Sadržaj osnovne literature:

Dopunska literatura:

- Benford, H. (1983a) A Naval Architect's Introduction to Engineering Economics (Ann Arbor, Mich.: University of Michigan, College of Engineering) No. 282.

- Čekić, Š., I. Bošnjak, MENADŽMENT U TRANSPORTU I KOMUNIKACIJAMA, Fakultet za saobraćaj i komunikacije Univerziteta u Zagrebu, Fakultet prometnih znanosti Sveučilišta u Zagrebu, Sarajevo, Zagreb, 2000.

- Dundović, Č., POMORSKI SUSTAV I POMORSKA POLITIKA, Pomorski fakultet u Rijeci i Glosa Rijeka, Rijeka, 2003.

Glavan, B., POMORSKI BRODAR – ORGANIZACIJA I POSLOVANJE, Istarska naklada, Pula, 1984.

- Hampton, M.J. (1989) Long and Short Shipping Cycles (Cambridge: Cambridge Academy of Transport), 3rd edition 1991.
- Haws, D. and Hurst, A.A. (1985) The Maritime History of the World, 2 vols (Brighton: Teredo Books Ltd).

- Jones, J.J. and Marlow, P.B. (1986) Quantitative Methods in Maritime Economics (London:
Fairplay Publications).

- Stopford, R.M. and Barton, J.R. (1986) 'Economic problems of shipbuilding and the state', Journal of Maritime Policy and Management (Swansea), Vol. 13(1), pp. 27–44.

- Volk, B. (1994) The Shipbuilding Cycle-A Phenomenon Explained (Bremen: Institute of Shipping Economics and Logistics).

3 Shipping Market Cycles

The four most expensive words in the English language are, 'This time it's different'.

(Sir John Templeton, quoted in *Devil Take the Hindmost,* Chancellor 1999, p. 191)

3.1 INTRODUCING THE SHIPPING CYCLE

Market cycles pervade the shipping industry. As one shipowner put it: 'When I wake up in the morning and freight rates are high I feel good. When they are low I feel bad'.[1] Just as the weather dominates the lives of seafarers, so the waves of shipping cycles ripple through the financial lives of shipowners. Considering the sums of money involved, it is not surprising that they are so prominent. Take the transport of grain from the US Gulf to Rotterdam. After operating expenses a Panamax bulk carrier trading spot would have earned $1 million in 1986, $3.5 million in 1989, $1.5 million in 1992, $2.5 million in 1995 and $16.5 million in 2007! A new Panamax would have cost $13.5 million in 1986, $30 million in 1990, $19 million in 1999 and $48 million in 2007.

These shipping cycles roll out like waves hitting a beach. From a distance they look harmless, but once you are in the surf it's a different story. No sooner has one finished than another starts and, like surfers waiting for a wave, shipowners cluster in the trough, paddling to keep afloat and anxiously scanning the horizon for the next big roller. Sometimes it is a long wait. In 1894, in the trough of a recession, a shipbroker wrote: 'The philanthropy of this great body of traders, the shipowners, is evidently inexhaustible, for after five years of unprofitable work, their energy is as unflagging as ever, and the amount of tonnage under construction and on order guarantees a long continuance of present low freight rates, and an effectual check against increased cost of overseas carriage'.[2] He was right. It was 1900 before he could write: 'The closing year of the century has been a memorable one for the shipping industry. It would be hard to find any year during the century which could compare in respect of the vast trade done and the large profits safely housed'.[3]

Comments of this sort appear time and again in shipping market commentaries and they make shipping investors sound short-sighted and incompetent as they scramble to over-order ships, triggering yet another recession. But appearances can be deceptive. Despite the industry's apparent inability to learn from history, its performance in providing transport has been excellent (see Chapter 2). If we set aside the volatility, over the last century there has been an impressive reduction in shipping costs. In 1871 it cost $11.40 to ship a ton of coal from Wales in the United Kingdom to Singapore.[4] In the 1990s the average freight cost to ship a ton of coal from Brazil to Japan, a roughly similar distance, was still $9.30, both figures reported in market prices.

As far as shipowners are concerned the cycles are like the dealer in a poker game, dangling the prospect of riches on the turn of each card. This keeps them struggling through the dismal recessions which have occupied so much of the last century and upping the stakes as the cash rolls in during booms. Investors with a taste for risk and with access to finance need only an office, a telex, and a small number of buy, sell or charter decisions to make or lose a fortune.[5] They become players in the world's biggest poker game, in which the chips are valued in tens of millions of dollars, betting on ships which may or may not be needed. If trade is to be carried, somebody has to take this risk, and the analogy with poker is appropriate because both activities involve a blend of skill, luck and psychology. Players must know the rules, but success also depends on their skill in playing the shipping cycle, a game shipowners have been playing for hundreds of years. This is the model we will explore in this chapter.

3.2 CHARACTERISTICS OF SHIPPING MARKET CYCLES

The components of economic cycles

Cycles are not unique to shipping, they occur in many industries. Sir William Petty, writing in the 1660s, noticed a 7-year cycle in corn prices and commented that 'the medium of seven years, or rather of so many years as make up the Cycle, within which Derths and Plenties make their revolution, doth give the ordinary Rent of the Land in Corn'.[6] Later economists analysed these cycles more deeply, and found that they often had several components which could be separated statistically using a technique known as 'decomposition'.[7] For example Cournot, the French economist, thought that 'it is necessary to recognise the *secular* variations which are independent of the *periodic* variations'.[8] In other words, we should distinguish the long-term trend from the short-term cycle. This approach is illustrated in Figure 3.1, which identifies three components of a typical cyclical time series. The first is the *long-term cycle* (referred to by Cournot as the 'secular trend'), shown by the dashed line. The long-term trend is of importance if it is changing, and the big issue here is whether, for example, the underlying cycle is moving upwards, which is good for business, or moving downwards, which is bad. The example in Figure 3.1 shows a long-term trend with upswings and downswings lasting 60 years. The second component is the *short-term cycle*, sometimes referred to as the 'business cycle'. It is the one that corresponds more closely to most people's notion of

a shipping cycle. In Figure 3.1 these short cycles are shown superimposed on the long-term trend. They fluctuate up and down, and a complete cycle can last anything from 3 to 12 years from peak to peak. This is the form economic business cycles take and they are important drivers of the shipping market cycle. Finally, there are *seasonal cycles*. These are regular fluctuations within the year. For example, in shipping the dry bulk market is often weak during July and August when relatively little grain is being shipped. Similarly, there is a seasonal cycle in the oil trade relating to stock building for the Northern Hemisphere winter. In the following subsections we will briefly review each of these three cyclical components. The techniques for identifying cycles statistically are discussed in Chapter 17.

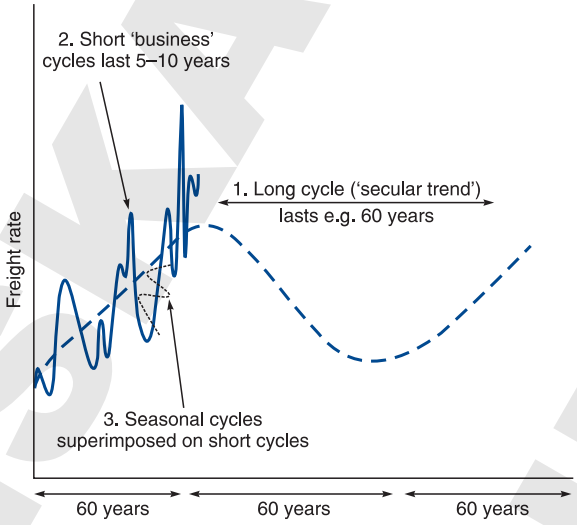


Figure 3.1
Seasonal, short and long cyclical components
Compiled by Martin Stopford from various sources

Long shipping cycles (the 'secular trend')

At the heart of the cyclical mechanism is the long-term cycle which 'ferries along with it other cycles which have neither its longevity, serenity nor unobtrusiveness'.[9] These long-term cycles are driven by technical, economic or regional change. This makes them of great importance, even if they are more difficult to detect.

The long-cycle theory of the world economy was developed by the Russian economist, Nikolai Kondratieff. He argued that in the major Western countries, between 1790 and 1916, there were three periods of slow expansion and contraction of economic activity, averaging about fifty years in length. After studying 25 statistical series, of which ten concerned the French economy, eight the British, four the US, one (coal) the German and two (pig iron and coal production) the world economy as a whole, he identified the three cycles with the initial upswings starting in 1790, 1844 and 1895. The peak-to-trough length of the cycles was 20–30 years, with an overall trough-to-trough length of approximately 50 years. Writing shortly after Kondratieff, the economist J.A. Schumpeter argued that the explanation of the long-wave cycles could be found in technological innovation.[10] He suggested that the upturn of the first Kondratieff cycle (1790–1813) was largely due to the dissemination of steam power, the second (1844–74) to the railway boom and the third (1895–1914/16) to the joint effects of the motor car and electricity. The upswing which started in the 1950s may be attributed to a combination of major innovations in the chemical industries, aircraft and

the electrical/electronic industries. Unfortunately these Kondratieff cycles do not fit well with the long-term freight cycles we will review in Figure 3.5. For example, 1790 was a peak in the long shipping cycle, not the beginning of an upswing, and in general the shipping cycle looks much longer, with a downswing that lasted for the whole of the nineteenth century.

The French historian, Fernand Braudel, identified much longer cycles lasting a century or more, with peaks in the European economy occurring in 1315, 1650, 1817 and 1973. This analysis matches the cycles in Figure 3.5 more closely. Whatever the exact timing, the history of the shipping industry in Chapter 1 made it clear that the long-term technical, social and political changes we observed are precisely the sort of developments that might well drive long-term shipping cycles.[11] For example, the period from 1869 to 1914 saw a downward spiral in freight rates which was driven by the increasing efficiency of steamships and the phasing out of the much less efficient sailing ships. Similarly, from 1945 to 1995 the mechanization of the bulk and liner shipping businesses using bigger ships and more efficient cargo-handling technology produced a fall in real freight rates. So these long cycles deserve a place in our analysis, even if we cannot define them precisely.

