UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

# REVIEW OF MARITIME TRANSPORT 2011

***Report by the UNCTAD secretariat***

## *Chapter 3*

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# 3

# PRICE OF VESSELS AND FREIGHT RATES

CHAPTER 3

*This chapter covers the determinants of transport costs, the price of vessels and freight rates in the tanker market, the dry bulk cargo market and the liner shipping market. It concludes with an analysis of freight rates by region and fleet performance over the past few decades.*

*The price of newbuildings was lower for all vessels types in 2010, reflecting market views that the capacity of the world fleet is sufficient to meet world trade in the short-term. In the second-hand market, the results were mixed. The larger oil tankers held their value, while smaller tankers and specialized product tankers declined in value. In the dry bulk sector, the price of medium-sized Panamax vessels decreased, while the price of smaller and larger vessels increased. The price for all sizes of second-hand container ships also rose in value during 2010 as trade volumes recovered.*

*Freight rates in the tanker sector performed better than the previous year, rising between 30 and 50 per cent by the end of 2010. Every month for all vessel types was better than the corresponding month for the previous year. However, tanker freight rates in general still remained depressed, compared with the years immediately preceding the 2008 peak. Freight rates in the dry bulk sector performed well for the first half of the year, but the Baltic Exchange Dry Index (BDI) lost more than half its value from the end of May 2010 to mid-July 2010. A partial rally occurred in August 2010 before the Index continued its downward trajectory. Between May 2010 and May 2011, the BDI declined by about two thirds. Container freight rates in 2010 witnessed a major transformation brought about by a boost in exports and measures introduced by shipowners to limit vessel oversupply. The result can be seen in the New ConTex Index, which tripled in value from early 2010 to mid-2011.*

# A. OVERVIEW OF THE DETERMINANTS OF MARITIME TRANPORT COSTS AND THEIR IMPACT ON TRADE

Transport costs are key determinants of a country's trade competitiveness. Excessive shipping costs are considered a major barrier to trade, often surpassing the cost of customs duties. Several studies conclude that transport costs influence the volume, structure and patterns of trade, as well as the comparative advantage of a country.[1] A doubling of a country's transport costs can slow annual gross domestic product growth by slightly more than one half of one percentage point and lead to lower levels of foreign investment, less access to technology and knowledge, and reduced employment opportunities. Transport costs also influence modal choices, the commodity composition of trade and the organization of production.

Against this background, understanding the determinants of freight rates and transport costs and how such costs influence trade flows, volume, patterns and structure is crucial and can assist policymakers in decision-making. Relevant determinants of freight rates and transport costs include, inter alia, distance, competition in shipping and port services, economies of scale, trade imbalance, capital costs of infrastructure, and type and value of goods. This chapter provides a general overview of how vessel prices and maritime freight rates evolved in 2010 and early 2011.

# B. THE PRICE OF VESSELS

The price of vessels is determined by construction costs and by market pressures derived from the demand for transport services and the supply of vessels, issues that are also discussed in detail in chapters 1 and 2.[2] Demand for newbuildings is a reflection of how shipowners perceive long-term demand, whereas demand for second-hand vessels may reflect short-term expectations.

Table 3.1 provides the newbuilding prices of all types of vessels that declined in 2010. Shipowners stopped placing new orders, cancelled existing orders and delayed taking delivery of vessels nearing construction; this is commonly referred to as "slippage". Shipyards reacted by lowering their prices to attract new orders, while ensuring that they had enough revenue to cover their operational expenditures. The largest percentage decline in vessel prices was for container vessels of 500 20-foot equivalent units (TEUs). In 2009, the price to build a new 500-TEU container ship cost on average $28,000 per TEU, whereas a 12,000-TEU vessel cost $9,500 per TEU: a 500-TEU vessel was almost 3 times more expensive per TEU than a 12,000-TEU

**Table 3.1. Representative newbuilding prices, 2003–2010** ***(millions of dollars, average prices)***

| Type and size of vessel | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Percentage change 2010/2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Oil tanker – Handy, 50 000 dwt** | 28 | 35 | 42 | 47 | 50 | 52 | 40 | 36 | -10.0 |
| **Oil tanker – Suezmax, 160 000 dwt** | 47 | 60 | 73 | 76 | 85 | 94 | 70 | 66 | -5.7 |
| **Oil tanker – VLCC, 300 000 dwt** | 67 | 91 | 119 | 125 | 136 | 153 | 116 | 103 | -11.2 |
| **Chemical tanker – 12 000 dwt** | 12 | 16 | 18 | 21 | 33 | 34 | 33 | 28 | -15.2 |
| **LPG carrier – 15 000 m³** | 28 | 36 | 45 | 49 | 51 | 52 | 46 | 41 | -10.9 |
| **LNG carrier – 160 000 m³** | 153 | 173 | 205 | 217 | 237 | 222 | 226 | 208 | -8.0 |
| | | | | | | | | | |
| **Dry bulk – Handysize, 30 000 dwt** | 16 | 19 | 21 | 22 | 33 | 38 | 29 | 25 | -13.8 |
| **Dry bulk – Panamax, 75 000 dwt** | 23 | 32 | 35 | 36 | 47 | 54 | 39 | 35 | -10.3 |
| **Dry bulk – Capesize, 170 000 dwt** | 38 | 55 | 62 | 62 | 84 | 97 | 69 | 58 | -15.9 |
| | | | | | | | | | |
| **Container – geared, 500 TEUs** | 13 | 18 | 18 | 16 | 16 | 21 | 14 | 10 | -28.6 |
| **Container – gearless, 6 500 TEUs** | 67 | 86 | 101 | 98 | 97 | 108 | 87 | 75 | -13.8 |
| **Container – gearless, 12 000 TEUs** | n.a. | n.a. | n.a. | n.a. | 154 | 164 | 114 | 107 | -6.1 |

*Source*: Compiled by the UNCTAD secretariat on the basis of data derived from *Drewry Shipping Insight.*

vessel. In 2010, the 500 TEU vessel price decreased significantly more (a 28.6 per cent decrease) than the price of a 12,000 TEU vessel which registered a 6.1 per cent decrease.

Table 3.2 reveals a mixed result of the prices of second-hand vessels, with some segments performing better than others. Chemical tankers experienced the greatest fall in price, at 35 per cent. Conversely, small container ships of 500 TEUs increased in price by 50 per cent. The 500-TEU container ships, which are proving unpopular as newbuildings, were in demand as second-hand tonnage.

## C. FREIGHT RATES

The price that a carrier, that is, a shipowner or charterer, charges for transporting cargo is known as the freight rate. The freight rate depends on many factors, including the cost of operating the vessel (for example, crew wages, fuel, maintenance and insurance); the capital costs of buying the vessel, such as deposit, interest and depreciation; and the cost of the shore-side operation, which covers office personnel, rent and marketing.[3] Freight rates are not all-inclusive but a subject to numerous additions, for example, the bunker adjustment factor, the currency adjustment factor, terminal handling charges, war risk premiums, piracy surcharges,[4] container seal fees,[5] electronic release of cargo fees,[6] late fees or equipment shortage fees.[7] [8] Maersk Line, the largest liner shipping company, lists on its website 107 possible fees and surcharges.[9] Surcharges may also vary considerably among transport providers and do not necessarily reflect the cost of the service being rendered. For instance, currency adjustment factor rates applied by different carriers varied in June 2011 by as much as 6 percentage points, from 10.3 per cent to 16.7 per cent of the freight.[10]

In general, freight rates are affected by the demand for the goods being carried and the supply of available vessels to carry the goods. In addition to the fluctuations in supply and demand, the bargaining power of the service user (the shipper), the number of competitors and the availability of alternative transport modes also affect price.

Most manufactured goods are shipped in containers by container vessels. The rapid growth in containerization over the last 20 years is the result of a combination of factors that includes dedicated purpose-built container vessels, larger vessels capable of achieving increased economies of scale, improved handling facilities in ports, and the increasing amount of components parts being carried in containers. When there is little demand for containerized goods, these container ships cannot carry other cargo (e.g. general cargo, dry bulk cargoes or liquids in an uncontainerized form) because of the specialist nature of the vessel. Lower demand and lack of alternative cargo have led some

**Table 3.2. Second-hand prices for five-year-old ships, 2003–2010** ***(millions of dollars, end-of-year figures)***

| Type and size of vessel | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | Percentage change 2010/2009 |
|---|---|---|---|---|---|---|---|---|---|
| **Oil tanker – Handy, 45 000 dwt, 5 years old** | 25 | 35 | 44 | 47 | 40 | 51 | 30 | 26 | -13.3 |
| **Oil tanker – Suezmax, 150 000 dwt, 5 years old** | 43 | 60 | 72 | 76 | 87 | 95 | 59 | 62 | 5.1 |
| **Oil tanker – VLCC, 300 000 dwt, 5 years old** | 60 | 91 | 113 | 116 | 124 | 145 | 84 | 86 | 2.4 |
| **Chemical tanker – 12 000 dwt, 10 years old** | 9 | 11 | 12 | 14 | 23 | 23 | 20 | 13 | -35.0 |
| **LPG carrier – 15 000 $m^3$, 10 years old** | 21 | 23 | 30 | 39 | 40 | 39 | 30 | 25 | -16.7 |
| | | | | | | | | | |
| **Dry bulk – Handysize, 28 000 dwt, 10 years old** | 10 | 15 | 20 | 20 | 28 | 31 | 17 | 20 | 17.6 |
| **Dry bulk – Panamax, 75 000 dwt, 5 years old** | 20 | 35 | 40 | 39 | 83 | 70 | 31 | 25 | -19.4 |
| **Dry bulk – Capesize, 150 000 dwt, 5 years old** | .. | .. | .. | .. | .. | .. | 47 | 54 | 14.9 |
| **Dry bulk – Capesize, 150 000 dwt, 10 years old** | 23 | 41 | 32 | 44 | 75 | 82 | 32 | .. | n/a |
| | | | | | | | | | |
| **Container – geared, 500 TEUs, 10 years old** | 5 | 7 | 11 | 10 | 9 | 13 | 4 | 6 | 50.0 |
| **Container – geared, 2 500 TEUs, 10 years old** | 20 | 29 | 39 | 41 | 24 | 36 | 18 | 23 | 27.8 |
| **Container – gearless, 12 000 TEUs** | 25 | 34 | 43 | 44 | 43 | 45 | 24 | 28 | 16.7 |

*Source*: Compiled by the UNCTAD secretariat on the basis of data from *Dewry Shipping Insight.*

liner operators to adopt measures to absorb capacity by reducing vessel speed and taking longer routes or laying up vessels. In 2010, these measures led to relatively stable liner freight rates, compared with other sectors. In the tanker market, ship operators decided to use very large crude carriers (VLCCs) and ultra-large crude carrier (ULCCs) as floating storage facilities. The advantage of laying up tanker vessels is that the cargo can be quickly put into storage by anchoring the vessel at a suitable place. However, as soon as the price of oil rises, the cargo owner sells the cargo, believes the price is near its maximum and the vessel is then returned to the spot market. The ship is unlikely to be used again as floating storage unless an opportunity arises to purchase oil cheaply and the buyer has faith in higher prices. Other markets, such as the liquefied natural gas (LNG) market, have no alternative other than laying up vessels when cargo demand falls.

Freight rates can be obtained through an agent or shipbroker. The shipbroker, whose role is to bring together cargo and vessel owners, may calculate, publish and maintain indices on historical data. The following section covers developments in approximately three quarters of the estimated 90 per cent of world cargo transported by sea.

## 1. The tanker market

The tanker market is mainly concerned with the transportation of crude oil and petroleum products, which, taken together, represent approximately one third of world seaborne trade by volume. Tanker freight rates and the demand for world trade are inherently linked. Petroleum is a raw ingredient in some 70,000 manufactured products such as medicines, synthetic fabrics, fertilizers, paints and varnishes, acrylics, plastics and cosmetics, and falling demand or shortages in supply of these goods can cause tanker freight rates to fluctuate wildly and abruptly.[11] Tanker cargoes, that is, chemical products or crude oil, are often stored to help absorb sudden variations in price caused by stock depletion or renewal.

