanker sailing at 13 - 14 knots burning some 30 tonnes per day, while a containership from 4100 to 8200 TEU travelling at 21 knots burning as much as 150 tonnes to 285 tonnes per day.

In the bulk sector some companies lease their vessels out under “time charters”, typically of one or two year duration, where the charterer is responsible for purchasing fuel. Other ship-owners may trade a portion, or all of their vessels, in spot markets or in longer term contracts where freight is sold on a \$/tonne basis. Some longer term industrial contracts may contain fuel escalation clauses tied to a price in one port, or a number of ports. Ship-owners operating in the day to day spot markets must absorb increases in fuel prices. Though tanker rates, calculated on a notional vessel, are adjusted annually to reflect bunker price levels over the previous months, the correlation with individual owners’ results is imperfect.

Bunker managements nowadays may involve derivative transactions. For example a company may enter into a “costless collar” to obtain a quantity of fuel between \$220 per tonnes and \$300 per tonne. Under this agreement, the company has a right to receive (call option) the amount by which the bunker price on a specified index exceeds \$300 per tonne and an obligation to pay (put option) the amount by which the price falls below \$220 per tonne on a specified index. Under this strategy, the company obtains upside protection as the price moves above the upper bound, in this case \$300 per tonne, but must put notional fuel to the counterparty if the price dips below \$220 per tonne. The “costless” aspect results from the premium paid (on the call options) being equal to the premium earned on the sale of the put options. If the fuel prices remain within the bounds of the collar, between \$220 per tonne and \$300 per tonne, the company does not exercise the options.

A different strategy is provided by bunker fuel swap contracts. Under the swap arrangement, the company receives payments as the fuel price on the designated index moves higher.

¹⁴ According to the September 2005 prospectus filed by World Fuel Services- a leading supplier and broker.

In 2004, Denmark-based A/S Global Risk Management Ltd conducted a survey of 170 shipping companies regarding their hedging practices. The results found that 49% of companies surveyed had engaged in hedging. Of those managing their price risks, 47% were hedging up to 25% of fuel purchases, while 27% were hedging between 25% and 50% of their requirements.

Crewing

The BIMCO/ISF manpower update estimates the worldwide supply of seafarers at almost 1.2 million comprising 466 thousand officers and 721 thousand ratings¹⁵, with the majority originating from a comparatively small number of countries. However, over recent years, there has been a relentless decline in the number of seafarers coming from developed countries, due to an appreciable reduction in recruitment and retention. Thus the age structure of this group has become progressively older. The lack of suitable seafarers from developed countries, coupled with a desire to reduce labour unit costs, has created an increasing demand for seafarers from developing countries. Initially the vast majority of these seafarers from these countries were ratings, but they are now supplying a growing number of officers.

The study estimated the demand for seafarers was from estimates of the size, number, ship type and age composition of the world fleet. Putting the supply and demand together the study suggests a 10,000 excess demand for Officers and a 135,000 excess supply of Ratings. The shortage of officers is expected to be compounded by growth in world trade and hence the growth of the world fleet. The recruitment and retention problems are clearly recognized by the OECD nations, some of which are adopting measures to address the issue. Many European countries have instituted tonnage tax legislation. In the UK this began in the year 2000 and is linked explicitly to recruitment.¹⁶

Despite the efforts of the traditional maritime nations, there is a definite decline in the number of seafarers from the developed countries which is essentially being counteracted by an increase in those from the labour supplying countries at junior officer at ratings levels. Over the coming years we would expect to see a larger number of senior officers from these countries to replace the ageing OECD seafarers. However, there are also signs that the labour supplying countries are experiencing some difficulty in recruiting. There is clearly a need for governments and the industry to address this issue. It remains a risk at a micro and macro level.

¹⁵ BIMCO/ISF Manpower Update The World Demand for and Supply of Seafarers, Institute for Employment Research, University of Warwick, 2005.

¹⁶ United Kingdom Seafarers Analysis 2001, Centre for International Transport Management, London Guildhall University shows 1999/2000 intake at 480, 2000/2001 at 468.

Environmental risk

Shipping companies need to consider the impact of their operations on the environment and manage this risk accordingly. Apart from greenhouse gases which all industries are trying to curb, the maritime industry has had to deal with often catastrophic effects of accidents which result in oil spills. Such events have led to much adverse publicity which has imposed an indirect cost, but there are also many direct costs.