Short cycles

The study of short economic cycles started in the early nineteenth century after a series of severe 'crises' in the UK economy in 1815, 1825, 1836–9, 1847–8, 1857 and 1866. Observers came to the conclusion that these 'crises' formed part of a wavelike mechanism in the economy and they started to refer to them as cycles.[12] These short cycles 'shoot up and down, and are easy, indeed conspicuous to see. Everyday life, today as in the past, is punctuated by the short-lived movements which must be added to the trend in order to estimate them as a whole'.[13] However, they also spoke of the 'periodicity' of cycles, by which they meant that they consisted of a sequence of phases, irrespective of duration. For example, the nineteenth-century banker, Lord Overstone, observed that 'the state of trade revolves apparently in an established cycle of quiescence, improvement, prosperity, excitement, overtrading, convulsion, pressure, stagnation and distress'.[14] This periodicity theory does not require cycles to be of equal length.

It is easy to identify Overstone's phases with the different stages in modern shipping cycles, an example of which is shown in Figure 3.2. The short cycle has four main stages (see Box 3.1): a market trough (stage 1) is followed by a recovery (stage 2), leading to a market peak (stage 3), followed by a collapse (stage 4). In this example the trough lasts 4 years, reaching a peak 7 years after the first market peak, then falling sharply. However, during the trough in year 8 the market starts to recover, but fails and slowly subsides back to recession levels in year 10. Abortive recoveries of this sort are quite common, and in shipping are often the result of counter-cyclical ordering. Investors anticipate the recovery and order large volumes of cheap ships, so that supply dampens off the recovery. A dashed line superimposed on the chart illustrates what might have happened if investors had been less aggressive. In that case the

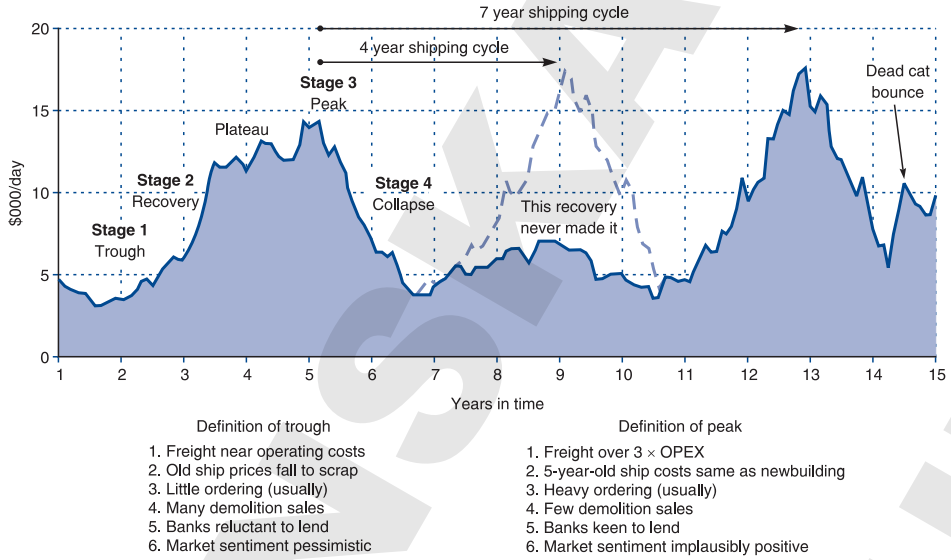


Figure 3.2
Stages in a typical dry cargo shipping market cycle
Source: Martin Stopford

shipping cycle lasts 4 years, not 7. In fact there is a strong case for supposing that the longer cycles of the sort shown in Figure 3.2 are often produced by a build-up of supply capacity during a succession of very profitable market spikes as a result of which the market 'jumps' a cyclical upswing, due to the pure weight of supply. Obviously the opposite effect can occur during these long recessions. These are important points we will come back to when we discuss past shipping cycles in Section 3.4. For example, does that abortive recovery in year 8 of Figure 3.2 count as a peak? And what about the 'dead cat bounce' in year 15? Frankly it is not easy to decide, but the cycles in Table 3.1 were compiled on the basis that neither counts.

Seasonal cycles

Seasonal cycles occur quite widely in shipping, and are the fluctuations in freight rates which occur within the year, usually at specific seasons, in response to seasonal patterns of demand for sea transport. There are numerous examples, some of which are far more prominent than others. In the agricultural trades, there is a noticeable cycle in freight rates for ships carrying grain, caused by the timing of harvests. Typically there is a surge in grain movements during late September and October as the North American harvest reaches the sea for shipment. Then there is a quieter period during the early summer as shipment of the previous season's stock runs down. Similarly, there is a strong seasonal cycle in the reefer trade, associated with the movement of fresh fruit during the harvest in the Northern Hemisphere. Another example is the stocking up of oil for periods of peak demand in the winter.

BOX 3.1 STAGES IN A 'TYPICAL' SHIPPING CYCLE

Stage 1: *Trough*. A trough has three characteristics. Firstly, there are clear signs of surplus shipping capacity with ships queuing at loading points and sea slow-steaming to save fuel. Secondly, freight rates fall to the operating cost of the least efficient ships, which move into lay-up. Thirdly, as low freight rates and tight credit produce negative cashflow, financial *pressures* build up, leading to stagnation as tough decisions are put off, and finally distress as market pressures overwhelm inertia. In extreme cycles banks foreclose and shipping companies are forced to sell modern ships at *distress* prices well below their book value, to raise cash. The price of old ships falls to the scrap price, leading to an active demolition market and the seeds of recovery are sown. As the wave of difficult decisions passes and the market starts to correct, a state of *quiescence* sets in.

Stage 2: *Recovery*. As supply and demand move towards balance, freight rates edge above operating costs, and laid up tonnage falls. Market sentiment remains uncertain, but gradually *confidence grows*. Spells of optimism alternate with doubts about whether a recovery is really happening (sometimes the pessimists are right, as shown by the false recovery in periods 7 to 9 in Figure 3.2). As liquidity improves, second-hand prices increase and sentiment firms as markets become *prosperous*.

Stage 3: *Peak/Plateau*. As the surplus is absorbed supply and demand tighten. Only untradable ships are laid up and the fleet operates at full speed. Freight rates rise, often two or three times operating costs, or on rare occasions as much as ten times. The peak may last a few weeks (see periods 5–6 in Figure 3.2) or several years (see periods 12–15 in Figure 3.2), depending on the balance of supply–demand pressures, and the longer it lasts the more the excitement increases. High earnings generate excitement, increasing liquidity; banks are keen to lend against strong asset values; the international press reports the prosperous shipping business with talk of a 'new era'; and shipping companies are floated on the stock market. Eventually this leads to *over-trading* as second-hand prices move way above their replacement cost, modern ships sell for more than the newbuilding price and older ships are bought without inspection. Newbuilding orders increase, slowly at first, and then rapidly until the only berths left are three or four years ahead, or in unattractive shipyards.

Stage 4: *Collapse*. As supply overtakes demand the market moves into the collapse (convulsion) phase and freight rates fall precipitately. This is often reinforced by the business cycle downturn, but other factors contribute, for example the clearing of port congestion, the delivery of vessels ordered at the top of the market, and in depressions we generally find these factors reinforced by an economic shock. The oil crises of 1973 and 1979 are prominent examples. Spot ships build up in key ports. Freight rates fall, ships reduce operating speed and the least attractive vessels have to wait for cargo. Liquidity remains high and there are few ship sales since owners are unwilling to sell their ships at a discount to recent peak prices. Market sentiment is initially confused, changing with each rally in rates and reluctant to accept that the peak is over.

Analysts' views of short cycles in shipping

By the end of the nineteenth century the concept of cycles had spread to shipping and in January 1901 a broker noted in his annual report that 'the comparison of the last four cycles (10 year periods) brings out a marked similarity in the salient features of each component year, and the course of prices'. He went on to observe that the cycles seemed to be getting longer: 'a further retrospect shows that in the successive decades the periods of inflation gradually shrink, whilst the periods of depression correspondingly stretch out'.[15]

But as the understanding of the shipping market model increased, it became evident that in concentrating on length as the primary defining characteristic, analysts were 'putting the cart before the horse'. At first the perception was murky, though Kirkaldy cast some light on economic process when he defined the cycles as a succession of prosperous and lean periods which sorted out the wealthy shipowners from their less fortunate colleagues.

> With the great development of ocean transport, which commenced about half a century ago, competition became very much accentuated. As the markets became increasingly normal, and trade progressively regular, there was from time to time more tonnage available at a given port than there was cargo ready for shipment. With unlimited competition this led to the cutting of rates, and at times shipping had to be run at a loss. The result was that shipping became an industry enjoying very fluctuating prosperity. Several lean years would be followed by a series of prosperous years. The wealthy ship-owner could afford to put the good years against the bad, and strike an average; a less fortunate colleague after perhaps enjoying a prosperous time, would be unable to face the lean years, and have to give up the struggle.[16]

Viewed in this way, shipping market cycles have a Darwinian purpose. They create an environment in which weak shipping companies are forced out, leaving the strong to survive and prosper, fostering a lean and efficient shipping business.

Whilst Kirkaldy dwelt on the competition between owners and the part played by cashflow pressures, E.E. Fayle had more to say about the mechanics of the cycle. He suggested that the build-up of a cycle is triggered by the world business cycle or random events such as wars which create a shortage of ships. The resulting high freight rates attract new investors into the industry, and encourage a flood of speculative investment, thus expanding shipping capacity.

> The extreme elasticity of tramp shipping, the ease with which new-comers can establish themselves, and the very wide fluctuations of demand, make the ownership of tramp steamers one of the most speculative forms of all legitimate business. A boom in trade or a demand for shipping for military transport (as during the South African War) would quickly produce a disproportion between supply and demand; sending freight soaring upwards. In the hope of sharing the profits

> of the boom, owners hastened to increase their fleet and new owners come into the business. The world's tonnage was rapidly increased to a figure beyond the normal requirements, and the short boom was usually followed by a prolonged slump.[17]

This analysis suggests cycles consist of three events: a trade boom, a short shipping boom during which there is overbuilding, followed by a 'prolonged' slump. However, Fayle was not confident about the sequence, since he says the boom is 'usually' followed by a prolonged slump. He thought the tendency of the cycles to overshoot the mark could be attributed to the lack of barriers to entry. Once again the cycle is more about people than statistics. Forty years later, Cufley also drew attention to the sequence of three key events common to shipping cycles: first, a shortage of ships develops, then high freight rates stimulate over-ordering of the ships in short supply, which finally leads to market collapse and recession.