### *All tanker sectors*

Freight rates for all tanker vessel sizes in 2010 performed better than the previous year, rising from 30 per cent to 50 per cent by the end of the year. This is not surprising, given that 2009 was a particularly bad year for tanker freight rates. However, freight rates in general still remained depressed, compared with the years immediately preceding the peak of 2008 (see table 3.3 and figure 3.1). The best performing months of 2010 for freight rates were the first and last two months of the year, reflecting seasonal demands in the main energy consumption markets. In the first quarter of 2011, freight rates for all vessel types decreased by around 16 per cent, compared with the same period in 2010, although they remained around 23 per cent higher than the first quarter of 2009. During the course of 2010, 743 new tankers of various types were delivered, the largest numbers being chemical or product tankers (300), product tankers (167) and crude oil tankers (121). In 2011, the order book for new tankers to be delivered over the next three years stands at 611 vessels, totalling 105 million dwt and representing about 27.5 per cent of the existing fleet. Taking this high growth in potential supply into consideration, the outlook for 2011 does not augur well.

Table 3.4 illustrates average freight rates measured in Worldscale (WS), a unified measure for establishing spot rates on specific major tanker routes for various sizes of vessels. The table focuses on traditional benchmark routes, and is not intended to be exhaustive; for example, it does not cover the growing trade between many African countries and China. Trade between West Africa and China is expected to divert to the closer European market in 2011 because of disruptions to supply brought about by events in the Mediterranean, most notably in Libya. Another consequence of this is to push up freight rates on other routes servicing China, for example, from the Persian Gulf. The main loading areas indicated in the table are the Persian Gulf, West Africa, the Mediterranean, the Caribbean and Singapore, while the main unloading areas are East Asia, Southern Africa, North-West Europe, the Mediterranean, the Caribbean, and the East Coast of North America. The following sections describe developments by tanker types, in greater detail.

### *Very large and ultra-large crude carriers*

Some of the world's largest ships are VLCCs and ULCCs, which offer the best economies of scale for the transportation of oil where pipelines are non-existent. VLCCs deliver vast quantities of crude oil that power manufacturing plants in many countries. VLCCs and ULCCs accounted for approximately 44 per cent of the world tanker fleet in dwt terms in 2010. Much of the world's oil exports that originate from the Persian

**Table 3.3. Tanker freight indices, 2009–2011 *(monthly figures)***

| | Lloyd's Shipping Economist | | | | | Exchange Baltic Tanker | |
|---|---|---|---|---|---|---|---|
| **2009** | **>200** | **120–200** | **70–120** | **25–70** | **Clean** | **Dirty Index** | **Clean Index** |
| **October** | 41 | 62 | 76 | 96 | 89 | 557 | 515 |
| **November** | 47 | 78 | 81 | 100 | 94 | 588 | 439 |
| **December** | 53 | 77 | 111 | 121 | 124 | 671 | 528 |
| **Average** | **47** | **72** | **89** | **106** | **102** | **605** | **494** |
| **2010** | | | | | | | |
| **January** | 82 | 120 | 133 | 185 | 189 | 1 024 | 817 |
| **February** | 75 | 94 | 117 | 187 | 175 | 1 047 | 884 |
| **March** | 77 | 100 | 128 | 159 | 159 | 889 | 761 |
| **April** | 83 | 105 | 122 | 168 | 151 | 949 | 703 |
| **May** | 74 | 118 | 150 | 169 | 144 | 995 | 730 |
| **June** | 84 | 105 | 115 | 150 | 138 | 938 | 669 |
| **July** | 58 | 79 | 110 | 151 | 165 | 844 | 798 |
| **August** | 49 | 79 | 101 | 152 | 152 | 789 | 792 |
| **September** | 47 | 69 | 85 | 131 | 137 | 708 | 677 |
| **October** | 44 | 78 | 101 | 140 | 132 | 684 | 622 |
| **November** | 64 | 89 | 93 | 146 | 138 | 763 | 623 |
| **December** | 57 | 109 | 138 | 187 | 170 | 896 | 756 |
| **Average** | **66** | **95** | **116** | **160** | **154** | **877** | **736** |
| **2011** | | | | | | | |
| **January** | 52 | 67 | 88 | 154 | 134 | 842 | 635 |
| **February** | 59 | 76 | 99 | 123 | 136 | 660 | 642 |
| **March** | 63 | 106 | 135 | 188 | 175 | 965 | 749 |
| **April** | 48 | 89 | 109 | 178 | 170 | 927 | 836 |
| **May** | 49 | 84 | 102 | 150 | 177 | 822 | 882 |
| **June** | 52 | 70 | 98 | 141 | 148 | 750 | 706 |

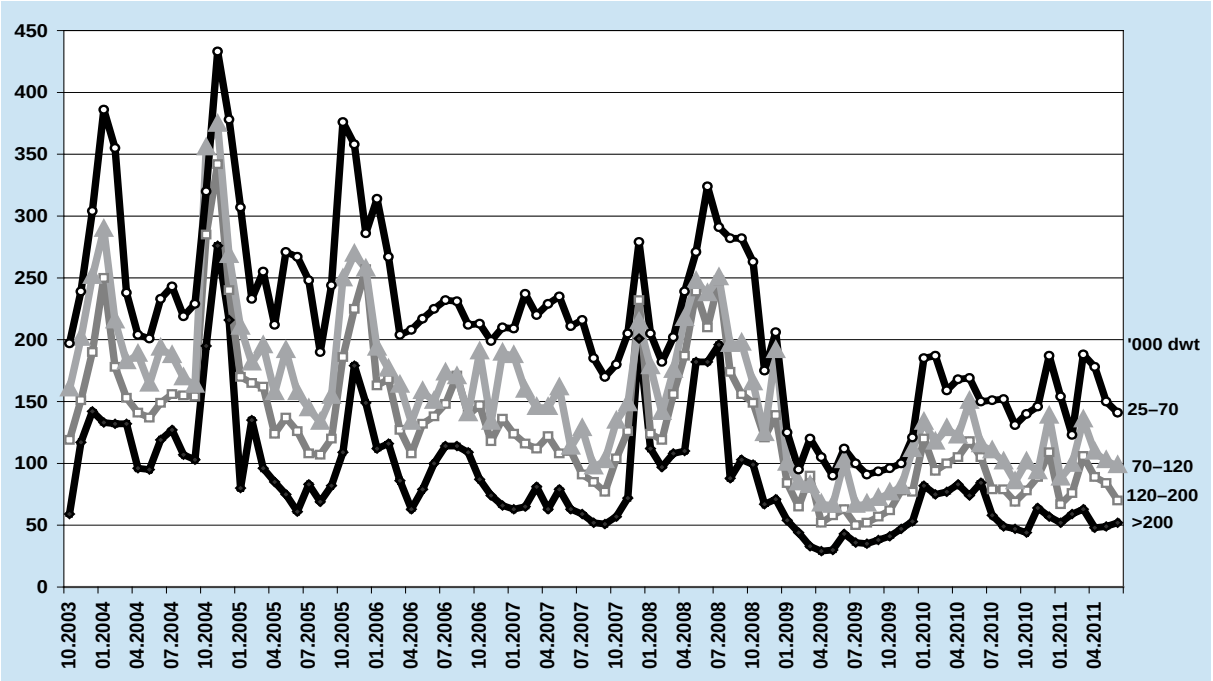
*Source*: UNCTAD secretariat, based on information in *Lloyd's Shipping Economist* (a trade journal that specializes in maritime-related market data and reports), several issues; and in the Baltic Tanker, an index produced by the London Baltic Exchange, in which indices are reported for the first working day of the month.

*Note*: The numbers in the second row, columns 2–5, refer to vessel size expressed in thousands of dwt.

Gulf are destined for the world's largest economies, the United States of America, China, Germany and Japan. Needless to say, freight rates on these sea routes are important indicators for global supply and demand.

The beginning of 2010 marked a yearly high for VLCC freight rates. While they were consistently higher in 2010 when comparing month-on-month figures with 2009, they declined over the course of 2010, diminishing shipowners' hopes of a sustained recovery in freight rates. From December 2009 to December 2010, freight rates from the Persian Gulf to Japan increased by almost 9 per cent to WS 61. However, this figure masks a turbulent ride in freight rates. In December 2009, the freight rates were at WS 56 points and almost doubled in January 2010 to WS 104 points as a result of increased market sentiment and a high seasonal demand. In June 2010, rates on the same route stood at WS 95 points, but plummeted to 58 points the following month. Thereafter, freight rates continued to go down to a yearly low of WS 47 points in October 2010, before recovering at the end of the year. The falls were largely due to increases in supply of vessels brought about by new deliveries and less vessels ceasing to be used as offshore storage. The decrease in offshore storage occurred as traders seized the opportunity of a rise in oil prices to sell stock held in floating storage. Once they were sold,

**Figure 3.1. Tanker freight market summary: various vessel sizes, 2003–2011**




*Source*: UNCTAD secretariat, based on information from *Lloyd's Shipping Economist*, several issues.

*Notes*: (X = monthly figures; Y = indices)

The Baltic Exchange Tanker indices are reported for the first working day of the month. Ship sizes are expressed in deadweight capacity (in thousands of dwt).

the empty vessels were then returned to the spot market to seek new cargo, thus driving down tanker freight rates. The Persian Gulf–Europe route monthly WS rate increased by 67 per cent from December 2009 to December 2010, whereas that of the Persian Gulf–East Coast United States increased by just 3 per cent.

Average freight rates for VLCCs in 2010 were approximately $36,083 per day, down slightly from $38,533 per day in 2009 and significantly so from $74,663 per day during the highs of 2008. Preliminary figures for 2011 show that freight rates continued to decline to approximately $29,500 per day. Correspondingly, the price of a five-year-old VLCC in January 2011 declined to around $79 million, compared with average annual prices of $85.5 million in 2010 and $144.7 million in 2008. In addition to declining freight rates, rising fuel prices also put pressure on shipowners' profits. The average monthly price of 380 centistoke fuel oil in Fujairah increased from $444 per ton in September 2010 to $623 per ton in February 2011.[12] At this point, freight rates for VLCCs decreased to around $11,000 per day, forcing many owners to operate at a daily loss.

### *Suezmax tankers*

Suezmax ships were named because they were the maximum-sized tankers that could transit the Suez Canal; their capacity ranges between 125,000 and 200,000 dwt.[13] There is a significant demand for Suezmax vessels on other routes that do not include the Suez Canal, for example from West Africa to North-West Europe, and to the Caribbean/East Coast of North America, as well as across the Mediterranean. Some 14 sea routes account for around three quarters of total demand for Suezmax cargoes.[14]

Freight rates for Suezmax tankers in 2010 fared relatively well from January to May and then declined until September before recovering most of their losses by year's end. The average Suezmax time charter rate was around $35,800 per day from 1997 to 2008.[15] In 2010, the average time charter earnings for a Suezmax vessel fell to $25,967 per day, down from $27,825 per day in 2009, which had already fallen from $46,917 in 2008. The one-year charter rates for a five-year old Suezmax vessel climbed by 1.7 per cent over the course of 2010 to reach around $24,000 per day in January 2011, thus faring better than the larger