Three main factors affect the costs of a spill: the spill's location, the time of year it occurs, and the type of oil spilled. A remote location, for example, can increase the cost of a spill because of the additional expense involved in mounting a remote response. Similarly, a spill that occurs close to shore rather than further out at sea can become more expensive because it may involve the use of manual labour to remove oil from sensitive shoreline habitat. Time also has situation-specific effects, in that a spill that occurs at a particular time of year might involve a much greater cost than a spill occurring in the same place, but at a different time of year. A spill occurring during fishing or tourist season, for example, might carry additional economic damage. Equally, a spill occurring during a typically stormy season might prove more expensive because it is more difficult to clean up than one occurring during a season with generally calmer weather. The specific type of oil affects costs because some are more difficult to clean up and cause more damage incurred. Light oils naturally dissipate and evaporate quickly, but are highly toxic and create severe environmental impacts. Heavy oils, though less toxic, do not evaporate and therefore may require intensive structural and shoreline cleanup. They also harm waterfowl and fur-bearing mammals through coating and ingestion.

The European Perspective

Overview

Over the centuries, Europe's economic success has been built on its trade with the rest of the world, trade which has been facilitated by maritime transport. It has already been cited that 80% of the world merchandise trade by volume is carried by and of this trade, Europe loads 18% and unloads 27% of the total¹⁷.

¹⁷ UNCTAD Review of Maritime Transport 2008.

EU Merchant Fleet - Ships of 1000 grt and over Data as at January 1st, 2007

	Total fleet controlled		National flag		Foreign flag (including other EU)		Share of foreign flag in total fleet %		
	Number	mio dwt	Number	mio dwt	Number	mio dwt	Number	mio dwt	
EU27	10,550	368.486	3,389	113.294	7,161	255.192			EU27
EU15	9,761	355.850	3,105	108.724	6,656	247.126			EU15
EU12	789	12.636	284	4.570	505	8.066			EU12
BE	169	12.014	52	6.334	117	5.680	69.2%	47.3%	BE
BG	107	1.749	68	1.211	39	0.538	36.4%	30.8%	BG
CZ	1	0.004			1	0.004	100.0%	100.0%	CZ
DK	684	21.251	255	9.674	429	11.577	62.7%	54.5%	DK
DE	2,942	85.330	376	12.845	2,566	72.485	87.2%	84.9%	DE
EE	93	0.315	30	0.095	63	0.220	67.7%	69.8%	EE
IE	37	0.179	18	0.108	19	0.071	51.4%	39.7%	IE
EL	3,041	170.260	700	49.172	2,341	121.088	77.0%	71.1%	EL
ES	234	4.443	124	0.859	110	3.584	47.0%	80.7%	ES
FR	208	5.724	97	2.651	111	3.073	53.4%	53.7%	FR
IT	677	15.364	524	11.571	153	3.793	22.6%	24.7%	IT
CY	186	5.028	91	2.407	95	2.621	51.1%	52.1%	CY
LV	132	1.629	18	0.319	114	1.310	86.4%	80.4%	LV
LT	57	0.390	41	0.307	16	0.083	28.1%	21.3%	LT
MT	17	0.057	13	0.037	4	0.020	23.5%	35.1%	MT
NL	620	7.631	429	3.777	191	3.854	30.8%	50.5%	NL
AT	8	0.048	6	0.038	2	0.010	25.0%	20.8%	AT
PL	108	1.903	10	0.044	98	1.859	90.7%	97.7%	PL
PT	39	0.734	24	0.107	15	0.627	38.5%	85.4%	PT
RO	60	0.855	13	0.150	47	0.705	78.3%	82.5%	RO
SI	28	0.706			28	0.706	100.0%	100.0%	SI
FI	123	1.655	77	0.599	46	1.056	37.4%	63.8%	FI
SE	327	6.244	154	1.852	173	4.392	52.9%	70.3%	SE
UK	652	24.973	269	9.137	383	15.836	58.7%	63.4%	UK
HR	104	2.579	68	1.496	36	1.083	34.6%	42.0%	HR
TR	870	11.114	446	6.464	424	4.650	48.7%	41.8%	TR
IS	44	0.354	1	0.000	43	0.354	97.7%	100.0%	IS
NO	1,424	47.970	502	13.943	922	34.027	64.7%	70.9%	NO
CH	362	12.333	29	0.810	333	11.523	92.0%	93.4%	CH

Source: ISL merchant fleet data bases; aggregates based on quarterly updates from the Lloyd's Maritime Information System

Notes:

DK: including international registers like the Danish International Ship Register; including vessels registered at territorial dependencies.