> The main function of the freight market is to provide a supply of ships for that part of world trade which, for one reason or another, does not lend itself to long term freighting practices … In the short term this is achieved by the interplay of market forces through the familiar cycle of booms and slumps. When a shortage of ships develops rising freights lead to a massive construction of new ships. There comes a point either when demand subsides or when deliveries of new vessels overtake a still increasing demand. At this stage freights collapse, vessels are condemned to idleness in laying up berths.[18]

This is a neat synopsis of the way cycles pump ships in and out of the market in response to changes in freight rates. However, Cufley is convinced that the pumping action is too irregular to forecast, though he thought the underlying trends were more predictable.

> Any attempt to make long-term forecasts of voyage freights (as distinct from interpreting the general trend in growth of demand) is doomed to failure. It is totally impossible to predict when the open market will move upwards (or fall), to estimate the extent of the swing or the duration of the phase.[19]

One reason the cycles are so unpredictable is that the investors themselves can influence what happens. Hampton, in his analysis of long and short shipping cycles, emphasizes this point:

> In today's modern shipping market it is easy to forget that a drama of human emotions is played out in market movements … In the shipping market, price movements provide the cues. Changes in freight rates or ship prices signal the next round of investment decisions. Freight rates work themselves higher and trigger orders. Eventually excess orders undermine freight rates. Lower freight rates stall orders and encourage demolition. At the low point in the cycle, reduced ordering and increased demolition shrink the supply and set the stage for a rise in freight rates. The circle revolves.[20]

Hampton goes on to argue that groups of investors do not necessarily act rationally, which explains why the market repeatedly seems to over-react to the price signals.

> In any market, including the shipping market, the participants are caught up in a struggle between fear and greed. Because we are human beings, influenced to varying degrees by those around us, the psychology of the crowd feeds upon itself until it reaches an extreme that cannot be sustained. Once the extreme has been reached, too many decisions have been made out of emotion and a blind comfort which comes from following the crowd rather than objective fact.[21]

All these descriptions of the shipping cycle have a common theme. They describe it as a mechanism devoted to removing imbalances in the supply and demand for ships. If there is too little supply, the market rewards investors with high freight rates until more ships are ordered. When there are too many ships it squeezes the cashflow until the owners of the oldest ships give up the struggle and ships are scrapped. Looked at in this way, the cycles last as long as is necessary to do the job. It is possible to classify them by length, but this is not very helpful as a forecasting aid. If investors decide that an upturn is due and decide not to scrap their ships, the cycle just lasts longer. Since shipowners are constantly trying to second-guess the cycle, and the crowd psychology to which Hampton refers often intervenes to drive the decision process, each cycle has a distinctive character.

Conclusions

Pulling all this together, shipping cycles are not there to irritate shipowners (though they do a good job in that respect), they are a crucial part of the market mechanism and we highlighted five points. First, shipping cycles have different components – long, short and seasonal. Second, the function of the short shipping cycle is to coordinate supply and demand in the shipping market. They are the shipping market's engine room telegraph (think about it) and as long as there are fluctuations in supply or demand there will be cycles. Third, a short cycle typically has four stages. A market trough (stage 1) is followed by a recovery (stage 2), leading to a market peak (stage 3), followed by a collapse (stage 4). Fourth, these stages are 'episodic', with no firm rules about the timing of each stage. Regularity is not part of the process. Fifth, there is no simple formula for predicting the 'shape' of the next stage, far less the next cycle. Recoveries can stall half way and slump back into recession in a few months or last for five years. Market collapses may be reversed before they reach the trough. Troughs may last six months or six years. Peaks may last a month or a year. Sometimes the market gets stuck in the middle ground between trough and recession.

3.3 SHIPPING CYCLES AND SHIPPING RISK

Since shipping cycles lie at the heart of *shipping risk*, we should now say something about what that risk involves. Technically, shipping risk can be defined as the 'measurable

liability for any financial loss arising from unforeseen imbalances between the supply and demand for sea transport'.[22] In other words, we are concerned with who shoulders the financial burden if the supply of ships does not exactly match the demand and a loss results. For example, if too few ships are built and oil companies cannot supply their refineries, steel mills run out of iron ore, and manufactured exports are stranded in the ports, who pays? Or if too many ships are built and many earn nothing on their multi-million-dollar capital investment, who pays?

The answer is that the primary risk takers are the shipowners (the investors who own the equity in the ships offered for hire) and the cargo owners (also called the *shippers*) who between them perform the balancing act of adjusting supply to demand. They are on opposite sides of the shipping risk distribution, and when supply and demand get out of balance, one or the other loses money. Figure 3.3 shows how movements in freight rates (the vertical axis) over time (the horizontal axis) determine who pays. The break-even cost of transport is shown by the line T_1 – in a perfect market this should reflect the long-term cost curve for operating ships, and if supply and demand were always precisely in balance freight rates would follow this line (we discuss this in Chapter 8). But in practice supply and demand are rarely exactly in balance, so freight rates fluctuate around T_1, as shown by the short-term cycle F_1. When cargo owners get it wrong and have too many cargoes, rates shoot above the trend cost, transferring cash to shipowners who respond by ordering more ships (point A in Figure 3.3). Conversely, when the owners get it wrong and there are too many ships, rates swing below trend. Shipowners find themselves subsidizing the cargo owners and they cut back on investment (point B in Figure 3.3). In this way the cycles exert financial pressure to correct the situation and bring rates back to the trend. Eventually if business is to continue, the freight cashflow should average out at the break-even cost of transport, so across the whole market shipping risk is primarily about the *timing* of receipts.

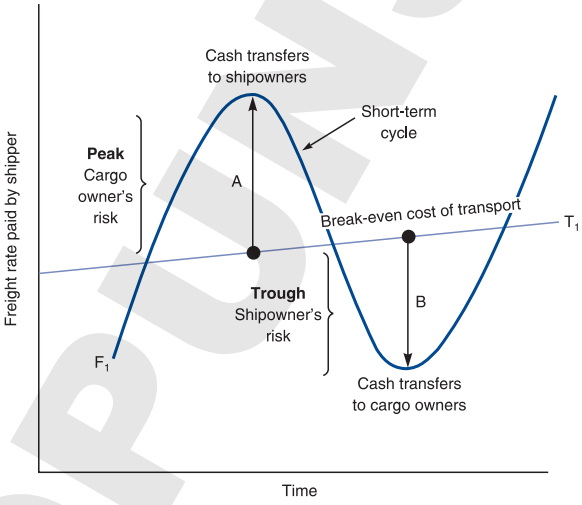


Figure 3.3
Key risk features of the shipping cycle
Compiled by Martin Stopford from various sources

Shipping risk and market structure

But that does not apply to the shipping risk of individual companies. As a group, cargo owners and shipowners face mirror-image risk distributions, so the volatility of the cycles allows individual companies to 'play the cycle' and in so doing vary their individual

risk profile. As cargo owners and shipowners adjust their exposure to shipping risk they can determine who actually controls the way the supply side of the market cycle develops. We will discuss the economics of this process in Chapter 4; the point here is simply to emphasize how the supply side decision process is determined. Since the shippers have the cargo, they take the lead in this process, and the diagram in Figure 3.4 illustrates the three main 'options' open to them.

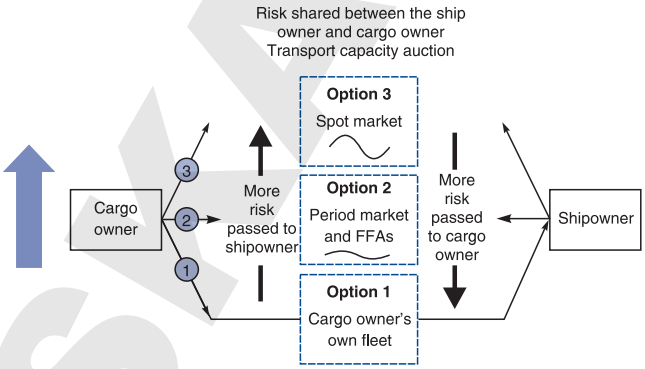


Figure 3.4
Risk management options in bulk shipping
Compiled by Martin Stopford from various sources

If cargo owners feel very confident about their future cargo flows and want to control the shipping, they may decide on option 1, which involves buying and operating their own ships. In doing this they cut the shipowner out of the equation (though they may use a shipping company to manage the vessels) and take all the shipping risk themselves. If all cargo owners do this, the spot market phenomenon disappears and the role of independent shipowners shrinks. There are many examples of this. For example, most LNG schemes were set up using vessels owned or leased by the project and until 1990 almost all the container-ship fleet was owned by the liner companies.

However, if they are reasonably certain about future cargo volumes, but feel independent shipowners can do the job cheaper, they may prefer option 2, which involves taking long-term charters from independent owners. They pay an agreed daily rate, regardless of whether the ship is needed, whilst leaving the cost management and the residual risk with the shipowner. For example, Japanese corporations often arrange for foreign owners to build ships in Japanese yards and charter them back on long-term contracts. These are known as 'tie-in' ships or *shikumisen*.[23] Raw materials such as iron ore, coal, bauxite, non ferrous metal ores and coal are often shipped in this way. The longer the charter, the more risk is taken by the cargo owner and the less by the shipowner, and long charters became so common that in the early 1970s that Zannetos commented: 'I know of few industries that are less risky than the oil tankship transportation business. Relatively predictable total requirements, time-charter agreements, and, because of the latter, availability of capital mitigate the risks involved in the industry'.[24] In this business the challenge is to win the contract and deliver the service at a cost which leaves the shipowner with a profit. Although the shipowner is freed from market risk, that does not remove all risk. Charterers strike a hard bargain, often leaving the owner vulnerable to inflation, exchange rates, the mechanical performance of the ship and, of course, the ability of the shipper to pay his hire. As an alternative to a physical contract, charterers could take financial cover using the derivatives market and,

for example, a forward freight agreement (FFA). This form of hedging (or speculating) is discussed in Chapter 6.