## Table 3.4. Tanker market summary: clean and dirty spot rates, 2009–2011 *(Worldscale)*

| Vessel type | Route | 2009 | 2010 | | | | | | | | | | | % change 2009/2010 | 2011 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | Jan | Feb | Mar | Apr | May | Jun |
| **VLCC/ULCC (200,000 dwt+)** | | | | | | | | | | | | | | | | | | | | | |
| | Persian Gulf–Japan | 56 | 104 | 71 | 84 | 90 | 72 | 95 | 58 | 51 | 48 | 47 | 75 | 61 | 8.9 | 48 | 74 | 63 | 50 | 51 | 54 |
| | Persian Gulf–Republic of Korea | 53 | 88 | 76 | 76 | 91 | 68 | 81 | 55 | 50 | 46 | 56 | 67 | 56 | 5.7 | 50 | 55 | 60 | 49 | 49 | 54 |
| | Persian Gulf–Europe | 34 | 70 | .. | 57 | 66 | 52 | 58 | 42 | 42 | 40 | 34 | 42 | 57 | 6.8 | 34 | 37 | .. | 38 | 38 | 43 |
| | Persian Gulf–Caribbean/East Coast of North America | 35 | 65 | 52 | 56 | 58 | 53 | 63 | 48 | 39 | 35 | 30 | 44 | 36 | 2.9 | 32 | 37 | 42 | 38 | 37 | 39 |
| | Persian Gulf–South Africa | .. | .. | .. | 89 | .. | 80 | .. | .. | .. | .. | .. | 66 | .. | | 52 | .. | | | | |
| **Suezmax (100,000–160,000 dwt)** | | | | | | | | | | | | | | | | | | | | | |
| | West Africa–North-West Europe | 77 | 127 | 100 | 104 | 114 | 125 | 110 | 85 | 78 | 64 | 80 | 95 | 118 | 53.2 | 63 | 75 | 107 | 83 | 84 | .. |
| | West Africa–Caribbean/East Coast of North America | 73 | 114 | 97 | 98 | 112 | 118 | 103 | 73 | 74 | 65 | 78 | 81 | 103 | 41.1 | 60 | 72 | 101 | 79 | 81 | 66 |
| | Mediterranean–Mediterranean | 83 | 127 | 103 | 115 | 110 | 129 | 102 | 96 | 84 | 72 | 97 | 101 | 113 | 36.1 | 71 | 82 | 130 | 86 | 80 | 74 |
| **Aframax (70,000–100,000 dwt)** | | | | | | | | | | | | | | | | | | | | | |
| | North-West Europe–North-West Europe | 115 | 137 | 113 | 126 | 116 | 141 | 100 | 108 | 107 | 90 | 103 | 94 | 162 | 40.9 | 88 | 97 | 122 | 95 | 99 | 94 |
| | North-West Europe–Caribbean/East Coast of North America | 100 | 135 | 117 | 110 | .. | 153 | 104 | 103 | 115 | .. | .. | 85 | 120 | 20.0 | 131 | 90 | 135 | 85 | 90 | 84 |
| | Caribbean–Caribbean/East Coast of North America | 112 | 173 | 146 | 127 | 123 | 167 | 131 | 137 | 115 | 99 | 98 | 127 | 146 | 30.4 | 125 | 98 | 125 | 123 | 104 | 98 |
| | Mediterranean–Mediterranean | 117 | 124 | 95 | 135 | 114 | 160 | 110 | 108 | 107 | 87 | 112 | 92 | 138 | 17.9 | 75 | 97 | 122 | 95 | 99 | 94 |
| | Mediterranean–North-West Europe | 108 | 121 | 92 | 119 | 110 | 151 | 102 | 103 | 105 | 84 | 108 | 94 | 133 | 23.1 | 69 | 103 | 135 | 85 | 90 | 84 |
| | Indonesia–East Asia | 95 | 136 | 118 | 116 | 99 | 127 | 114 | 111 | 98 | 92 | 91 | 102 | 111 | 16.8 | 88 | 87 | 110 | 115 | 99 | 98 |
| **Handy size (less than 50,000 dwt)** | | | | | | | | | | | | | | | | | | | | | |
| | Mediterranean–Mediterranean | 120 | .. | 164 | 130 | 158 | 173 | .. | 146 | 139 | 129 | 132 | 126 | 168 | 40.0 | 140 | 116 | 134 | 155 | 138 | 130 |
| | Mediterranean–Caribbean/East Coast of North America | 111 | 171 | 183 | 139 | 145 | 161 | 145 | 138 | 131 | 119 | 118 | 121 | 146 | 31.5 | 134 | 111 | 147 | 139 | 133 | 116 |
| | Caribbean–East Coast of North America/Gulf of Mexico" | 116 | 176 | 181 | 151 | 146 | 163 | 129 | 142 | 138 | 112 | 117 | 119 | 200 | 72.4 | 155 | 105 | 174 | 155 | 139 | 128 |
| **All clean tankers** | | | | | | | | | | | | | | | | | | | | | |
| **70,000–80,000 dwt** | Persian Gulf–Japan | 111 | 140 | 123 | 118 | 106 | 124 | 112 | 124 | 144 | 130 | 101 | 99 | 125 | 12.6 | 107 | 98 | 105 | 123 | 129 | 111 |
| **50,000–60,000 dwt** | Persian Gulf–Japan | 121 | 151 | 139 | 124 | 126 | 143 | 123 | 128 | 161 | 141 | 110 | 120 | 128 | 5.8 | 119 | 111 | 122 | 142 | 145 | 124 |
| **35,000–50,000 dwt** | Caribbean–East Coast of North America/Gulf of Mexico" | 99 | 149 | 139 | 159 | 137 | 119 | 127 | 169 | 135 | 129 | 135 | 133 | 158 | 59.6 | 133 | 120 | 190 | 191 | 171 | 152 |
| **25,000–35,000 dwt** | Singapore–East Asia | 158 | 145 | 155 | 144 | 143 | 215 | 240 | 161 | 155 | .. | 183 | 165 | 193 | 22.2 | 139 | 135 | 159 | 185 | .. | 177 |

*Source*: UNCTAD secretariat, based on *Dewry Shipping Insight*, various issues.

*Note*: Two dots (..) means that no rate was reported. The classification of ship size in this table reflects the source used, and may vary when compared to other parts of this publicaion.

VLCCs. Average Suezmax freight rates on the West Africa and Caribbean/East Coast of North America route plunged from $36,000 per day in the first half of 2010 to $19,000 per day in the second half. This came at a time when the region's biggest oil exporter, Nigeria, began regaining lost ground. Nigeria's oil output, which peaked at 2.47 million barrels per day (mbpd) in early 2006, declined to 1.68 mbpd in July 2009 before increasing to 2.15 mbpd in the third quarter of 2010.[16] In early 2011, output began to fall back towards the 2 mbpd threshold. Around two thirds of Nigeria's oil exports is bound for the United States, with the remainder destined for Europe.

Despite the fluctuating fortunes of the Suezmax market during 2010, the price of a five-year-old Suezmax vessel rose by around 5 per cent over the course of the year to reach $62 million. This modest increase during a period of uncertainty reflects a positive market mood for the Suezmax segment. During previous economic downturns, Suezmax vessels have been able to reap benefits at the expense of the larger VLCCs, as importers typically demand smaller cargo volumes. Presently, the oversupply of Suezmax vessels is hampering a recovery in freight rates. However, the political turmoil in Libya has led importers to seek alternative sources from further afield, leading to the absorption of more capacity and pushing freight rates higher.

### *Aframax tankers*

Aframax tankers offer a large carrying capacity with lower overheads than those of VLCCs or Suezmax vessels. The term is derived from the maximum-sized vessel (80,000–120,000 dwt) that is permitted under the average freight rate assessment procedure for adjusting long-term oil freight contract rates. They are often deployed for trading within and between the following regions: North-West Europe, the Caribbean, the East Coast of North America, the Mediterranean, Indonesia and East Asia.

In 2010, freight rates for all Aframax vessels generally fared well. From December 2009 to December 2010, all routes climbed between 16 and 40 per cent. The best performing region was Northern Europe. January 2010 was a particularly good month for all sectors and May represented a peak in all Aframax sectors. However, the following month witnessed significant falls as demand fell over mounting concerns about the Greek debt crisis and the dollar strengthened against the Euro. Pessimism over the United States recovery and the Chinese Government's efforts to curb rising housing costs also added to concerns about the global economy. This pushed crude oil prices to a temporary two-year low before resuming their uphill climb. From $41.9 million in 2009, the annual average price of a five-year-old Aframax vessel rose 6 per cent in 2010 to $44.5 million. This increase reflected the preference for mid-sized tankers in an uncertain market. The one-year charter rates for a five-year-old 80,000 dwt tanker climbed by around 2.4 per cent in 2010 to reach around $16,800 per day in January 2011.

### *Handysize tankers*

Handysize tankers are those of less than 50,000 dwt that have a draft of around 10 metres. These vessels are most suited for calling at destinations with depth and length constraints. Table 3.4 shows the freight rates for these types of ships deployed intra-Mediterranean and from the Mediterranean to the Caribbean and the East Coast of North America, plus trades from the Caribbean to the Gulf of Mexico and the East Coast of North America. Freight rates on all three routes increased between 31 and 72 per cent in 2010, after a particularly bad performance in 2009. Freight rates for Handymax vessels have remained depressed. The Caribbean–East Coast of North America–Gulf of Mexico route, the worst performing route for this segment in 2009, experienced a dramatic rise. A five-year-old 45,000 dwt Handysize vessel, which cost on average $30 million in 2009, declined by 13 per cent to $26 million in 2010.

### *All clean tankers*

Product tankers are specialized cargo-carrying vessels that carry various chemicals, such as naphtha, clean condensate, jet fuel, kerosene, gasoline, gas oil, diesel, cycle oil and fuel oil. Unlike crude oil tanker markets, which primarily transport cargo from its origin to the point of refinery, this sector handles the processed cargo that leaves the refinery destined for consumption. The chemical tanker fleet is divided into three specifications established by the Internationl Martime Organization (IMO). The smallest market, accounting for less than 3 per cent of vessels, is the IMO 1 specification, which trades in the most hazardous cargoes such as chlorosulphonic acid that is used in detergents, pharmaceuticals, pesticides, and dyes, and trichlorobenzene, more commonly known as TCB, a solvent used in herbicides and pesticides.[17] The largest sector, with some two thirds of the fleet, trades primarily in pure chemical cargoes such as styrene, xylene and easychems, and is known as IMO 2. Around one third of chemical tankers are

classified as IMO 3, or double-hull product tankers, trading only in chemicals and vegetable oils.

Freight rates on all four routes shown in table 3.4 increased between 6 per cent and 60 per cent in 2010, with the Caribbean–East Coast of North America/Gulf of Mexico route increasing the most. On the Persian Gulf–Japan route, freight rates oscillated between 100 and 150 WS throughout the year.

While 2009 was a low point for product tanker earnings, matters only slightly improved in 2010. May 2010 marked a bottom point for average time charter equivalent earnings on the Caribbean–East Coast of North America/Gulf of Mexico route at $7,300 per day. The one-year charter rates for a five-year old 30,000 dwt clean tanker climbed by around 21 per cent in 2010 to reach $12,800 per day in January 2011. The five-year-old 30,000 dwt clean tankers were the best performing type of tanker in 2010, reflecting a strong demand for small shipments of chemicals.

### *Liquefied natural gas tankers*

Natural gas has many uses, such as generating electricity in large power plants, providing cooking and heating for domestic homes, fuelling vehicles (particularly in Pakistan, Argentina, Brazil, the Islamic Republic of Iran and India) and producing ammonia (with China as the main producer) for fertilizers. Cooling natural gas to minus 162°C turns it into a liquid, thereby making it easier to transport by vessel. A typical LNG tanker can carry around 160,000 cubic metres (cbm) of natural gas on a single voyage. The largest LNG tankers (Q-Max) have a capacity of 266,000 cubic metres, but their size limits which ports they can operate between. Because gasification and re-gasification are expensive, only a few countries are involved in this market. With approximately one quarter of the world's market share of LNG exports, Qatar is the single largest of 19 LNG-exporting countries. In 2010, Peru became the latest country to join this small group of specialized exporters. The number of countries importing LNG stands at 23, with Asia being the largest importing region. However, a lack of pipeline infrastructure linking LNG plants to domestic users limits the demand for gas.[18] The single largest LNG importer is Japan. The tragic nuclear accident at the Fukushima Daiichi nuclear power plant caused by the March 2011 earthquake and tsunami is likely to increase the county's need to import more LNG. Some analysts estimate that an additional 2 million cbm could be needed in order to compensate for the cessation in electricity output from the affected nuclear power plants.[19] Previously, when the Kashiwazaki-Karima nuclear power plant shut down in 2007 because of another earthquake, LNG spot rates soared.[20]

The conversion of existing oil tankers into floating re-gasification vessels, at a fraction of the cost of building a dedicated gasification plant, is helping the number of LNG importers to grow. In 2010, Dubai commissioned its first floating re-gasification terminal at Jebel Ali. In Qatar, the RasGas Train-7, with a capacity of 7.8 million tons per year, became operational in February 2010. The BG Group announced that it was considering expanding its LNG facilities at Curtis Island in Queensland, Australia, to a maximum of five trains.