Russia: 1523 ships, 16.907 mio dwt; **Monaco:** 70 ships, 2.721 mio dwt; **Ukraine:** 358 ships, 2.359 mio dwt; **Gibraltar:** 10 ships, 0.286 mio dwt

Table 7 Control of the World Fleet by EU 27 countries

Some 90% of the EU external freight trade in tonnes is seaborne¹⁸, and short sea shipping represents 40% of intra-EU exchanges in terms of ton-kilometers. In 2007, The 27 states of the EU controlled 368,486 million dwt which represents around 35% of the world fleet.

Table 7 shows that Greece controls 46% of the European fleet followed by Germany with

¹⁸ the transport statistics researcher state that it is more likely 70-75%.

23% and Norway with 13%. However, the vast majority of these vessels are registered under a foreign flag and therefore under a different jurisdictions which determine the way in which they are regulated.

On the ports side, the top 40 European ports handle over 1.5 billion tonnes of cargo. The Northern European ports of Rotterdam, Antwerp and Hamburg account for almost 15% of this total with Rotterdam exhibiting throughput of more than double its nearest rival (see Table 8) These 3 ports are also the largest for container traffic.

Port	Million tonnes	Port	Million tonnes
Rotterdam	374.152	Trieste	37.777
Antwerpen	165.512	Bilbao	37.313
Hamburg	118.19	Forth	36.681
Marseille	92.559	Tallinn	35.865
Le Havre	78.856	Tarragona	35.802
Grimsby & Immingham	66.279	Milford Haven	35.496
Amsterdam	62.516	Zeebrugge	34.843
Algeciras	62.128	Nantes Saint-Nazaire	33.409
London	52.739	Liverpool	32.258
Dunkerque	50.244	Ventspils	30.473
Tees & Hartlepool	49.779	Venezia	28.898
Valencia	45.935	Augusta	28.379
Taranto	45.023	Gioia Tauro	26.849
Constantza	44.916	Sines	25.97
Southampton	43.815	Felixstowe	25.685
Bremerhaven	43.618	Riga	25.216
Wilhelmshaven	42.643	Ravenna	25.17
Barcelona	41.04	Dover	25.144
Goteborg	40.353	Ghent	24.988
Genova	40.228	Porto Foxi	24.678
		Total	1560.525

Table 8: Freight traffic (goods loaded and unloaded) through the major European ports 2007 Source Eurostat

European Policy for Maritime Markets

The European Commission plays an important role in the operation of the maritime markets. More specifically it focuses its strategy on two main areas.

- The ability of the maritime transport sector to provide cost-efficient maritime transport services adapted to the needs of sustainable economic growth of the EU and world economies and
- The long-term competitiveness of the EU shipping sector, enhancing its capacity to generate value and employment in the EU, both directly and indirectly, through the whole cluster of maritime industries.

Commission policy has been developed to encourage competition, but also to address market externalities such as safety, and the environment. The ‘free provision of services’ (regulation 4055/86) in the maritime transport sector ensures that users of those services, i.e. logistic operators, sea passengers and, ultimately, the final consumer, have a better choice of services and that those services are offered at good prices. In addition the Commission works actively in support of quality shipping world wide and in ensuring safety, security, environmental protection and acceptable working conditions of seafarers.

Ports

The Commission is keen to ensure the sustainable development of all ports in Europe and cooperates closely with all stakeholders. Much of the recent discussion at European level has been concerned with port competition which has been increasing. The Commission does focus on factors which distort the market and recognizes that a Community framework is needed to ensure the principle of free and fair competition.

Seafarers

Seafarers are seen as key not only to maritime safety and marine environment but also in supporting the growth of the maritime sector as a whole. The European maritime industry like many other parts of the developed world suffers from an increasing lack of seafarers, particularly officers. All the predictions are that this shortage will increase as international trade and the fleet grows. There is no obvious solution to this problem but it is important that steps are taken to encourage potential members of the seafaring profession and ensure

that living and working conditions on European flagged vessels are consistent with that aspiration.