Finally, cargo owners can pass all the shipping risk to the shipowner by using the spot market (option 3 in Figure 3.4). They hire the ships they need on a cargo by cargo basis, so if for some reason there is no cargo, the shipowner carries all the cost of the ships which are unemployed. However, everything has a price and when ships are in short supply, cargo owners with no cover must pay a premium. Both the period and the spot markets have cycles, but the spot cycles are the most volatile. We discuss the workings of the spot and period markets and the economics of freight rates in detail in Chapter 6.

Risk distribution and shipping strategy

These three options do not change the amount of shipping risk; they just redistribute it between the cargo owners, who take all the downside risk under option 1 and none under option 3, and the shipowners, who take no risk (except possibly as ship manager) under option 1, take time-charter risk under option 2, and become primary shipping risk takers under option 3. So shipowners have very different strategic options. They can trade on the spot market and become risk managers or become subcontractors and ship managers, focusing on cost and management. Cargo owners have strategic choices, too. The distribution of risk between the spot and period markets is a matter of policy, and the balance will change with circumstances. Oil transport provides a good example. In the 1950s and 1960s the oil companies owned or time-chartered most of the ships they needed, taking only 5–10% from the voyage charter market, so in 1973 there was 129 m.dwt of independent tanker tonnage on time charter and only 20 m.dwt on the spot market (see Figure 5.2 in Chapter 5).[25] However, after the oil crisis in 1973 the oil trade became more volatile and oil shippers, which now included many traders, started to switch to the spot market, so by 1983 the tonnage trading spot had increased to 140 m.dwt and only 28 m.dwt was on time-charter. So in 10 years tanker shipping risk was completely redistributed. One benefit of this was that with such a large spot market there was increased liquidity, making it a more viable transport source for shippers than the tiny spot market in the early 1970s.

3.4 OVERVIEW OF SHIPPING CYCLES, 1741–2007

The freight index in Figure 3.5 allows us to see how freight cycles have behaved over a 266-year period. This freight index was derived from a number of sources. Coal rates for the English trade covering the period from 1741 to 1869 were spliced together with a long dry cargo freight index compiled by Isserlis.[26] The post-1950 data came from several published sources of dry cargo data. But overall we get a reasonable indication of what was going on each year in the shipping market. Identifying the shipping cycles from these data is not entirely straightforward, since it was necessary to distinguish the many small fluctuations from the significant peaks and troughs. Over the 266-year period 22 shipping cycles were identified. The initial market peak of each of the

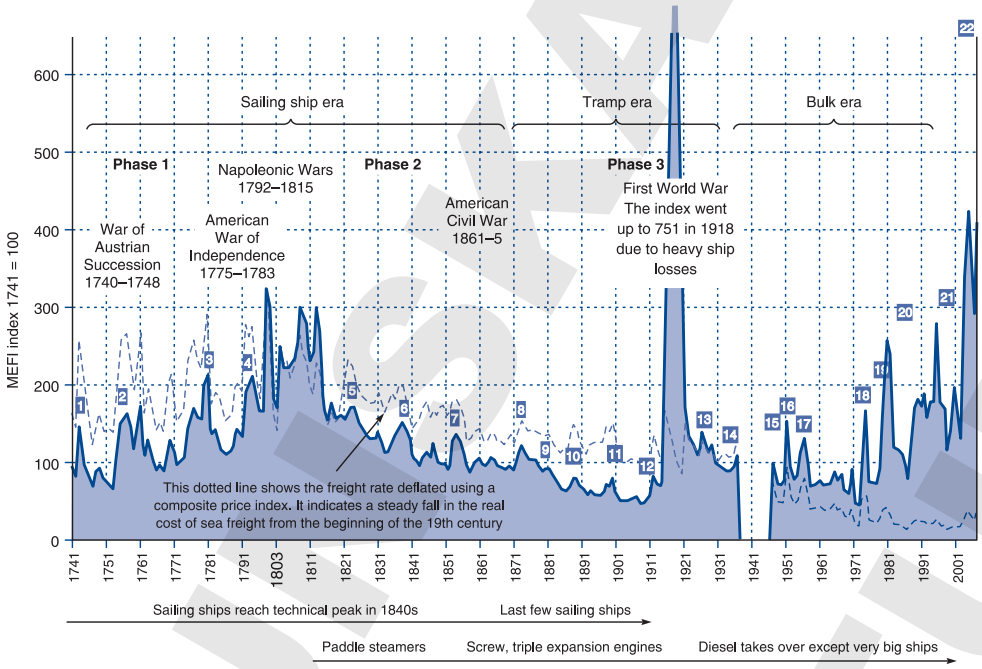


Figure 3.5
Dry cargo shipping cycles (mainly coal), 1741–2007
Source: Based on Appendix C.

22 cycles is numbered in Figure 3.5, ignoring the minor year-to-year fluctuations and focusing on major peaks. From 1869 it was possible to confirm the status of the identified peaks and troughs by referring to contemporary brokers' reports, and this resulted in 1881 and 1970 being treated as peaks although they are not prominent in statistical terms.

Table 3.1 provides a statistical analysis of the length of the 22 cycles since 1741 and shows that they vary enormously in length and severity. Between 1741 and 2007 there were 22 cycles lasting 10.4 years on average, though only one actually lasted 10 years. Three cycles were over 15 years, three lasted 15 years; one lasted 14 years; one 13 years; three 11 years; one 10 years; three 7 years; two 6 years; two 5 years; one 4 years; and one 3 years. In statistical terms, the standard deviation was 4.9 years, so with a mean of 10.4 years we can be 95% certain that cycles will last between 0 and 20 years. Table 3.1 also shows the length of the peaks and the troughs of each cycle. The start, end and total length of each cyclical peak is shown in columns 2–4, and the same information for each market trough in columns 5–7. Finally, column 8 shows the total length of each cycle, including both the peak and the trough. Finally, note that between 1741 and 2007 there were three major wars – the Napoleonic Wars, the First World War and the Second World War – and numerous lesser wars and revolutions, so it was a pretty bumpy ride. Since the major wars disrupted the market, the freight statistics for these periods are excluded from the analysis. The longest cyclical peak, defined as a period when

Table 3.1 Dry cargo freight cycles, 1741–2007

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Peak			Trough			
Cycle Number		Start	End	Length	Start	End	Length	Total Cycle
1	Sail era 1741–1871	1743	1745	3	1746	1753	7	10
2		1754	1764	11	1765	1774	9	20
3		1775	1783	9	1784	1791	7	16
4		1791	1796	6	1820	1825	5	11
		1792	1813		Napoleonic Wars			
5		1821	1825	5	1826	1836	10	15
6		1837	1840	4	1841	1852	11	15
7		1853	1857	5	1858	1870	12	17
8	Tramp era 1872–1947	1873	1874	2	1875	1879	5	7
9		1880	1882	3	1883	1886	4	7
10		1887	1889	3	1890	1897	8	11
11		1898	1900	3	1901	1910	10	13
12		1911	1913	3	First World War			
13		1919	1920	2	1921	1925	4	6
14		1926	1927	2	1928	1937	9	11
		1939	1946		Second World War			
15	Bulk era 1947–2007	1947	1947	1	1948	1951	4	5
16		1952	1953	2	1954	1955	2	4
17		1956	1957	2	1958	1969	12	14
18		1970	1970	1	1971	1972	2	3
19		1973	1974	2	1975	1978	4	6
20		1979	1981	1	1982	1987	6	7
21		1988	1997	10	1998	2002	5	15
22		2003	2007	5				5
Average				3.9			6.8	10.4

Summary		Av. Peak	Av. Trough	Total
Sail era	1741–1871	6.1	8.7	14.9
Tramp era	1871–1937	2.6	6.7	9.2
Bulk era	1947–2007	3.0	5.0	8.0
1741–2007		3.9	6.8	10.4

Source: Complied by Martin Stopford from the data in Appendix C and other sources

the freight index was consistently above the long-term trend, was 10 years, whilst the longest trough was also 10 years. However, there were many cycles which lasted only 1 year, and 2-year troughs were particularly frequent.

Figure 3.6, which plots the cycles in chronological order by length, reveals two interesting points. Firstly, cycles were longer in the sailing ship era than during the

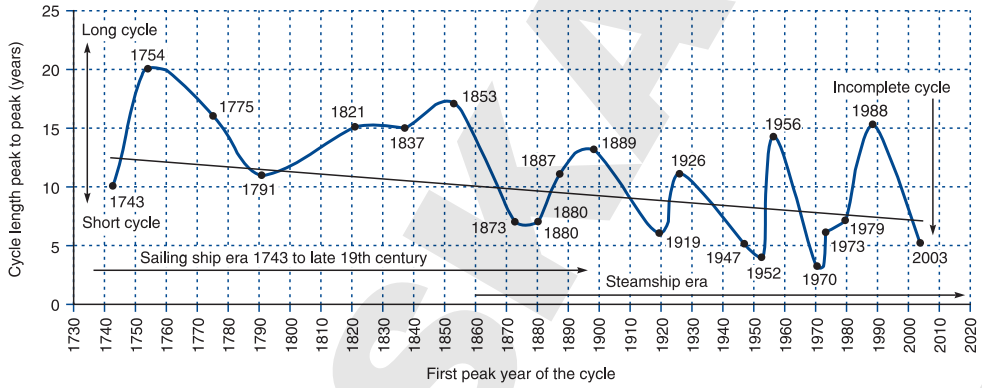


Figure 3.6
Length of shipping cycles, 1740–2007
Source: Compiled by Martin Stopford from various sources

steamship era which followed, and the average length of cycle fell from 12.5 years in 1743 to 7.5 years in 2003. This could be associated with the technology. Or possibly global communications which first appeared in 1865 could have affected the dynamic adjustment process. So for the present there may be some merit in the industry rule of thumb that shipping cycles last about 7 years. Secondly, the graph suggests that the length of cycles was itself cyclical. The long cycles of 12–15 years were generally separated by a sequence of short cycles, sometimes lasting less than 5 years. For example, the long cycle in 1956 was preceded two short cycles and the 1988 long cycle was preceded by three short cycles. Although the pattern is not regular, there could, for example, be a dynamic mechanism which produces alternating long and short cycles. But there are clearly no firm rules and the main conclusion is that shipping investors who rely on rules of thumb about the length of cycles are asking for trouble. We need to dig deeper for an explanation of what drives these cycles.