Because of the high investment requirement in building plants and vessels, LNG shipments tend to be negotiated on long-term contract of up to 20 years. For instance, in 2010 the BG Group signed a sales agreement with Tokyo Gas for the supply of 1.2 million tons of LNG a year for 20 years principally from its Queensland Curtis LNG facility, near Gladstone in Queensland, Australia. However, the number of LNG trades on the spot market or short-term contracts in 2010 increased to 727 from 491 in the previous year.[21] Freight rates for LNG vessels in 2010 remained low, with an average of around $35,000 per day, down from $50,000 per day in 2009. By the middle of 2011, the average one-year charter rates for LNG tankers increased to $100,000 per day. Prices for new LNG tankers fell by 8 per cent in 2010, bringing the price back to near 2005 levels. A limited supply of LNG vessels and an increase in demand is expected to keep freight rates firm for the short-term.

The Capital Link LNG/LPG Index, which tracks the market value of major United States-listed shipping companies (for example, Golar LNG, StealthGas Inc. and Teekay LNG) involved in the LNG/LPG sector increased by 50 per cent in 2010 from 2,088.39 points at the start of the year to 2,992.17 points in December. In April 2011, the index climbed further to 3,461.13 points, indicating a positive outlook for LNG among investors.

### *Summary of tanker freight rates*

In sum, the tanker freight rates rebounded from the effects of the global financial crisis, albeit in most cases only slightly. Tanker freight rates, excluding LNG, remain depressed in comparison with their long-term average. Additions to the tanker fleet continue to

have an effect on destabilizing prices, while demand remains uncertain. The immediate effects of the global economic crisis have been reflected in the falling price of newbuildings for all tanker vessel types. Because the tanker sector is providing the fuel to drive industrial centres, and is a key component of many manufactured goods, it is heavily dependent on the global economic outlook and the demand for those goods. While increasing vessel supply may hamper short-term growth, the future for this market segment looks more positive with the increased demand that will come from a growing global population enjoying a higher disposable income that will be used to consume more products and travel services.

## 2. The main dry bulk shipping market

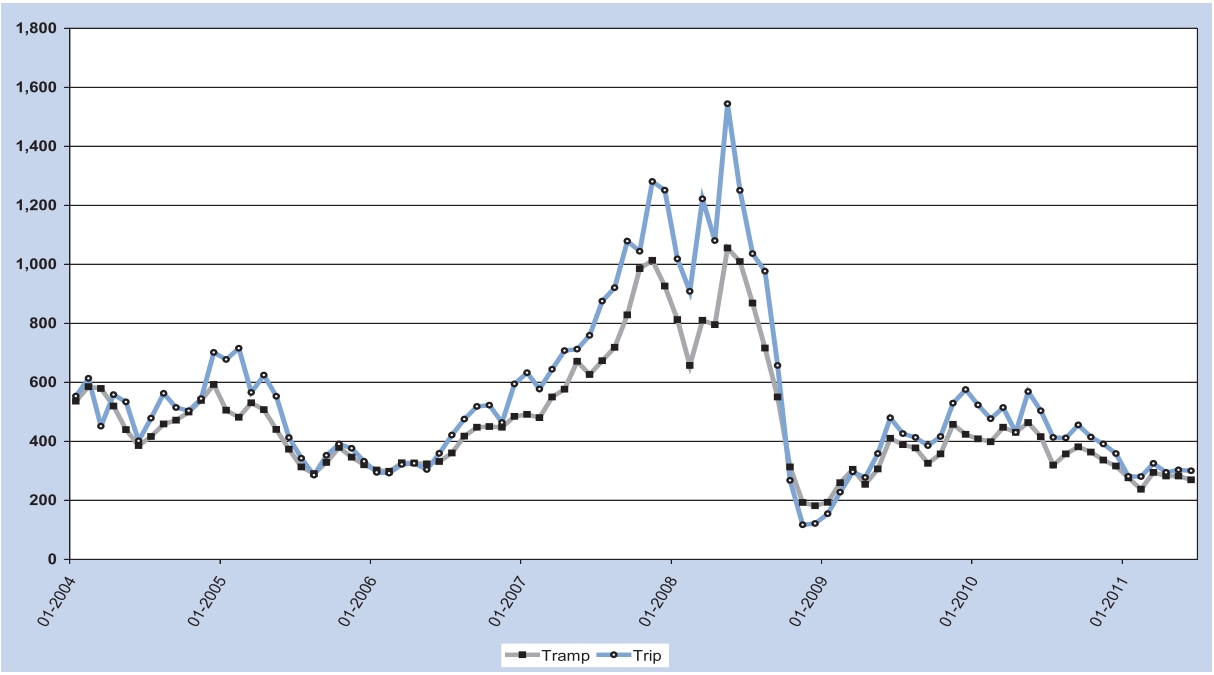
The main dry bulk shipping market consists primarily of five cargo types: iron ore, grain, coal, bauxite/alumina and phosphate. Many of the major cargo types are raw ingredients such as coal that are used either to generate power or to drive manufacturing activities. The main dry bulk sector accounts for just over one quarter of the total volume of cargo transported by sea. The demand for major dry bulk cargoes increased by around 11 per cent in 2010 but freight rates undulated.

### *Dry bulk freight rates*

The dry bulk sector improved in 2010 over the previous year, with freight rates up 12 per cent on the tramp time and 16 per cent on the tramp trip. Dry cargo tramp time charter refers to vessels chartered for a period of time and dry cargo tramp trip charter refers to a charter for a specific voyage. Freight rates for dry bulk vessels were still down by around one third, compared with their 2007 and 2008 levels (see figure 3.2 and table 3.5). Freight rates for dry bulk vessels, which were buoyant during the first half of 2010, declined on average by a quarter for the second half of the year.

Freight rates for Capesize vessels chartered on the Far East–Europe route were $57,587 per day in January 2010 and declined to $17,358 per day in early 2011. In the opposite direction, from Europe to Asia, freight rates fell from $20,664 per day in January 2010 to minus $3,371 per day, as shipowners subsidized charterers' repositioning costs. Other factors have limited cargo availability, such as events in the world's number one iron ore exporting country, Australia (flooding in the coal-producing regions, followed by cyclones in the iron-ore exporting regions), and in the world's number three iron ore exporter, India, where Chhattisgarh and Orissa States have imposed a ban on ore exports.[22]

**Figure 3.2. Dry cargo freight indices, 2004–2011**




*Source*: UNCTAD secretariat, based on various issues of *Shipping Statistics* and *Market Review*, produced by the Institute of Shipping Economics and Logistics.

**Table 3.5. Dry cargo freight indices, 2007–2011**

| Period | Dry cargo tramp time charter (1972 = 100) | | | | | Dry cargo tramp trip charter (1985 = 100) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2007 | 2008 | 2009 | 2010 | 2011 |
| January | 491 | 812 | 193 | 408 | 276 | 632 | 1 018 | 154 | 523 | 281 |
| February | 480 | 657 | 259 | 398 | 237 | 577 | 908 | 227 | 476 | 280 |
| March | 550 | 810 | 305 | 447 | 294 | 644 | 1 221 | 296 | 514 | 325 |
| April | 576 | 795 | 254 | 430 | 282 | 707 | 1 080 | 277 | 430 | 294 |
| May | 671 | 1 055 | 306 | 463 | 282 | 712 | 1 544 | 358 | 568 | 303 |
| June | 626 | 1 009 | 410 | 415 | 269 | 759 | 1 250 | 479 | 503 | 300 |
| July | 673 | 868 | 388 | 319 | | 875 | 1 036 | 426 | 413 | |
| August | 718 | 716 | 377 | 357 | | 920 | 976 | 413 | 411 | |
| September | 828 | 550 | 325 | 381 | | 1 078 | 657 | 385 | 455 | |
| October | 985 | 313 | 357 | 363 | | 1 044 | 267 | 416 | 414 | |
| November | 1 013 | 192 | 457 | 336 | | 1 280 | 117 | 529 | 391 | |
| December | 926 | 181 | 423 | 316 | | 1 251 | 121 | 575 | 358 | |
| Annual average | 711 | 663 | 338 | 386 | 273 | 873 | 850 | 378 | 455 | 297 |

*Source*: UNCTAD secretariat, based on various issues of *Shipping Statistics and Market Review* produced by the Institute of Shipping Economics and Logistics.

*Note*: All indices have been rounded to the nearest whole number.

Chinese imports of iron ore represent around 63 per cent of the iron ore market transported by sea, which makes this market a major employer of Capesize vessels.[23] Iron ore freight rates from Brazil to China started 2010 at $29.83 per ton – more than double the January 2009 figure of $13.90 per ton – but still half the $64.05 per ton in 2008. In 2010, rates on this route declined by around 40 per cent. Also iron ore freight rates declined at a similar percentage on the Western Australia–China route rates. The falling freight rates for dry bulk carriers helped boost Chinese demand for foreign iron ore by 8 per cent per annum in 2010; demand in 201l is estimated at 652.1 million tons.

The time charter earnings of a Capsize vessel in 2010 averaged $40,308 per day, up from $35,283 in 2009. By February 2011, the corresponding figure had fallen to $17,500 per day. During 2008, the average earning for a Capesize vessel was $116,175 per day and at one point, rates surpassed $300,000 per day. At a time of record profits for the biggest mining companies on the back of rising commodity prices, shipowners are experiencing some of the lowest freight rates since 2002.

### *Dry bulk time charter*

In 2008, 45 per cent of charters were for short-term contracts of less than six months. This rose to 52 per cent in 2009 and 60 per cent in 2010. Whereas 18 per cent of charters were for long-term contracts of more than 24 months in 2008, this declined to between 8 and 9 per cent in 2009 and 2010. This may show that shipowners generally perceived the market as volatile, while expecting that rates would increase, or at least, remain higher than operating costs. Estimated rates for 12-month period charters (prompt delivery) were relatively stable for most of 2010, but in the last two months of 2010, rates began to slide. Capesize ships of 200,000 dwt aged five years fetched $39,700 per day at the start of 2010, compared with $19,700 per day for the same period in 2009; by the end of the year, the figure stood at $26,000 per day. By February 2011, the rate had fallen further to $18,000 per day. The best-performing sector was Handysize vessels of 28,000 dwt aged 10 years, which experienced a decrease of 14.8 per cent in rates between December 2009 and December 2010.[24]

Declining freight rates affected the price of vessels, but not dramatically. A five-year-old Capesize vessel which cost an average $123.2 million in 2008 and $47.3 million in 2009, rose 15 per cent to $54 million in 2010. By February 2011, the price had fallen back to 2009 levels, at $48 million. Given the high rate of delivery of newbuildings in 2011, the price is likely to slide further.