Short Sea Shipping

The European Commission has an active policy to promote Short Sea Shipping because of its environmental performance, energy efficiency, and potential to solve road congestion problems. The “motorways of the sea” concept aims at introducing new intermodal maritime-based logistics chains in Europe. Such chains will be more sustainable, and should be commercially more efficient, than road-only transport. Motorways of the sea will thus improve access to markets throughout Europe, and relieve congestion. In order for this to work efficiently, the short sea mode has to be well integrated into the transport chain.

The European intermodal transport market

Competition between transport modes is subject to EU regulation aimed at shifting the current unsustainable balance and meeting the future growth in demand for transport services.

Intermodal freight transport (or combined transport) means movement of goods in an intermodal transport unit (ITU), using two or more modes. Increasingly congested motorways, rising oil prices and concerns about the environment and climate change, demand the optimised use of transport resources. An important European Union policy is to decrease the share of freight transport moving by road in favour of alternative land transport modes (rail and waterway).

In order to analyse the EU intermodal market it is important to look at the deep see market as it provides an important context for intra-EU shipping markets.

Table 9 shows the percentages of EU 27 external trade by mode. By value, 45% of exports and 51% of imports are moved by sea and, and, by volume, the percentages reach 73% and 71% respectively. The significance of sea as a mode for external trade is not surprising. However, the greater challenge is in the promotion of water freight transport for domestic and intra EU delivery.

EU-27 External Trade by Mode of Transport 2007

	Value (billion €)					
	Export		Partner: Extra EU-27		Export + Import	
			Import			
Sea	560.2	45.1%	736.9	51.4%	1,297.1	48.5%
Road	281.2	22.6%	181.8	12.7%	462.9	17.3%
Rail	21.6	1.7%	18.4	1.3%	40.0	1.5%
Inland waterway	4.9	0.4%	4.0	0.3%	8.8	0.3%
Pipeline	3.5	0.3%	87.4	6.1%	90.9	3.4%
Air	321.1	25.9%	262.9	18.3%	584.0	21.8%
Other/unknown*	49.1	4.0%	142.5	9.9%	191.5	7.2%
Total	1,241.4	100.0%	1,433.8	100.0%	2,675.2	100.0%

	Weight (million tonnes)					
	Export		Partner: Extra EU-27		Export + Import	
			Import			
Sea	373.0	72.8%	1,275.1	70.8%	1,648.1	71.3%
Road	83.8	16.4%	60.1	3.3%	143.9	6.2%
Rail	23.7	4.6%	78.1	4.3%	101.8	4.4%
Inland waterway	8.8	1.7%	17.0	0.9%	25.8	1.1%
Pipeline	3.8	0.7%	269.2	15.0%	273.0	11.8%
Air	11.5	2.2%	4.1	0.2%	15.7	0.7%
Other/unknown*	7.6	1.5%	96.8	5.4%	104.4	4.5%
Total	512.3	100.0%	1,800.4	100.0%	2,312.7	100.0%

Source : Eurostat

Note: *: Self propulsion + post + mode of transport unknown

Data for intra-EU trade are no longer available by mode of transport used.

Table 9: Intermodal Transport in EU 27

The Modal split for intra EU 27 and domestic trade from 1995 to 2007 is shown in Table 10. As can be seen the trend has been towards road which has consistently represented 42% of the total over the period. Rail has fallen as a percentage of goods moved whilst sea has remained at around 37%. Clearly there is work to be done in achieving a shift away from road towards more sustainable modes such as rail and water.

Modal split (%)

	Road	Rail	Inland Water-ways	Pipe-lines	Sea	Air
1995	42.1	12.6	4.0	3.8	37.5	0.1
1996	42.0	12.7	3.9	3.9	37.5	0.1
1997	42.0	12.7	4.0	3.7	37.5	0.1
1998	42.7	11.9	4.0	3.8	37.6	0.1
1999	43.3	11.3	3.8	3.7	37.9	0.1
2000	43.0	11.4	3.8	3.6	38.1	0.1
2001	43.1	10.7	3.7	3.7	38.8	0.1
2002	43.8	10.5	3.6	3.5	38.6	0.1
2003	43.7	10.5	3.3	3.5	38.8	0.1
2004	44.6	10.6	3.5	3.4	37.9	0.1
2005	44.9	10.3	3.5	3.4	37.9	0.1
2006	45.0	10.7	3.4	3.3	37.6	0.1
2007	45.6	10.7	3.3	3.0	37.3	0.1