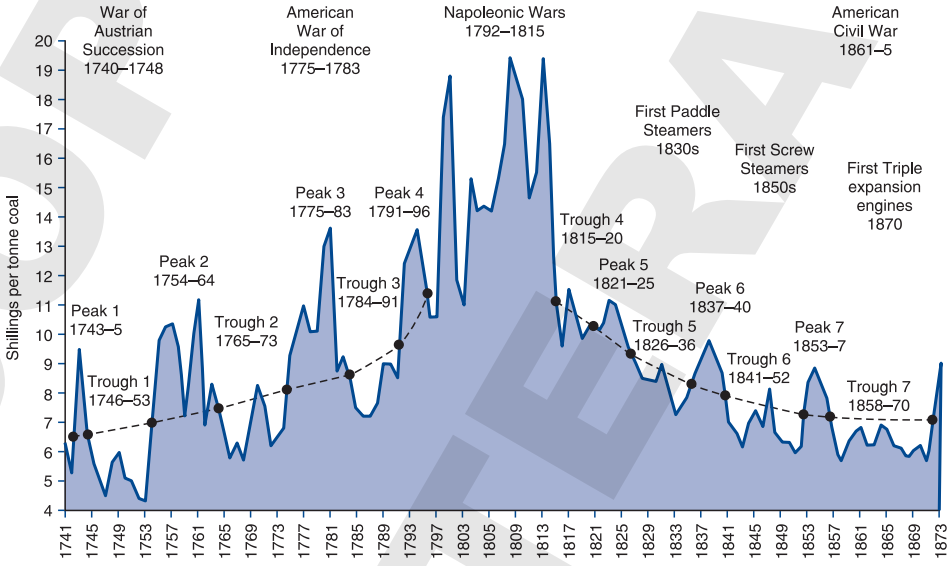
Shipping cycles in practice

Having looked at cycles from a number of different perspectives, we can take advantage of the shipping industry's long and well-documented history to see how cycles have behaved in the past. In the following sections we will review the cycles illustrated in Figure 3.5 in the context of developments in the world economy and the contemporary comments made by brokers and other commentators. The three periods taken as the basis for this review are the sailing ship era (1741–1869); the liner and tramp era which started when efficient steamships became available in the 1860s – and lasted until the Second World War; and the bulk shipping era which started after the second world war as the shipping industry transport system was mechanized and purpose-built bulk carriers started to be used. The commentary focuses on dry cargo until the third period, when the tanker market is introduced into the discussion.

3.5 SAILING SHIP CYCLES, 1741–1869

The period 1741–1869 covers the final years when sailing ships dominated sea transport. The freight index in Figure 3.7, which tracks the cycles during this period, is based on coal freight rates from Newcastle upon Tyne to London in shillings per ton. The freight increased from 6*s*. 8*d*. per ton in 1741 to 18*s*. 16*d*. in 1799, during the Napoleonic Wars, then declined to 7*s*. per ton in 1872. Most of the early increase between 1792 and 1815 was due to wartime inflation; this period has been excluded from the cycle analysis and market prices have been retained for comparability. Although this was the sailing era, there was a clear pattern of cycles over the period which was not so different from later times, though the cycles were longer. There were seven peaks, not counting the Napoleonic war period, averaging 6.1 years each, and seven troughs, which averaged 8.7 years each, so the average cycle lasted 14.9 years. Although the graph in Figure 3.7 shows a clear cyclical pattern, the cycles varied enormously in length and the number of cycles depends on how you classify them. One very obvious issue is that there were seven 'mini-peaks' which occurred mid-way through the troughs, in 1749, 1770, 1789, 1816, 1831, 1847, and 1861. These mini-peaks barely reached the dotted trend line in Figure 3.7 and for this reason were not included as market peaks. Possibly they are examples of the 'recovery that never made it' illustrated in Figure 3.6.

This was a period of continuous trade growth as the industrial revolution took hold in Britain, but it was also a politically unsettled period, with a series of wars which



The cycles during this period are based on upward movements in freight rates which at least doubled earnings and were sustained for more than a year. As a result the 'mini-peaks' which occurred 1749, 1770, 1831, 1845, 1861 etc. are not counted as peaks. The graph suggests that these half-hearted recoveries were a regular feature of the long troughs which occurred during this period.

Figure 3.7
Sailing ship market cycles, 1741–1873: coal freight rates from Newcastle upon Tyne to London
Source: Compiled by Martin Stopford from various sources

certainly affected freight rates. At the start of the period there was a seven-year trough from 1746 to 1753. This coincided with the War of Austrian Succession and the 1739–48 War of Jenkins' Ear with Spain. Davis comments that 'In 1739–48 … the armed conflict was holding back trade … The peace of 1748, therefore, found England ripe for an extraordinary increase in the volume of export trade'.[27] This increase is reflected in contemporary trade statistics which show that the volume of English commodity exports increased by 40% between 1745 and 1750.[28] Possibly this prepared the way for the boom which started in 1754 and lasted until 1764.

Generally this was a period of relatively strong alternating peaks and troughs. The strong boom of 1754–64 was followed by a mirror image recession from 1765 to 1773. The strength of the boom almost precisely matched the depth of the recession. After a 'mini-peak' in 1770 there was another strong boom from 1775 to 1783. In fact this coincided with the American War of Independence and between 1775 and 1881 English commodity exports fell by 30% from £15.2 million to £10.5 million.[29] The result was a nine-year recession from 1782 to 1791. This is one of the most severe recessions on record and was caused by the disruption to trade arising from the American War. Before the war there was a well-balanced three-leg trade consisting of general cargo from the UK to the Caribbean, followed by a trading leg with plantation produce, from the Caribbean to East Coast North America from where a backhaul to the UK could be obtained. It worked well, but after the American War of Independence, the backhaul cargoes completely disappeared, and the focus of trade switched from the North Atlantic to the Baltic, leaving surplus shipping capacity. The recovery came with the fourth peak, which lasted from 1791 to 1796.

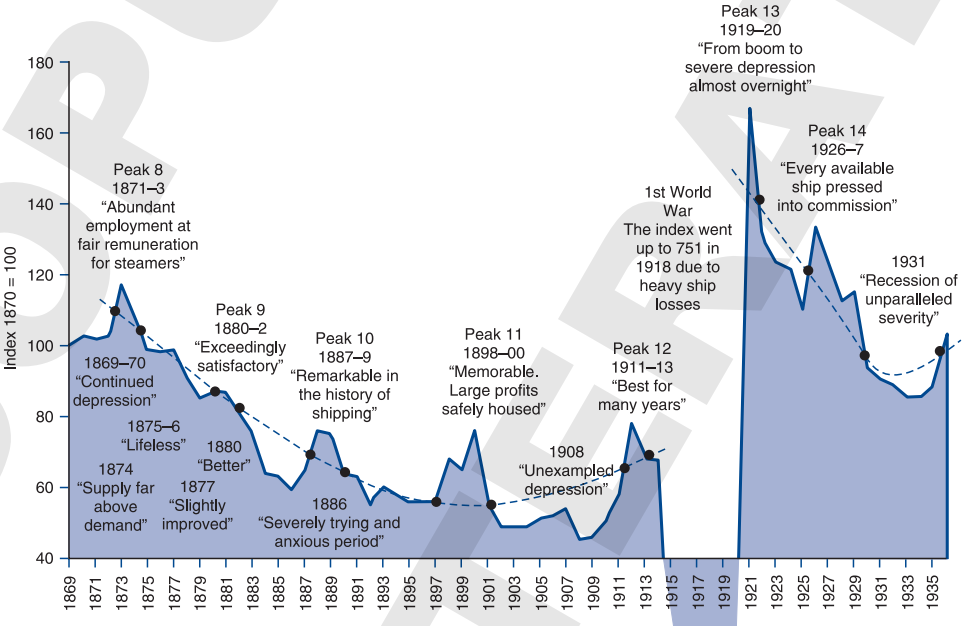
From the end of the Napoleonic wars in 1815 the trend in freight rates was strongly downwards. The dry cargo freight rate started at £11 8*s*. per ton in 1815 and by 1871 it had fallen by 40% to £7 per ton. This falling trend makes it difficult to identify the cycles precisely during this period and creates a particular problem when assessing the severity of cycles. In fact the cycles were probably not particularly extreme. Although these freight rates are not adjusted for inflation, this is probably evidence that sea transport was becoming more efficient and cheaper. Some of this efficiency was certainly due to the intense competition between sailing ships, which, as we noted in Chapter 1, reached new peaks of efficiency during the first half of the nineteenth century. However, the paddle steamers became more economic with each decade and by the end of the period had evolved into screw-driven ships with more efficient steam engines. In addition, improvements in shipbuilding and greater industrial activity resulted in ship sizes increasing steadily during the period. For example, in the eighteenth century a 300 grt vessel was a good size, but by 1865, a 2,000 grt vessel built of iron was a more common size.

During the period following 1815 there were four cycles, with peaks averaging 4–5 years each and troughs averaging 10–12 years. On that basis the average length of cycle was 15 years, which is similar to the earlier period. The fifth peak from 1821 to 1825 was followed by a 10-year trough, but with a 'mini-peak' in 1831. Then there was another strong peak between 1837 and 1840 followed by an 11-year trough from 1841 to 1852, with a 'mini-peak' in 1847 when rates reached £8 14*s*. per ton. The seventh

peak lasted from 1853 to 1857 with the final long trough from 1858 to 1870, again with a couple of 'mini-peaks' in 1861 and 1864. This was a period of rapidly changing technology in the coal trade as new steam colliers forced their way into the trade and the owners of old and obsolete sailing ships may have suffered badly during the troughs, whilst the owners of more modern vessels faced less pressure, due to their greater productivity. In general this was a period of well-defined cycles pushing the industry forward during an era of changing technology.

3.6 TRAMP MARKET CYCLES, 1869–1936

The next seventy years provide a fascinating example of the interplay between short-term cycles and long-term trends, with just about every shape of cycle appearing. During this period the tramp steamer dominated the freight market. At the start efficient steam-driven tramps were just beginning to appear, and they reached their peak during the Second World War with the mass production of Liberty ships. The pattern of freight rates in Figure 3.8 shows a long-term downward trend, during which the freight index fell from 94 in 1869 to 53 in 1914.[30] Onto this long-term trend was superimposed a series of five shorter cycles which averaged 9.8 years in length.