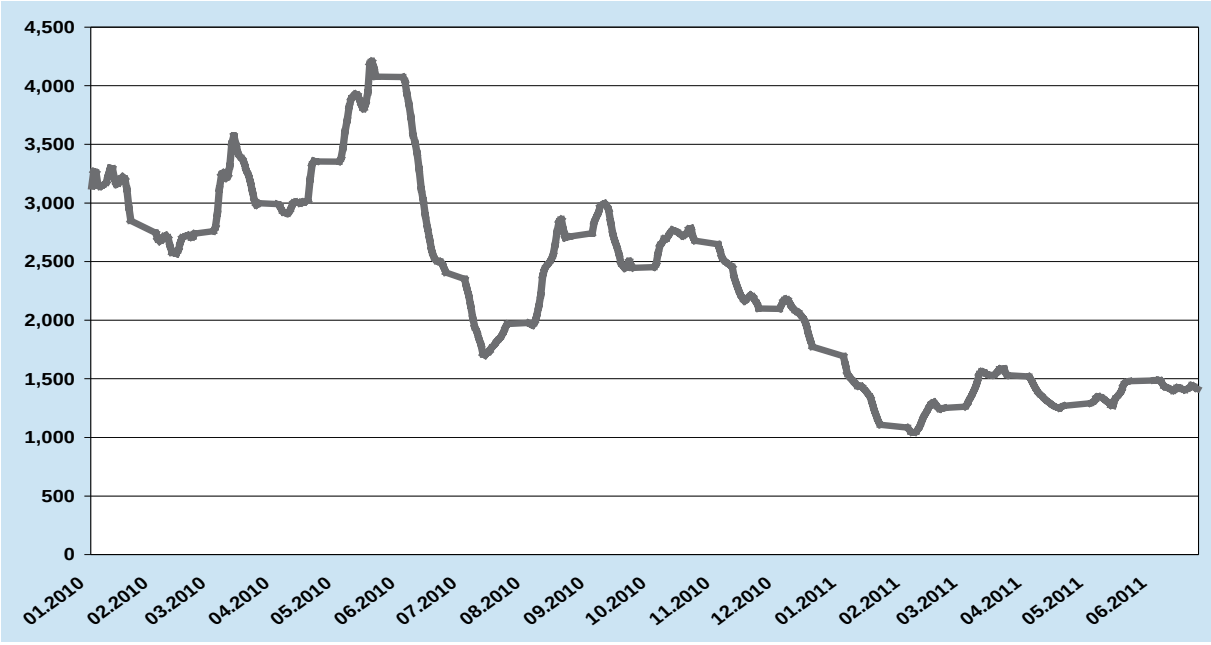
Dry cargo freight rates, which suffered a disastrous collapse in 2008, made a significant recovery by the end of 2009. However, it was short-lived and by June 2010, had petered out. To illustrate this, the BDI), which measures freight rates for dry bulk transported on selected maritime routes, started 2010 at 3,140

points and ended the year at 1,773 points (see figure 3.3).[25] From the end of May 2010 to the middle of July 2010, the BDI lost more than half its value as concern over the recovery of the global economy mounted. A partial rally occurred in August 2010 before the Index continued its downward trajectory. Between May 2010 and May 2011 the BDI declined by around two thirds. The most significant recent development in the dry bulk sector was the filing for bankruptcy protection in January 2011 of the second-largest shipping company in the Republic of Korea, Korea Line. With an owned fleet of 42 ships, over 100 vessels chartered in and three on order, the impact of the company's failure on other shipowners will be significant. Shipowners Eagle Bulk Shipping and Navios Maritime Partners were two companies whose chartering portfolios with Korea Line represented about 25 and 13 per cent of their business, respectively.

Freight rates for Capesize vessels on the major routes suffered a poor 2010, primarily because this sector is experiencing the strongest vessel oversupply of all the dry bulk sectors.[26] In 2011, an estimated 200 Capesize vessels, spanning some 35 miles end to end, will leave shipyards to join the existing 1,100-strong fleet.[27] As reported in chapter 2, the world's largest ore carrier, the 402,347 dwt Vale Brasil, was expected for delivery in 2011. Thus, not only are the numbers of ships increasing, but also their size.

Shipping companies are not the only ones to suffer. There is presently an oversupply of shipyards. If they are to survive, many of these shipyards need to diversify into higher-end production, for example, that of special-use vessels – multi-purpose vessels, cruise ships or specialized vessels carrying single cargoes such as LNG – or move into other manufacturing areas. However, there is no guarantee that diversification is the answer, since the higher-end shipyards in Odense, Denmark, and Mitsubishi Heavy Industries in Kobe, Japan, are both due to close in 2012.[28] [29] While the closure of a shipping company will result in the loss of jobs at the company's headquarters and in various other locations, including where it takes its seafarers (see chapter 6 for more details on which countries man the world's fleet), the closure of a shipyard will likely have a bigger impact on a single community, as shipyards tend to employ large workforces and buy local services. For example in Tuzla, Turkey, some 48 shipyards and various subcontracting firms employed around 30,000–35,000 workers in 2008; since then, the number has fallen to 8,000 workers (2011).[30] The number of shipyards in operation declined by 60 per cent from 2008 to 2011. Torgem Shipyard, for example, is reportedly operating at 20 per cent capacity owing to a series of cancelled orders, lowering employment levels at the shipyards from 270 to a mere 29.[31]

**Figure 3.3. Baltic Exchange Dry Bulk Index, 2010–2011** ***(index base year 1985, 1000 points)***




*Source*: UNCTAD, based on London Baltic Exchange data.

Despite the cancelled orders for newbuildings and dire predictions for shipyards in 2010, there was an average of 69 dry bulk vessels totalling 6.2 million dwt being delivered every month, compared with an average of 16 vessels of 1.6 million dwt over the decade beginning in 2000.[32] Surprisingly, orders for new vessels have not completely dried up, with around 55 new orders for dry bulk carriers being placed each month and 1,510 ships of 123 million dwt – approximately 23 per cent of the present fleet in dwt terms – expected to be delivered in 2011.

Reasons for the continued new orders could include renewed confidence in the world economy, lower vessels prices or attractive terms being offered by shipyards. Dry bulk vessels are one of the least complicated types to build, and new shipyards, which sprang up in the boom years of high commodity prices, entered this market and kept the prices of vessels low.

### *Summary of dry bulk freight rates*

Demand for major dry bulk services rose about 11 per cent in 2010, with increased demand for raw materials from developing countries, most notably China. Further, in 2010 there was strong growth in steel, forest products, coke and potash. Fine weather also contributed to a good growing season for agricultural products, which also helped the sector. In particular, global imports of sugar increased 10 per cent, and rice, 6 per cent.[33] However, the carrying capacity of vessels servicing this market grew by 16 per cent, resulting in falling freight rates. The oversupply of vessels is the main cause of lower dry bulk freight rates, brought about by overordering during the boom years. The oversupply of shipyards is likely to continue to drive down the price of newbuildings and in particular, dry bulk vessels. Some shipowners will be attracted by the lower prices and will take the opportunity to modernize their fleet. However, unless their old vessels are sold for scrap, there will still be too many vessels, which will mean freight rates will continue to remain low.

## 3. The liner shipping market

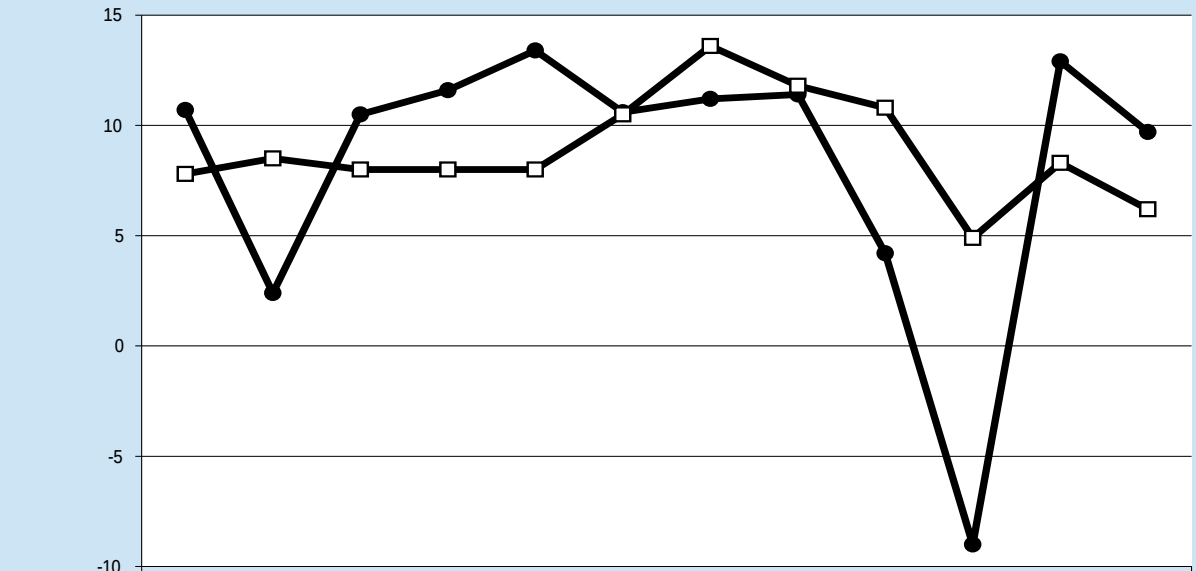
Liner shipping services operate vessels between fixed ports on a strict timetable. Liner services can be operated by one company or by a group of companies known as an alliance or a consortium. Costs and revenues are shared in accordance with each company's contribution. Liner shipping companies primarily operate container ships, which carry containerized cargo. In 2010, total world containerized trade was estimated at 1.4 billion tons – an increase of around 17.6 per cent over the previous year. Container trade volumes amounted to an estimated 140 million TEUs in 2010, an increase of around 12.9 per cent from the 124 million TEUs recorded in 2009. Approximately 17 per cent of world seaborne trade in volume terms (tons) is transported in containers (see chapter 1 for more details). The following sections examine developments in the liner shipping market and freight rates.

The rapid growth in containerization over the last 20 years is due to a combination of factors such as dedicated purpose-built container vessels, larger vessels capable of achieving larger economies of scale, improved handling facilities in ports and increasing amounts of components parts being carried in containers. Although 39 per cent of newbuilding orders were not delivered, the world's fleet of container ships increased by 14.7 million dwt in 2010, or 8.7 per cent, to reach 184 million dwt, approximately 13.2 per cent of the total world fleet. In all likelihood, these vessels will be built, but delivery will be delayed. At the beginning of 2011, there were 4,868 container ships, with a total capacity of 14.1 million TEUs (see chapter 2 for more details on the container fleet).

### *Developments in the liner trade*

In 2009, the top 30 liner carriers reported their worst financial performance ever, with an estimated collective loss of $19.4 billion from a reported $5 billion profit the year before.[34] In 2010, the same liners are estimated to have earned a combined $17 billion, whereas profits are forecast to be about $8 billion in 2011.[35] The turnaround is attributable to the following factors: methods adopted by the carriers, which absorbed capacity (for example, they removed some vessels by laying them up and added other vessels to existing routes with orders to sail at a lower speed); a fall in fuel prices, in some cases by as much as 30 per cent; and most importantly, an increase in demand from merchandise trade. Figure 3.4 illustrates trends in container shipping supply and demand in recent years. The growth in demand for liner shipping has rebounded significantly from the gloom of 2009, when concern about the global economic crisis pulled apart

**Figure 3.4. Growth of demand and supply in container shipping, 2000–2011** ***(annual growth rates)***




| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Demand | 10.7 | 2.4 | 10.5 | 11.6 | 13.4 | 10.6 | 11.2 | 11.4 | 4.2 | -9.0 | 12.9 | 9.7 |
| Supply | 7.8 | 8.5 | 8.0 | 8.0 | 8.0 | 10.5 | 13.6 | 11.8 | 10.8 | 4.9 | 8.3 | 6.2 |

*Source*: Compiled by the UNCTAD secretariat on the basis of data from *Clarkson Container Intelligence Monthly,* various issues.

*Note*: Data refer to total container-carrying fleet, including multi-purpose vessels and other vessels with some container-carrying capacity. The data for 2011 are forecasted figures.

supply and demand to their widest point. For the first time since 2005, growth in demand for liner services has outstripped the growth in supply. Estimates for 2010 show that the difference between the growth in supply and demand reached its widest point at 4.6 percentage points. The forecast for 2011 is that the gap between these two will narrow to 3.5 percentage points, with supply and demand growth being in line with and more stable freight rates.

The idleness of the container fleet, which was around 11.7 per cent, representing some 600 vessels at the start of 2010, declined to 1.9 per cent at the beginning of 2011. Container trade grew by an estimated 12.1 per cent in 2010 after its first-ever contraction in 2009. North–South trade lanes grew about 12.2 per cent because of a growing intra-Asian trade. Freight rates for containers reached an all-time high in early 2010. Freight rates from Shanghai to Europe were $2,164 per TEU in March 2010 and ended the year at $1,401 per TEU.[36]

### *Container freight rates*

Container freight rates in 2010 witnessed a major transformation brought about by an upward trend in exports and measures introduced by operators to constrain vessel supply. Table 3.6 shows the average yearly rates provided since 2001 by the Hamburg Shipbrokers' Association, also known by its German acronym, VHSS. The table also includes the monthly charter rates for container ships in 2010.[37] It is clear that the average yearly freight rates in the liner market segments performed significantly better in 2010 than 2009, but were still very much below pre-crisis levels. Freight rates climbed steadily in 2010. The smallest container ships, 200–299 TEUs, ended the year up 29 per cent, whereas the largest ships in the table, 1,600–1,999 TEUs, ended the year up 130 per cent. These rises also continued well into 2011.