Notes:

Air and Sea: only domestic and intra-EU-27 transport; provisional estimates

Road: national and international haulage by vehicles registered in the EU-27

Table 10: Intra EU Trade by mode (based on tonne kilometres)

A study conducted by NEA together with other European companies investigated the potential of intermodal transport within Europe. It scored the current transport flows via road if it shifted to intermodal transport. Specifically compared were such factors as the availability of intermodal services, frequency, turnaround time, and cost.

According to this survey, the biggest potential for intermodal transport within Europe lies in rail transport with as much as 155 million tonnes to be transported additionally. Another 118 million tonnes may be shifted from road to short sea shipping (see Figure 6).

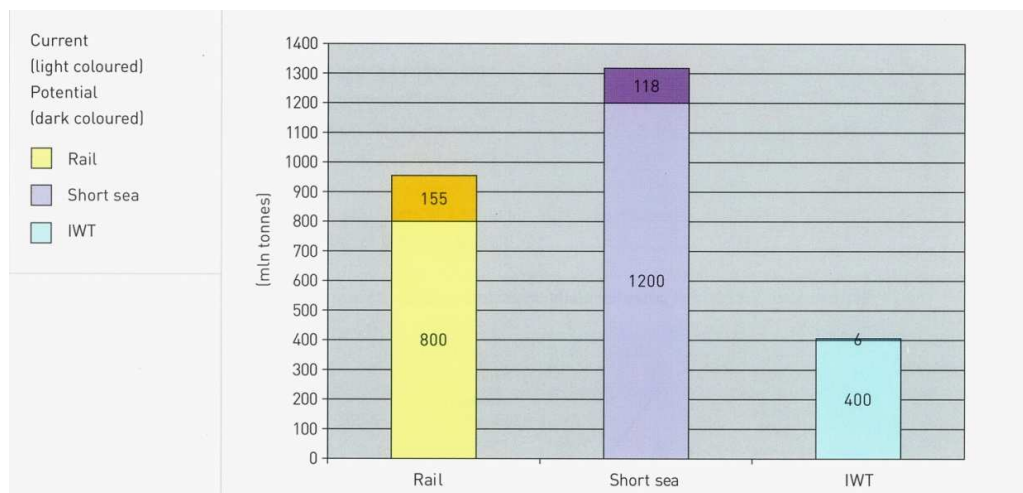


Figure 6: Potential of “modal shift” with respect to current market position. Source NEA, 2006

Conclusions and outlook

This study has focused on the maritime markets. Demand for shipping and port services is derived from the demand for the products being shipped and it is therefore important to examine international trade and patterns in order to assess those demand levels. In this respect the emerging markets of China and India have made a significant impact on demand side of the industry. Supply in terms of the world fleet has responded to growth in trade over a long period with record orders for new vessels. In addition, ports have expanded rapidly to accommodate higher trading volumes, particularly in the container sector. However, the collapse in demand as a result of the global financial crisis has led to a dramatic change in fortunes. Freight rates have collapsed in all sectors and are unlikely to begin their upward cycle until the supply and demand gap is closed. Port volumes are down and the sector is struggling to maintain levels of investment.

The shipping markets are highly complex, influenced by many economic and political factors, which create uncertainty and volatility. Against this background, maritime markets are becoming increasingly competitive as we strive to find cheaper transport solutions with improved environmental performance.

Looking ahead, two main issues will play an important role in the maritime markets, namely trade and the environmental agenda. As far as trade is concerned, there is still enormous potential for growth in countries such as Vietnam, Malaysia, Philippines, the Indian sub-continent, countries of Central Asia, Russia and the East European states, Africa; and of course South America. Despite the current massive overcapacity and faltering demand, the international efforts to stimulate growth and the continued effect of China / India etc (balanced by the ongoing cancellations and slowing newbuild deliveries down) are likely to help avoid structural overcapacity and a prolonged depression in the shipping market. At the same time the industry faces a huge environmental challenge as it tries to tackle the longer term problem of emissions. Regulation is very much on the agenda providing both a threat in terms of additional operational costs and an opportunity through greater technical innovation.