It is difficult to identify the cycles clearly in the period 1921–40. Cycle 5 started with a strong peak in 1921 and, arguably, ended with the short peak in 1926. On this interpretation cycle 6, which included the shipping depression of the 1930s, lasted 11 years. An alternative interpretation would be to count the period 1926–9 as a separate cycle.

Figure 3.8
Tramp shipping market cycles, 1871–1937
Source: Compiled by Martin Stopford from various sources

Like the cycles in the first half of the nineteenth century, it is difficult to disentangle the short cycles from the long-term trend. Once again we see rapidly falling freight rates resulting in cyclical peaks at rates which, in terms of their deviation from the trend, are in absolute terms lower than rates experienced in troughs just a few years earlier. Fortunately the availability of brokers' reports from 1869 onwards means that it is possible to validate the estimated cycles against market reports.

The cycles continued relentlessly, despite the rapid advances in technology. The best peak came in the early 1870s and there were two relatively severe troughs. The first was between 1866 and 1871, but the most severe was the trough between 1902 and 1910. Contemporary records confirm that this was indeed a very difficult time for the shipping industry, probably triggered by over-building as a result of the preceding boom in 1900. In 1902 'the result of the past year's trading, as far as 80 percent of British shipping is concerned, is an absolute loss, or at best the bare covering of out of pocket expenses' and 1904 was 'the fourth year of unprofitable work'. By 1907 the brokers noted 'the enormous difficulties which beset the shipowner in his efforts to find employment for his tonnage as will not involve him in a heavy loss', and it was not until 1909 that the reports state that, 'having passed through times of utmost stress, one can with some confidence state that the worst is over'.[31]

The technological trend in freight rates, 1869–1913

The fall in freight rates between 1869 and 1913 was driven by technical change which steadily reduced costs. This trend is well documented in both academic and shipping literature. Lecturing at Oxford in 1888, Professor James Rogers commented:

> There is perhaps no branch of human industry in which the economy of cost has been so obviously exhibited as in the supply of transit. The voyage across the Atlantic is completed in less than half the time it took forty years ago, a great saving in motive power and labour. The same is true on voyages to and from India, China and other distant places. The process of loading and unloading ships does not take a third of the time, a third of the labour and a third of the cost which it did a few years ago.[32]

Shipyards were gaining confidence in steel shipbuilding and production grew rapidly. Between 1868 and 1912 the shipbuilding output of the shipyards on the Wear trebled from 100,000 grt to 320,000 grt. The ships became bigger and more efficient. In 1871 the largest transatlantic liner was the *Oceanic*, a 3800 grt vessel with a 3000 hp engine capable of 14.75 knots. It completed the transatlantic voyage in nine and a half days. By 1913 the largest vessel was the 47,000 grt *Aquitania*. Its 60,000 hp engines drove it at 23 knots. The transatlantic voyage time had fallen to under five days. These vessels were comparable in length with a 280,000 dwt tanker and vastly more complex in terms of mechanical and outfitting structure.

Perhaps the most important technical improvement was in the efficiency of steam engines. With the introduction of the triple expansion system and higher-pressure boilers,

the cargo payload of the steamships increased rapidly.[33] The economic advantage of steamships was compounded by economies of scale. The average size of merchant ships launched on the River Wear grew from 509 gross tons in 1869 to 4324 gross tons in 1913.[34] Finally, the opening of the Suez Canal in 1869 gave steamships the economic advantage they needed to oust sail as the preferred type of newbuilding.

Between 1870 and 1910 the world fleet doubled from 16.7 million grt to 34.6 million grt and the continuous running battle between the new and old technologies dominated market economics as each generation of more efficient steamers pushed out the previous generation of obsolete vessels. The first to come under pressure were the sailing ships, which were replaced by steamers. In 1870 steamers accounted for only 16% of the tonnage (Table 3.2) but by 1910 they accounted for 76% of the world merchant fleet.[35] The competition was long and hard fought. Sailing ships with their low overheads managed to survive recessions and even occasionally win back a little ground.

Table 3.2 World merchant fleet by propulsion

	Steam	Sail	Total
1870	2.6	14.1	16.7
1910	26.1	8.4	34.5
Growth pa	6%	–1%	

Source: Kirkaldy (1914 Appendix XVII).

Change is never easy, and the market used a series of short cycles to alternately draw in new ships and drive out old ones. At a time when the shipping industry was growing rapidly and making great technical strides forward, shipbrokers saw little of the current of technical progress on which the market was being swept along. Their reports focus on the charter market where each generation of marginal tonnage struggled for survival against the new-cost effective vessels. They paint a picture of almost continuous gloom as year after year the better and bigger high-technology ships drove out the obsolete tonnage.[36] Yet by the end costs had fallen, the fleet had grown and enormous volumes of cargo had been shipped. The following brief review of the cycles is drawn from several sources, but principally Gould, Angier & Co., supplemented by the details of the cycles in shipbuilding output on the River Wear, at that time one of the world's most active merchant shipbuilding areas.

Cycle 8: 1871–9

There were three good years in 1871–3. The first was described as a year with 'abundant employment at very fair remuneration for steamers, but restricted employment at very low remuneration for sailing ships'.[37] This theme of steamers driving sailing ships from the market was to persist for the next decade. The following two years were patchy, though brokers described them as better than expected.

The recession started in 1874 and lasted 5 years until 1879. By 1876 the market was 'still stagnant', but started improving in 1877, a trend that is clear from the pick-up in shipbuilding output on the River Wear. Steamers were gradually winning the battle with sail. According to McGregor '1878 can be regarded as the last year in which sail

figured at the same equality as steam in the China trade'.[38] Although the market was weak, it was not a particularly severe recession. Rates were seasonal, and the words 'dull', 'lifeless' and 'stagnant' were repeatedly used in contemporary reports to describe business. Shipbuilding deliveries were running well below the peak of 1872. On the Wear launches fell from a peak of 134,825 grt in 1872 to 54,041 grt in 1876, after which they recovered to 112,000 grt in 1878.

Cycle 9: 1881–9

The next cycle also lasted 8 years, spanning most of the 1880s. The boom picked up in the autumn of 1879 when rates showed 'considerable firmness' and 'in almost every trade a fair amount of business is doing which leaves more or less profit, and there is a better state of things than could be noted during several winters past'.[39] Firm rates continued until 1882, driven by an expanding trade cycle. The strength of this boom is apparent from the sharp rise in shipbuilding launches. This was a real shipbuilding boom. Output on the Wear was 108,626 grt in 1880 and, following heavy ordering in 1880–1, doubled to a peak of 212,313 grt in 1883.

After a slow start in 1883 the recession gathered force in 1884. 'The rates at which steamers have been chartered are lower than have ever before been accepted. This state of things was brought about by the large over-production of tonnage during the previous three years, fostered by the reckless credit given by banks and builders, and over-speculation by irresponsible and inexperienced owners. The universal contraction of trade also aggravated the effect of the above causes'. It continued this way until 1887, making it a four-year trough. In fact, the recession was coming to an end, but, as so often happens, the transition from recession to boom was somewhat drawn out. Three years into the recession the volume of shipbuilding output in the UK had fallen sharply from a peak of 1.25 million grt in 1883 to a trough of 0.47 million grt in 1886.

Cycle 10: 1889–97

The third cycle was of similar length, spanning 1889–1897. The 1880s ended with a real freight boom, described as 'remarkable in the history of shipping'. In fact 1888 opened quietly, but in the autumn the freight index, which had fallen to 59 in 1886, peaked at 76, a 29% increase. In 1889 freights remained at this level and prices for completed cargo steamers rose by 50% from £6.7 to £9.9 per deadweight ton. Shipbuilding output continued to grow, with launches on the Wear in 1889 reaching 217,000 grt, higher than the previous peak of 212,000 grt in 1883. In total the peak lasted a little over 18 months.

In 1890 the market moved sharply into recession. By the end of the year observers commented on 'The sudden relapse of all freights and all values of steam property from the high points reached in 1889 to about the lowest figures touched during the long recession from 1883 to 1887 … The rates now ruling leave a heavy loss in working for all but cheaply-bought new steamers … The only sure means of improving the position was a wholesale laying-up of steamers in order to reduce the amount of trading tonnage by 25%'.[40]

The recession which followed lasted most of the decade. There was a modest recovery in 1895 and the market progressively improved during the next three years. Once again attention is focused on the shipbuilding scene, where the level of production had not fallen as sharply as in the previous recession. Launches on the Wear reached 215,887 grt in 1896, almost back to the 1889 peak.

Cycle 11: 1898–1910

The fourth and last cycle before the First World War was also the longest, lasting 12 years. After the protracted recession of the early 1890s, there was a three-year freight market boom, starting in 1898. That year opened with a distinctly firm market as 'the effect of the long stoppage of work in the engine shops and shipyards caused by the engineers' strike of 1897, and a general awakening of trade, but the actual advance in prices was so gradual that purchasers were able to get in contracts for an immense amount of tonnage at cheap rates'.[41]

The year 1899 proved less profitable than expected, but far from unsatisfactory. Bad crops in India and Russia reduced the exports from these areas, undermining the anticipated boom. Then 1900 was a memorable year for the shipping industry: 'It would be hard to find any year during the century which could compare in respect of the vast trade done and the large profits safely housed'.[42] The freight index reached the highest level since 1880 and, as a result of orders placed during this period, in 1901 shipbuilding launches on the Wear were close to 300,000 grt.

A major factor during 1900 was the large amount of government transport taken for the South African war, but also for India and China. By the last quarter the market was starting to run out of steam. 'The last quarter witnessed a general sobering down, showing distinctly that the flood tide was spent, and a gradual ebb commenced. The general conditions of the world's trade point to no sudden contraction or slump, but to a continuance of steady and widespread business for some time to come, though at gradually reducing margins of profit'.[43]

Things did not work out quite so well. By 1901 the market was back in recession. Starting from a decline of 20–30% from the best rates fixed in 1900, there was a further fall of 20–30%. By the autumn of 1901 rates were 50% below the peak levels in 1900. The year 1901 was poor and in 1902 'the result of the year's trade, as far as the 80% of British Shipping is concerned, was an absolute loss to the vast majority of ships, or at best the bare covering of out of pocket expenses. Of the remaining 20% of tonnage, consisting of "liners" proper, only the few most favoured companies have done well, viz. those with good mail contracts'.[44] The market remained more or less in depression until 1909.