Figure 3.5 shows the New ConTex Index, which is made up of combined rate freight rates for various container trades.[38] The index shows the dramatic two-thirds decline in container charter rates from mid-2008 to April 2009 and its subsequent rebound to near three quarters of the 2008 level.

Ownership of liner vessels is dominated by German shipowners, who control about two thirds of the container charter market and one third of the total available capacity.[39] Table 3.7 shows the development of liner freight rates on cargoes loaded or discharged by German-owned container vessels for the period

## Table 3.6. Container ship time charter rates *(dollars per 14-ton slot/day)*

| Ship type | Yearly averages | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (TEUs) | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| **Gearless** | | | | | | | | | | | |
| **200–299** | 15.7 | 16.9 | 19.6 | 25.0 | 31.7 | 26.7 | 27.2 | 26.0 | 12.5 | 12.4 | 14.6 |
| **300–500** | 14.7 | 15.1 | 17.5 | 21.7 | 28.3 | 21.7 | 22.3 | 20.0 | 8.8 | 9.9 | 12.9 |
| **Geared/gearless** | | | | | | | | | | | |
| **2 000–2 299** | 8.0 | 4.9 | 9.8 | 13.8 | 16.4 | 10.5 | 11.7 | 10.0 | 2.7 | 4.8 | 7.4 |
| **2 300–3 400[a]** | | 6.0 | 9.3 | 13.2 | 13.0 | 10.2 | 10.7 | 10.7 | 4.9 | 4.7 | 8.5 |
| **Geared/gearless** | | | | | | | | | | | |
| **200–299** | 17.8 | 17.0 | 18.9 | 27.0 | 35.4 | 28.0 | 29.8 | 32.1 | 16.7 | 18.3 | 22.5 |
| **300–500** | 14.9 | 13.4 | 15.6 | 22.2 | 28.8 | 22.0 | 21.3 | 21.4 | 9.8 | 11.7 | 16.5 |
| **600–799[b]** | | 9.3 | 12.3 | 19.6 | 23.7 | 16.6 | 16.1 | 15.6 | 6.6 | 8.4 | 12.1 |
| **700–999[c]** | | 9.1 | 12.1 | 18.4 | 22.0 | 16.7 | 16.9 | 15.4 | 6.0 | 8.5 | 13.0 |
| **800–999[d]** | | | | | | | | | 4.9 | 6.3 | 11.9 |
| **1 000–1 260** | 8.8 | 6.9 | 11.6 | 19.1 | 22.6 | 14.3 | 13.7 | 12.2 | 4.0 | 5.9 | 9.1 |
| **1 261–1 350[e]** | | | | | | | | | 3.7 | 4.9 | 8.5 |
| **1 600–1 999** | 8.0 | 5.7 | 10.0 | 16.1 | 15.8 | 11.8 | 12.8 | 10.8 | 3.5 | 5.0 | 7.5 |

| Ship type | Monthly averages for 2010 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (TEUs) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| **Gearless** | | | | | | | | | | | | |
| **200–299** | 10.4 | 11.7 | 13.0 | 10.4 | 12.7 | 11.9 | 10.8 | 14.9 | 10.9 | 14.7 | 14.3 | 13.5 |
| **300–500** | 9.1 | 8.1 | 8.3 | 8.5 | 9.3 | 9.6 | 10.0 | 10.9 | 11.3 | 11.1 | 11.8 | 11.4 |
| **Geared/gearless** | | | | | | | | | | | | |
| **2 000–2 299** | 2.6 | 2.4 | 2.5 | 2.8 | 3.2 | 5.2 | 6.2 | 6.9 | 8.1 | 6.6 | 5.9 | 5.4 |
| **2 300–3 400[a]** | 2.1 | 2.6 | 3.0 | 5.2 | 5.5 | 7.2 | 7.7 | | | | | |
| **Geared/gearless** | | | | | | | | | | | | |
| **200–299** | 16.6 | 15.2 | 15.6 | 15.6 | 17.4 | 20.2 | 17.5 | 20.3 | 18.2 | 21.9 | 19.6 | 21.7 |
| **300–500** | 8.8 | 9.4 | 9.7 | 11.6 | 9.7 | 9.8 | 12.6 | 14.2 | 13.0 | 14.9 | 14.7 | 12.2 |
| **600–799[b]** | 6.1 | 5.9 | 7.4 | 6.2 | 7.2 | 8.5 | 8.5 | 10.0 | 9.9 | 9.8 | 11.4 | 10.3 |
| **700–799[c]** | 6.6 | 6.2 | 6.3 | 6.6 | 6.9 | 8.2 | 9.5 | 9.3 | 10.1 | 10.4 | 10.8 | 11.2 |
| **800-999[d]** | 6.4 | 6.1 | 5.2 | 5.3 | 6.1 | 7.0 | 8.3 | | | | | |
| **1 000–1 260** | 4.0 | 3.8 | 4.0 | 4.3 | 4.8 | 6.2 | 6.5 | 7.3 | 7.6 | 7.6 | 7.4 | 7.3 |
| **1 261–1 350[e]** | | | | 3.8 | 4.2 | 5.3 | 6.3 | | | | | |
| **1 600–1 999** | 3.0 | 3.3 | 3.0 | 4.5 | 3.4 | 5.0 | 5.9 | 6.8 | 7.0 | 6.4 | 5.5 | 6.8 |

## Table 3.6. Container ship time charter rates *(dollars per 14-ton slot/day)* (concluded)

| Ship type | Monthly averages for 2011 | | | | | |
|---|---|---|---|---|---|---|
| (TEUs) | Jan | Feb | Mar | Apr | May | Jun |
| **Gearless** | | | | | | |
| **200–299** | 13.3 | 14.4 | 14.9 | 15.6 | 15.7 | 13.8 |
| **300–500** | 11.3 | 12.3 | 13.4 | 14.4 | 14.3 | 14.1 |
| **Geared/gearless** | | | | | | |
| **2 000–2 299** | 6.6 | 7.3 | 7.4 | 8.2 | 7.6 | 7.9 |
| **2 300–3 400**[a] | 7.6 | 8.5 | 9.1 | 8.6 | 8.7 | 8.1 |
| **Geared/gearless** | | | | | | |
| **200–299** | 22.1 | 22.9 | 22.5 | | 27.2 | 24.7 |
| **300–500** | 17.2 | 16.1 | 17.2 | 15.5 | 15.3 | 18.2 |
| **600–799**[b] | 10.4 | 12.9 | 12.6 | 12.4 | 13.4 | 12.7 |
| **700–999**[c] | 11.9 | 12.7 | 13.4 | 13.8 | 13.5 | 13.3 |
| **800–999**[d] | 10.3 | 12.7 | 12.2 | 12.3 | 12.4 | 12.1 |
| **1 000–1 260** | 7.5 | 8.7 | 9.9 | 10.1 | 10.4 | 10.3 |
| **1 261–1 350**[e] | 7.6 | 8.0 | 8.9 | 9.4 | 9.5 | 9.6 |
| **1 600–1 999** | 6.7 | 7.5 | 7.9 | 7.8 | 8.0 | 8.0 |

*Source*: Compiled by the UNCTAD secretariat, from the Hamburg Index produced by the Hamburg Shipbrokers' Association, available at http://www.vhss.de; and from *Shipping Statistics and Market Review*, vol. 52, no. 1/2 2010: 54–55, produced by the Institute of Shipping Economics and Logistics.

[a] This category was created in 2002. The data for the first half of the year correspond to cellular ships in the 2,300–3,900 TEU range, sailing at 22 knots minimum.

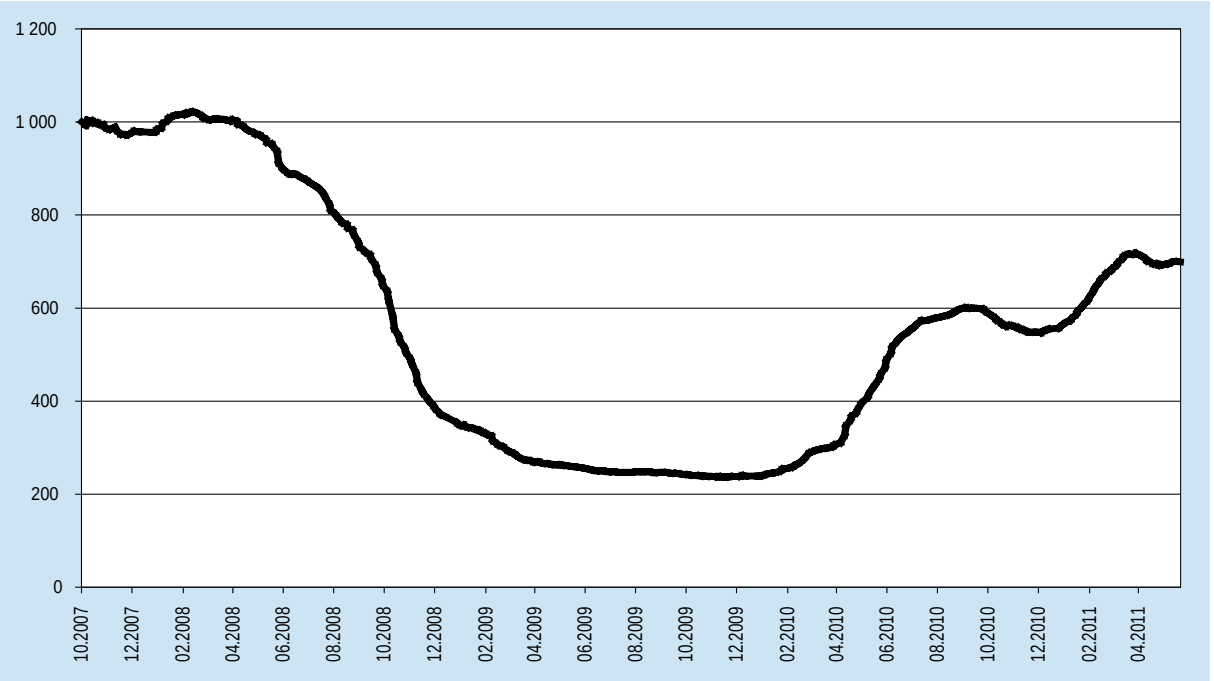
[b] Sailings at 17–17.9 knots.

[c] Sailings at 18 knots minimum.

[d] This category was created in 2009 by splitting the 700–999 category.

[e] This category was created in 2009 by splitting the 1,000–1,350 category.

## Figure 3.5. New ConTex 2007–2011 *(indices base: 1,000 – October 2007)*




*Source*: Compiled by the UNCTAD secretariat, using the ConTex Index produced by the Hamburg Shipbrokers' Association. See http://www.vhss.de.

**Table 3.7. Liner freight indices, 2007–2011** ***(monthly figures: 1995 = 100)***

| Month | Overall index | | | | | Homebound index | | | | | Outbound index | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2007 | 2008 | 2009 | 2010 | 2011 | 2007 | 2008 | 2009 | 2010 | 2011 |
| **January** | 89 | 98 | 62 | 98 | 114 | 98 | 116 | 68 | 138 | 152 | 81 | 83 | 58 | 65 | 82 |
| **February** | 88 | 95 | 59 | 104 | 108 | 98 | 114 | 64 | 149 | 141 | 80 | 80 | 55 | 67 | 81 |
| **March** | 86 | 92 | 57 | 111 | 106 | 96 | 110 | 60 | 163 | 136 | 78 | 77 | 55 | 68 | 80 |
| **April** | 87 | 88 | 56 | 115 | 102 | 100 | 106 | 61 | 161 | 130 | 77 | 74 | 52 | 77 | 80 |
| **May** | 88 | 89 | 53 | 119 | 103 | 101 | 107 | 58 | 166 | 130 | 76 | 75 | 49 | 82 | 81 |
| **June** | 92 | 89 | 53 | 125 | 103 | 105 | 106 | 59 | 170 | 129 | 81 | 75 | 48 | 88 | 82 |
| **July** | 94 | 89 | 60 | 127 | | 114 | 104 | 71 | 174 | | 80 | 76 | 51 | 88 | |
| **August** | 95 | 93 | 65 | 120 | | 118 | 107 | 80 | 162 | | 81 | 81 | 53 | 86 | |
| **September** | 98 | 97 | 69 | 117 | | 121 | 113 | 87 | 158 | | 84 | 85 | 54 | 83 | |
| **October** | 97 | 90 | 75 | 109 | | 119 | 105 | 98 | 146 | | 84 | 77 | 57 | 79 | |
| **November** | 97 | 86 | 75 | 109 | | 115 | 101 | 97 | 146 | | 86 | 74 | 56 | 79 | |
| **December** | 100 | 73 | 84 | 111 | | 118 | 83 | 111 | 146 | | 88 | 65 | 63 | 83 | |
| **Annual average** | 93 | 90 | 64 | 114 | | 109 | 106 | 76 | 157 | | 81 | 77 | 54 | 79 | |

*Source*: Compiled by the UNCTAD secretariat, on the basis of information in various issues of *Shipping Statistics and Market Review*, published by the Institute of Shipping Economics and Logistics.

2007–2011. The average overall index for 2010 increased by 50 points from the 2009 level, to reach 114 points, a rise of 78 per cent. The year 2010 took off with a significant increase, especially on the homebound index (imports into Europe). The annual average figure on the homebound index was up by over 100 per cent in 2010, whereas the outbound index increased by 45 per cent.

At present (2011), freight rates between Asia and Europe are declining. Their average all-inclusive freight rate for dry cargo from Asia to northern Europe fell by 10 per cent in April. Freight rates from Asia to the Western Mediterranean/Northern Africa declined by 7.4 per cent and Eastern Mediterranean/Black Sea regions dropped 9 per cent.[40] The average bunker adjustment factor had risen by approximately $135 per TEU in April 2011, compared with the average for the fourth quarter of 2010. By June 2011, the figure was $250 per TEU. On the Shanghai–Mediterranean route, the bunker adjustment factor was an additional $700 in April 2011 based on a freight rate of around $960 per TEU. At around the same time, all-inclusive freight rates from Shanghai to the United States West Coast were around $1,650–$1,850 per 40-foot equivalent unit (FEU), while prices to the East Coast were $2,980–$3,200 per FEU.[41] [42]

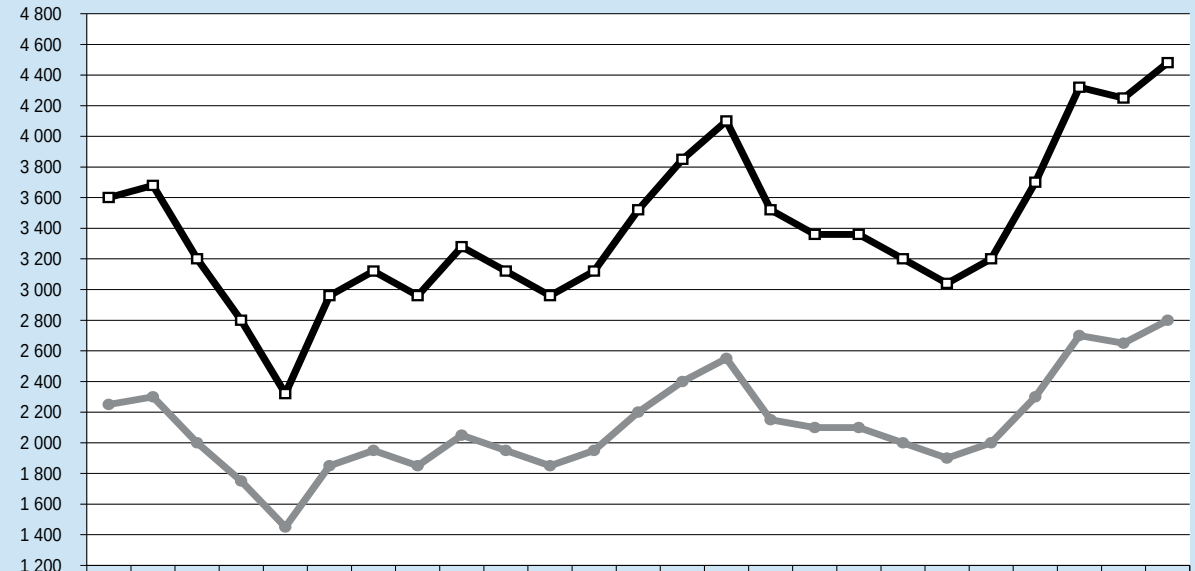
### *Container prices*

Figure 3.6 shows how the purchase prices of containers have evolved over the past few years. During 2010 and into 2011 they continued to climb. At the end of 2009, a standard TEU cost $1,900. By the first quarter of 2011 it had risen to $2,800, an increase of almost 50 per cent. Helping to boost the demand for containers is the increase in container fleet size. While the ratio of container per vessel has declined in recent years, the overall number of containers in circulation has grown (see chapter 2 for more details on the container fleet).

## 4. Freight cost as a percentage of value of imports

Figure 3.7 illustrates how costs as a percentage of the value of imports have averaged over the last three decades by region. Over the last two decades, maritime freight rates have fallen in all regions. The most significant observation is that transport costs as a percentage of imports for developing countries in the Americas have remained the same, whereas all other areas witnessed a reduction in costs. Transport costs in Africa remain

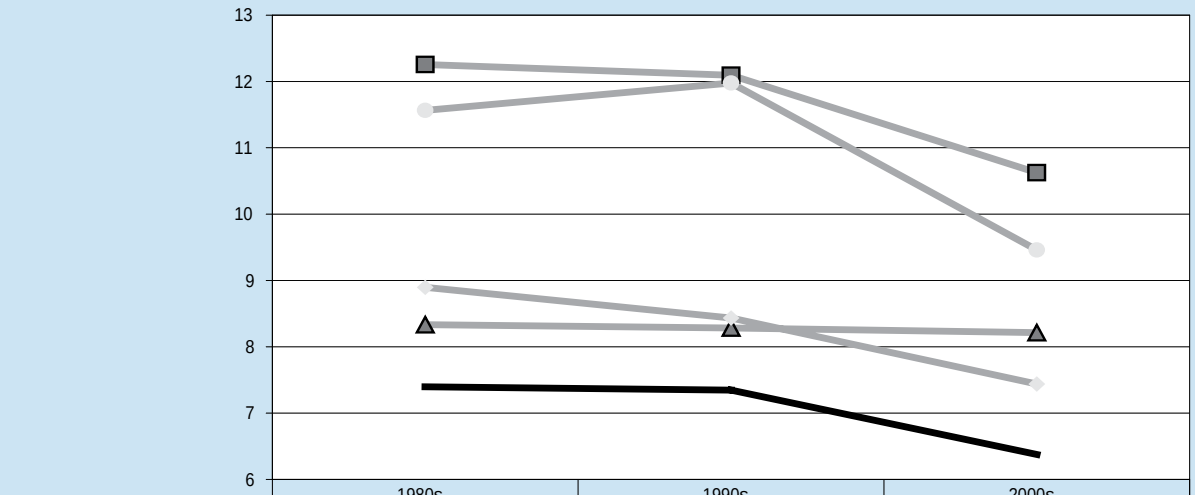
**Figure 3.6. Container prices (2005–2011) *(quarterly averages, in dollars)***




| | Q1 05 | Q2 05 | Q3 05 | Q4 05 | Q1 06 | Q2 06 | Q3 06 | Q4 06 | Q1 07 | Q2 07 | Q3 07 | Q4 07 | Q1 08 | Q2 08 | Q3 08 | Q4 08 | Q1 09 | Q2 09 | Q3 09 | Q4 09 | Q1 10 | Q2 10 | Q3 10 | Q4 10 | Q1 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40ft | 3600 | 3680 | 3200 | 2800 | 2320 | 2960 | 3120 | 2960 | 3280 | 3120 | 2960 | 3120 | 3520 | 3850 | 4100 | 3520 | 3360 | 3360 | 3200 | 3040 | 3200 | 3700 | 4320 | 4250 | 4480 |
| 20ft | 2250 | 2300 | 2000 | 1750 | 1450 | 1850 | 1950 | 1850 | 2050 | 1950 | 1850 | 1950 | 2200 | 2400 | 2550 | 2150 | 2100 | 2100 | 2000 | 1900 | 2000 | 2300 | 2700 | 2650 | 2800 |

*Source*: Compiled by the UNCTAD secretariat based on data from *Containerisation International Magazine*, various issues.

**Figure 3.7. Freight cost as a percentage of value of imports: long-term trend (1980–89, 1990–99 and 2000–09) *(average percentages for decades)***




| | 1980s | 1990s | 2000s |
|---|---|---|---|
| Developing Africa | 12.3 | 12.1 | 10.6 |
| Developing Oceania | 11.6 | 12.0 | 9.5 |
| Developing America | 8.3 | 8.3 | 8.2 |
| Developing Asia | 8.9 | 8.4 | 7.4 |
| Developed economies | 7.4 | 7.3 | 6.4 |

*Source*: UNCTAD secretariat.

the highest in the world. Freight costs for African countries constitute a higher proportion of total import value than those of other regions. The data suggest that it costs more to ship to Africa than to developed countries, on average 10.6 per cent of the price of final goods for Africa, as opposed to 6.4 per cent on average for developed countries.[43]

The drop in shipping costs has been influenced by the global transformation of maritime transport spurred by globalization over the past two decades. Several factors have contributed to this decline, including: the growing market of container traffic, which has been the fastest-growing segment of maritime transport. As a result, and in order to benefit from economies of scale, container ships have been growing in size surpassing 10,000 TEUs per vessel, compared with the late 1990s, when the largest vessels had a capacity of 4,400 TEUs – Panamax.[44] Moreover, developments in cargo handling, new technologies and reduced crew sizes have had an impact on the operational costs and per-unit cost of ocean cargo transport. Port reforms and increased investment in information and communication technology, innovation and new technologies have also led to greater efficiency and productivity at the port level, reducing the time of cargo handling, and in turn affecting terminal charges and reducing overall cargo prices.

### *Outlook for vessel prices and freight rates*

Tables 3.8 and 3.9, and figure 3.8 describe world fleet performance. Table 3.8 reveals that the world ratio of world fleet to volume carried was at 1:6, meaning that over the course of the year, each vessel carried on average six times its maximum capacity – six full journeys a year – to produce the total volume of cargo carried by sea. This figure is below 6.6, which was achieved in 2009, and down from the 2006 ratio of 1:8. The increase in the world total of cargo moved by maritime transport shows the expansion of the world fleet with significantly more ships and ship capacity chasing only slightly more cargo.

Table 3.9 and figure 3.8, derived from the same data, provide a breakdown of table 3.8 by general vessel type. For instance, it reveals that the productivity

**Table 3.8. Cargo carried per deadweight ton of the total world fleet, selected years**

| Year | World fleet (millions of dwt, beginning of year) | Total cargo (millions of tons) | Tons carried per dwt |
|---|---|---|---|
| **1970** | 326 | 2 566 | 7.9 |
| **1980** | 683 | 3 704 | 5.4 |
| **1990** | 658 | 4 008 | 6.1 |
| **2000** | 799 | 5 984 | 7.5 |
| **2006** | 960 | 7 700 | 8.0 |
| **2007** | 1 042 | 8 034 | 7.7 |
| **2008** | 1 118 | 8 229 | 7.4 |
| **2009** | 1 192 | 7 858 | 6.6 |
| **2010** | 1 395 | 8 408 | 6.0 |

*Source*: Calculated by the UNCTAD secretariat, on the basis of UNCTAD data on seaborne trade (in tons) and IHS Fairplay data on the world fleet (in dwt).

of the tanker and dry bulk sectors has decreased considerably over time. Tankers that used to carry 9.74 tons per dwt in 1970 carried only 6.12 tons in 2010. For the dry bulk sector, the corresponding figures are 6.21 tons per dwt in 1970 to 5.11 tons per dwt in 2010. However, fleet productivity relating to dry cargo almost doubled from the 6.38 tons per dwt that were carried in 1970, to the 11.69 tons per dwt that were carried in 2010. One explanation for the high productivity rate of container ships is that container shipping can often benefit from return cargoes, whereas oil and bulk vessels tend to move cargo from extraction to consumptions points and return in ballast. With an increased number of production centres, the distances between source and consumption have grown, resulting in a lower measured tanker fleet productivity. In 2010, tanker fleet productivity declined, whereas the productivity of dry bulk and containers fleets increased. The year 2010 was the most productive for the container fleet since 2006, suggesting that the container fleet might need to expand.