Despite the recession, by 1906 shipbuilding launches on the Wear reached 360,000 grt, an all-time record. Considering the level of freight rates, the newbuilding boom is difficult to explain. It may have been triggered by the large cash reserves built up during the previous market boom and anticipation of a market upturn. Shipbuilders trying to maintain their business volume may also have contributed. Angier thought so, commenting that in 1906 'The knowledge that many fleets of steamers were owned far more by the

builders than by the registered owners [has] become a commonplace, but this year we have seen a shipbuilder's syndicate entering directly into competition with shipowners and securing a mail contract from Australia. This action was received with natural annoyance on the part of the established lines'.[45]

Cycle 12: 1911–14

Finally, in 1911 the industry moved into a period of better trading conditions during which most owners made modest profits. This improvement was 'contributed to by the general improvement in the trade of the world, the cessation of building brought about by the lockout of the boiler makers by the shipbuilders, and the removal from freight markets of a number of obsolete steamers which their owners have been driven, by the prohibitive premiums demanded by underwriters, to sell for breaking up'.[46] In 1911 freights were higher than in any year since 1900, though returns on capital were not much more than 'would have been made by the investing of a like amount in first class securities, involving no labour or retention'.[47] The year 1912 witnessed a 'boom' in freights which enabled shipowners to make a real profit. The freight market collapse started again in 1913 but was interrupted by war.

Shipping cycles between the wars (1920–40)

The period between the First and Second World Wars had a very different character. It was not a particularly prosperous period for shipowners, and Jones comments: 'For most of the period between the wars it appears from the statistics of laid up tonnage that the world was over-stocked with shipping'.[48] In fact the period falls into two separate decades, the first poor and the second disastrous. The first, from 1922 to 1926, was volatile and from time to time shipping was modestly profitable. The second, from 1927 to 1938, was dominated by the great shipping depression of the 1930s.

In terms of cycles, it was a very strange period. In 1920 there was one of the most extreme market booms in the history of shipping. Freight rates went to record levels, and the General Council of British Shipping index jumped 140, four times the normal level. But the extent of the boom is best illustrated by the escalation of ship prices. A modern cargo ship, which had cost £55,000 in September 1914 at the start of the war, jumped in price from £169,000 in 1918 to 232,500 at the end of 1919. But two years later the price was back down to £60,000, where it stayed for the rest of the decade.[49] So that got the period off to a quirky start. According to Jones, the explanation of this boom was wartime reparations.

During the war, losses of merchant shipping to submarine warfare on the North Atlantic had become so severe that shipbuilding production had become a major strategic issue. In the United Kingdom, at that time the world's leading shipbuilder, capacity was expanded and between 1917 and 1921 the United States set up the first mass-production facility for merchant ships at Hog Island. The facility, which had 50 slipways, was designed to build 7800 dwt freighters for the war effort. However, it did

not come into production until a few months before the end of the war, and it helped to swell surplus capacity. The result was that shipping in the 1920s was under a cloud of shipyard overcapacity, making it difficult to disentangle the cycles. The index shows little change over the 20 years, with just three short peaks and two lengthy troughs. The average length of cycle was 7.8 years. Contemporary records show that the first cyclical trough started in 1921 and continued until 1925. During this period the market was weak, though this is not fully reflected in the annual statistics. In 1926 there was a brief boom, triggered by the coalminers' strike in the UK, plus a revival in business activity. By the end of 1927 rates were slipping again and the market moved into a seven-year trough, one of the longest on record.

Cycle 13: 1921–5

The 1920s started with a boom and in 1921 the Economist freight index reached 200. After this spectacular start to the decade, the market was never really strong. By 1922 the freight index had fallen to 110. From then onwards freights fluctuated throughout the 1920s, creating conditions which, though not wildly profitable for shipowners, provided a modest living from year to year.[50] There was a brief recession in 1924–5 followed by a brief 'boom' when freight rates touched 170 in 1926, when demand was driven up by heavy coal imports from the USA to the UK during the miners' strike of that year. This is taken as the end of the fifth cycle, though the precise timing is debatable. After a spectacular start to the decade, second-hand prices were relatively stable, offering no opportunity for asset play profits. The Fairplay price index for a standard 7,500 dwt vessel opened at £258,000 in the first quarter of 1920. By spring 1921 it had fallen to £63,750, where it stayed, with the exception of a brief fall to £53,000 in 1925, until December 1929.

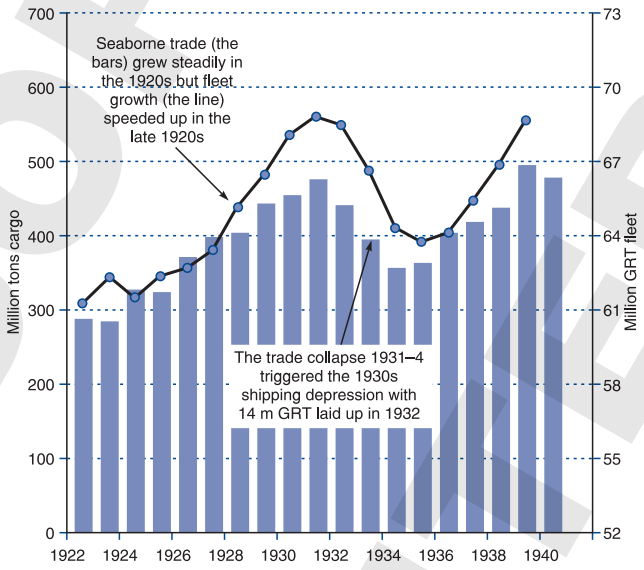


Figure 3.9
Sea Trade, 1922–38
Source: Sturmey (1962) Lloyd's Register

There were three developments which gave this period its distinctive character. By far the most important were the boom and bust cycle in sea trade. Between 1922 and 1931 the volume of seaborne trade increased by more than 50% from 290 million tons to 473 million tons, before falling precipitously to 353 million tons in 1934 (Figure 3.9). The second was shipyard overcapacity. During the First

World War the shipyards had built up capacity to replace heavy wartime losses of merchant ships, especially in the North Atlantic. The annual merchant tonnage launched during the war was 3.9 million gt, compared with only 2.4 million grt annual launches in 1901–14. After record production of 4.45 million grt in 1921, output fluctuated between 2 and 3 million grt. The lowest year was 1926, when production fell to 1.9 million grt. This was the best year of the decade for freight rates. Third, this was a period of moderate technical change. Internal combustion engines were starting to replace steam engines; oil was replacing coal as a primary fuel; and specialist ships such as tankers were being built in greater numbers.

Cycle 14: 1926–37 (The Great Depression)

A patchy market in the 1920s turned into the 1930s depression. Ironically, in 1929 some shipowners were predicting a return to more favourable market conditions, but the Wall Street Crash of October 1929 and the subsequent recession in world trade plunged the shipping industry into a major depression which lasted until the late 1930s. There is no doubt about the cause of the depression. Between 1931 and 1934 the volume of sea trade fell by 26%, and this coincided with a phase of rapid expansion of the merchant fleet, as can be seen in Figure 3.9. As a result laid-up tonnage increased from the 'normal' level of 3 million gt in June 1930, to a peak of 14 million gt by June 1932, representing 21% of the world fleet, after which heavy scrapping started to remove the surplus.

The financial consequences for the shipping industry were severe. The Economist freight index, which had averaged 110 in the 1920s and had never fallen below 85, fell to 80 points and stayed there. The fall in second-hand ship prices was even more severe, reaching a trough in the first half of 1933. Jones comments:

> Ship values fell by 50% in 1930. Similar depreciation is disclosed in the sale records of post-war vessels of every type and size. Single- and two-deck steamers built in the early post war period, which at the time were valued at between £200,000 and £280,000, were being sold for £14,000 in 1930. A number of these vessels were sold during 1933 and during the early part of the year these were changing hands for between £5,000 and £6,000. There was a slight recovery in the autumn, and in December the S.S. *Taransay*, a single-deck steamer, was sold for £11,500.[51]

By 1933 financial pressures had become so great, and market sentiment so adverse, that financially weak owners were forced to sell their ships at the distress prices which distinguish a depression from a recession. The banks played a leading role in forcing down prices and 'the market was hammered into insensibility by the ruthless and incredible course pursued by British banks in 1931 and thereafter'.[52] This trough in prices created an active speculative market and, 'values having reached such an unprecedented low level, extraordinary activity was recorded in the ship sale market. Foreign buyers recognized the opportunity to acquire tonnage at bargain prices. Greek buyers were especially prominent'.[53] Between 1935 and 1937, 5 million gt of ships were scrapped.

This was coupled with the renewed growth of sea trade, which finally passed its 1929 peak in 1937 and by January 1938 ships in lay-up had fallen to 1.3 million gt. As a result the freight index had shot up from 80, where it had been for the previous five years, to 145.

This 'boom' did not last long. The position deteriorated rapidly due to a decline in trade in 1938 and a recovery of shipbuilding deliveries to 2.9 million tons in 1937 and 2.7 million tons in 1938. Within 6 months, laid-up tonnage increased by over a million tons (on 30 June 1938, out of 66.9 million tons in existence, 2.5 million tons was laid up). Further details of the cycles during the inter-war period can be found in the discussion of shipbuilding market cycles in Chapter 15.