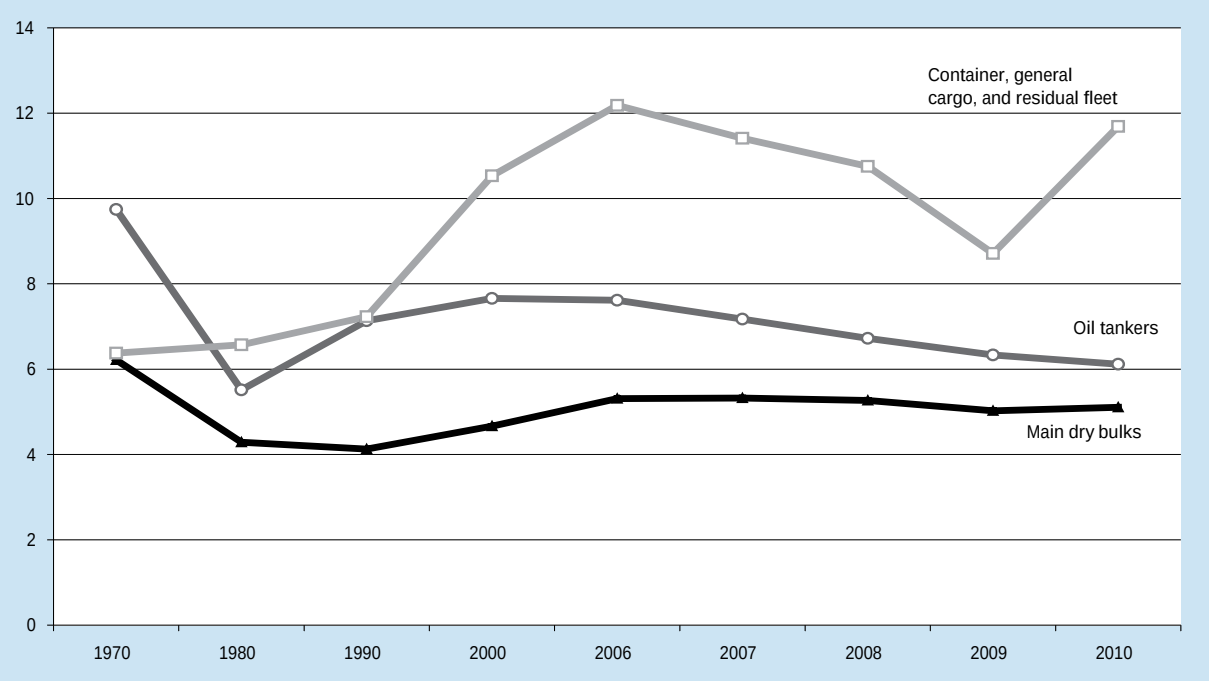
## Table 3.9. Estimated productivity of tankers, bulk carriers and the residual fleet,[a] selected years

| Year | Oil cargo (millions of tons) | Tanker fleet (millions of dwt, beginning of year) | Tons carried per dwt of tankers | Main dry bulks (millions of tons) | Dry bulk fleet (millions of dwt, beginning of year) | Tons carried per dwt of bulk carriers | All other dry cargoes (millions of tons) | Residual fleet[a] (millions of dwt, beginning of year) | Tons carried per dwt of the residual fleet[a] |
|---|---|---|---|---|---|---|---|---|---|
| **1970** | 1 442 | 148 | 9.74 | 448 | 72 | 6.21 | 676 | 106 | 6.38 |
| **1980** | 1 871 | 339 | 5.51 | 796 | 186 | 4.29 | 1 037 | 158 | 6.57 |
| **1990** | 1 755 | 246 | 7.14 | 968 | 235 | 4.13 | 1 285 | 178 | 7.23 |
| **2000** | 2 163 | 282 | 7.66 | 1 288 | 276 | 4.67 | 2 532 | 240 | 10.53 |
| **2006** | 2 698 | 354 | 7.62 | 1 836 | 346 | 5.31 | 3 166 | 260 | 12.19 |
| **2007** | 2 747 | 383 | 7.17 | 1 957 | 368 | 5.32 | 3 330 | 292 | 11.41 |
| **2008** | 2 742 | 408 | 6.72 | 2 059 | 391 | 5.26 | 3 428 | 319 | 10.75 |
| **2009** | 2 642 | 418 | 6.32 | 2 094 | 418 | 5.01 | 3 122 | 355 | 8.80 |
| **2010** | 2 752 | 450 | 6.12 | 2 333 | 457 | 5.11 | 3 323 | 284 | 11.69 |

*Source*: Calculated by the UNCTAD secretariat, based on UNCTAD data on seaborne trade (in tons), and IHS Fairplay data on the world fleet (in dwt).

[a] The residual fleet refers to general cargo, container ships and other vessels included in annex III (b).

## Figure 3.8. Tons carried per deadweight ton (dwt) of the world fleet, selected years




*Source*: UNCTAD secretariat.

# ENDNOTES

1 See for example, Radelet S and Sachs J (1998), *Shipping Costs, Manufactured Exports, and Economic Growth*, presented at the Annual Meeting of the American Economics Association, Chicago, 3–5 January; Hummels D, (1999), *Towards a Geography of Trade Costs*, University of Chicago; Limao N and Venables AJ (2001), Infrastructure, geographical disadvantage and transport costs, *World Bank Economic Review*, No. 15; UNCTAD Transport Newsletter (2006), Trade, liner shipping supply, and maritime freight rates, No. 33, September; Hummels D, (2007), Transportation costs and international trade in the second era of globalization, *Journal of Economic Perspectives*, 21(3):131–154; UNCTAD Transport Newsletter (2008), The modal split of international goods transport, No. 38, March; Kumar S and Hoffmann J (2010), Globalization: The maritime nexus, in: the *Handbook of Maritime Economics and Business, second edition*.

2 Other factors, such as competition between shipyards and the residual value of a vessel, will also affect its price.

3 Around 40 per cent of the operating costs of a 10-year-old bulk carrier in 2005 were capital costs, according to Stopford M (2009). Maritime Economics. Third edition. Routledge. London.

4 In February 2009, the United Arab Shipping Company introduced a $22 piracy surcharge for containers moving through the port of Aden, Yemen. See http://www.seatradeasia-online.com/News/3728.html.

5 In April 2011 Hapag-Lloyd was charging a container seal fee of ₩ 5,000 ($4.6) on all exported containers from the Republic of Korea, whereas in China the fee was RMB 44 ($6.8) on exports from Ningbo.

6 In January 2011, Maersk Line was charging $16 per container for electronic cargo release.

7 As freight rates are rarely all-inclusive, it is often difficult for shippers to estimate the final transport cost. Therefore, there is growing pressure to change the billing process. In 2008, the European Union repealed the block exemption previously granted to liner conferences to collectively set freight rates, which meant that liner companies would have to set prices independently. A study of THCs in some 44 ports across Europe showed that the level of those charges increased after the ending of liner conferences, and that there was a high degree of averaging of charges applied. This has led to complaints from shippers that terminal handling charges (a) are not a reflection of the actual costs incurred by terminal operators and (b) are used as a mechanism to compensate for lower freight rates. See Competition reports (2009). *Terminal Handling Charges During and After the Liner Conference Era*. October. European Commission. Brussels.

8 In July 2010, COSCO announced an "emergency equipment surcharge" of $400 per FEU on its transpacific route because of container shortages brought about by a surge in shipping demand amid the global economic revival. Bloomberg (2010). China shipping container adds surcharges on cargo-box shortage, 25 June.

9 While Maersk Line lists 107 surcharges on the following link, http://www.maerskline.com/link/?page=brochure&path=/our_services/Related%20services/VAS/ALL (date accessed: 17 June 2011) consultancy firm Seaintel quotes an unnamed carrier with 541 surcharges http://www.seaintel.com/.

10 Lloyd's List (2011). Box carriers display independence on currency surcharges, 1 June.

11 See http://www.strategicnine.com/LNG-gas-market.htm.

12 *Tanker Operator Magazine* (2011). High cost of bunkers impacts on earnings. March, p. 4.

13 The expansion of the Suez Canal in recent years has meant that some smaller VLCCs can now transit the canal.

14 *Sea Rates* (2010). DVB bank: Suezmax tanker market outlook newsletter. 25 August. Available online from http://www.searates.com/news/11236/ (accessed 22 June 2011).

15 Tanker Operator. November/December 2010.

16 See http://c0182999.cdn1.cloudfiles.rackspacecloud.com/TOJanFeb2011web.pdf.

17 Lloyd's List (2009). About the fleet, 1 April.

18 Unlike in Europe, where an extensive network of pipelines feeds gas directly into many homes, thereby creating many sources of demand.

19 Lloyd's List (2011). LNG spot market boost as few ships to come off charter, 11 May.

20 Lloyd's List (2011). How high can LNG rates go? 21 May.

21 Platts (2011). Global spot, short-term LNG trades in 2010 up 40% on year to 727 cargoes, 10 May.

22 Orissa State, which alone accounts for a quarter of India's annual exports of around 100 million tons of iron ore, has banned exports since July 2010.

23 Clarkson (2011). *Dry Bulk Trade Outlook*. 17(6):5. June.

24 Handysize and Handymax vessels are smaller bulk carriers, ranging from 10,000 dwt to 35,000 dwt and 35,000 dwt to 55,000 dwt, respectively. They are preferred because of their flexibility, as they can carry reasonable cargo sizes to almost any port.

25 The BDI is made up of various vessel types involved in the carry of different cargo types on various routes.

26 Capesize vessels are the largest dry bulk carriers and so named because they had to sail pass the Cape of Good Hope because they were too large to transit the Suez or Panama Canals.

27 Bloomberg (2011). Freight rates poised to tumble as 35-mile line of ships passes coal demand, 10 January.

28 The world's biggest container ship, the *Emma Maersk* (2006), and her seven sister-ships, were constructed here.

29 Business Monitor Online (2010). Mitsubishi yard closure reflects long-term shipbuilding decline, 26 July.

30 See http://www.reclaiming-spaces.org/transformation/archives/302.

31 TR Defence (2011). Turkish shipyards struggle due to financial crisis. 6 February. See http://www.trdefence.com/2011/02/06/turkish-shipyards-struggle-due-to-financial-crisis/.

32 Clarkson (2011). *Shipping Review and Outlook*. Spring, p59.

33 *Ibid.*, p66.

34 The Shippers' Voice (2011). Container freight derivatives, April.

35 Lloyd's List (2010). Container lines on track for $17bn profits in 2010, 14 December.

36 CIMB (2010). Container shipping. 7 June. Available from http://www.remisiers.org/cms_images/research/Jun06-Jun10/REG-CS-070611CIMBOW.pdf.

37 Since 1998, the Hamburg Shipbrokers' Association has published the Hamburg Index, which provides a market analysis of container ship time charter rates of a minimum duration of three months.

38 The New ConTex is a daily index that appears every Tuesday and Thursday and is compiled by a panel of international brokers on charter rate fixtures for six container vessel sizes.

39 Some of the largest German shipowners who charter their tonnage are C-P Offen, Peter Dohle, NSB N'Elbe, Norddeutsche, Rickmers and E.R.Schiff. Between them they represent more than 2 million dwt. (*Source*: *Clarkson's Container Intelligence Monthly*, May 2011).

40 (2011) Asia-Europe rates shock. *Containerisation International, 3 June*.

41 IFW (2011). Asia to Europe rates still on the slide. 13 April. Available from http://www.ifw-net.com/freightpubs/ifw/article.htm?artid=20017864731&src=rss.

42 JCtrans. (2011). Shanghai container index up on all routes. 16 May. Available from http://info.jctrans.com/jcnet/news/osn/20115161004026.shtml.

43 The data shown are the average for the decade, indicating only the relative price of freight as a percentage to imports, not the actual transport costs per se. Variations by country and over time will undoubtedly exist. The data must be read along with trade volume data to see how they have changed over time.

44 World Bank (2007). Port and maritime transport challenges in West and Central Africa. Sub-Saharan Africa Transport Policy Program (SSATP). Working Paper No. 84, May.