3.7 BULK SHIPPING MARKET CYCLES, 1945–2008

In the fifty-year period following the Second World War, the seven dry cargo freight market cycles were shorter, averaging 6.7 years each. During this period the bulk shipping markets developed, and we need to track developments in the tankers market as well as the dry cargo cycles. Dry cargo freight rates are shown in Figure 3.10 which continues the sequence of dry freight cycles, starting with cycle 15 in 1947 and ending with cycle 23 in 2003–8, whilst the tanker spot rates are shown in Figure 3.11. Although there are similarities in the timing of cycles, the shape is different. The dry cargo cycles are more clearly defined and the peaks tend to be longer, while the tanker cycles are

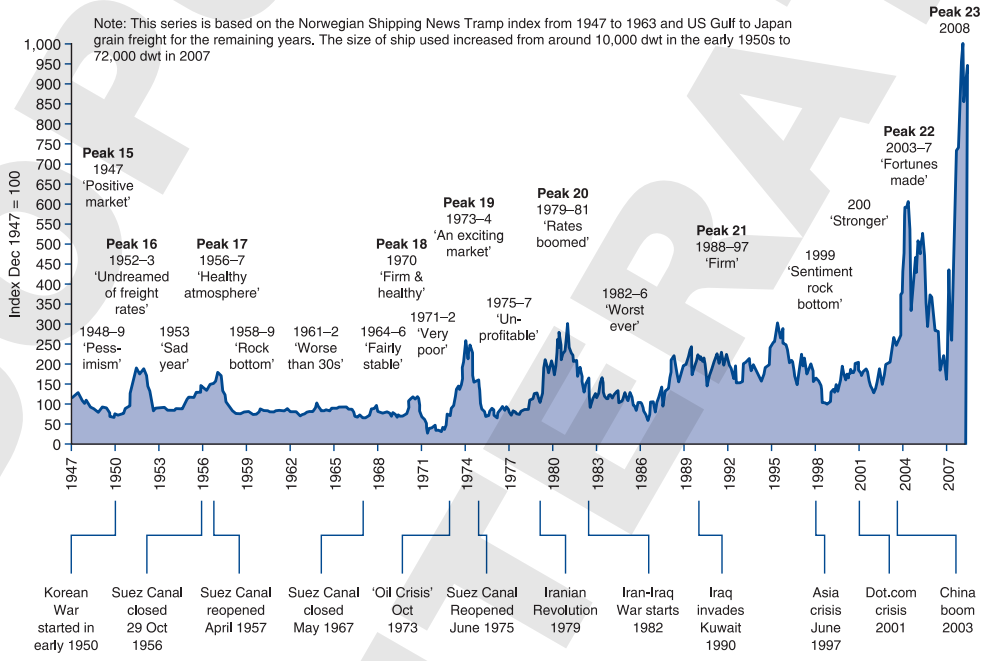


Figure 3.10
Bulk carrier shipping market cycles, 1947–2008
Source: Compiled by Martin Stopford from various sources

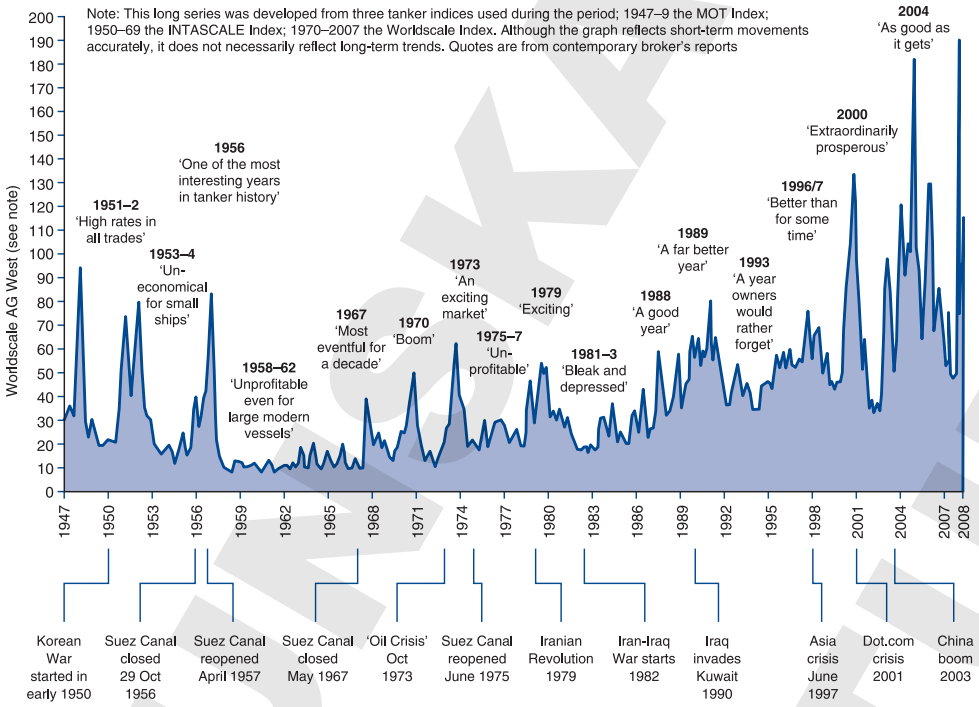


Figure 3.11
Oil tanker shipping market cycles, 1947–2008
Source: Compiled by Martin Stopford from various sources

more 'spiky'. Since freight rates do not tell the whole story, the graphs are annotated to show the terms in which shipbrokers were describing the market at each point. Changing technology made new markets possible and the liner and tramp markets which dominated the previous period gave way to a range of specialized bulk shipping markets. The main markets which developed during this period were tanker, bulk carrier, LPG, LNG, container, offshore, cruise and sophisticated ferries. In the bulk market the multi-deck tramp ships which had dominated the business for a century were progressively replaced by more efficient specialized ships.

The technological trend, 1945–2007

During the post-war period the freight trend line, adjusted to constant prices using a US inflation index, fell from 15 to less than 5. This is clear evidence that the period was one of extreme technical change, and these changes have been documented elsewhere. Bigger ships, specialized vessels, improved on-board technology and more efficient engines combined to reduce the cost of freight by about two-thirds. Quite an achievement.

The first twenty-five years after the Second World War saw extraordinary growth in sea trade (Figure 3.12), which increased from 500 million tons in 1950 to 3.2 billion tons in 1973. Once again this was a period of great technical change in the shipping

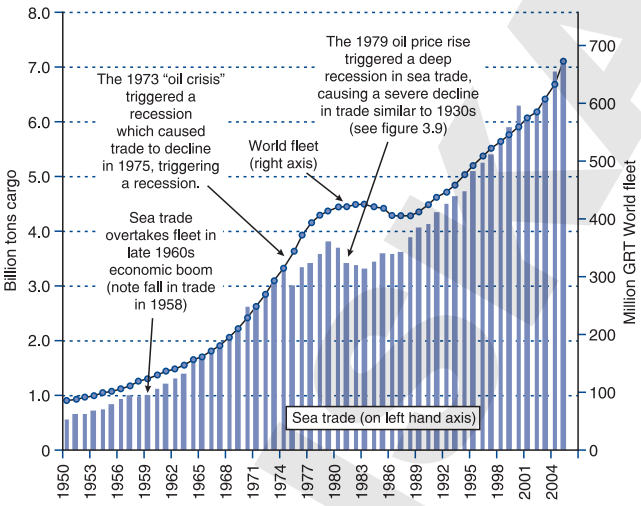


Figure 3.12
Sea Trade, 1949–2005
Source: *United Nations Yearbook* (various years)

industry, though the emphasis was on organization as much as hardware. Major shippers in the energy and metal industries took the initiative in developing integrated transport operations designed to reduce their transport costs. The trend towards specialization was continuous and pervasive. In 1945 the world merchant fleet consisted of passenger ships, liners, tramps and a small number of tankers. Few vessels used for cargo transport were larger than 20,000 dwt. By 1975 the fleet had changed out of all recognition and all the major trades had been taken over by specialized ships. Dry bulks were carried by a fleet of bulk carriers, oil by crude tanker, and general cargo for the most part by container-ships, vehicles in car carriers, forest products in open hatch lumber carriers and chemicals in chemical parcel tankers. Specialization allowed the size of ship to increase. The largest cargo ships in 1945 were not much more than 20,000 dwt. By the mid-1990s the specialist bulk fleets contained many ships over 100,000 dwt and in the liner trades the largest container-ships were four or five times the capacity of their multi-deck ancestors. Thus the familiar theme of large modern ships forcing out small obsolete vessels continued just as it had in the nineteenth century.

In addition, the market was disrupted by a series of political developments: the Korean War which started in 1950; the nationalization and subsequent closure of the Suez Canal in 1956; the second Suez closure in 1967; the Yom Kippur War in 1973; the second oil crisis in 1979; the Gulf War in August 1990; and the Iraq invasion in 2003. Although the pattern of freight peaks and troughs coincided with fluctuations in the OECD industrial trade cycle, the effects of these political influences were also apparent.

In the mid-1970s the shipping environment changed. There was a fall in sea trade, followed by a major dip in the early 1980s. The scale of this downturn in trade rivalled that of the 1930s in its severity. In the tanker market the sprint for size lost momentum and the fleet, which had previously been young and dynamic, grew old and sluggish. Shippers became less confident about their future transport requirements, and the role of tanker owners as subcontractors gave way to an enlarged role as risk takers. In other parts of the shipping market the technical evolution continued. Bulk carriers continued to increase in size, with volume cargoes such as iron ore and coal moving up into Capesize vessels of over 100,000 dwt. A fleet of car carriers was built, with the largest able to carry 6,000 vehicles. Chemical parcel tankers grew in size to 55,000 dwt.

Container-ships increased from 2,000 TEU in the early 1970s to 6,500 TEU in the mid-1990s, and by 2007 vessels of over 10,000 TEU were being delivered. Ship technology improved with the unmanned engine room, satellite navigation, anti-fouling paint finishes, more efficient diesel engines, vastly improved hatch covers and a host of other technical improvements in the design and construction of merchant ships.

Short-term cycles, 1945–2007

However, it is the short-term cycles that are of real interest. During the period 1947–2007 there were eight dry cargo cycles, and compared to previous periods their average duration was quite short: the peaks averaged 2.4 years and the troughs 3.2 years, so the average cycle was 5.6 years. However, the cycles varied in shape and intensity. Most peaks lasted 2 years but there was a long drawn-out peak from 1988 to 1997, and finally a very long one which started in 2003 and was still going on at the beginning of 2008, making it the best boom in 264 years. On the negative side, there were two very severe recessions, from 1958 to 1964 and from 1982 to 1987, the latter ranking alongside the 1930s recession as the worst of the century. On some measures it was the most extreme since 1775, which helps to put things into perspective.[54]

Cycle 15: 1945–51

The post-war market got off to a good start in 1945: 'As a result of scarcity of tonnage and the tremendous need for transportation, the freight quotations were soon at a sky high level and seemed fantastic compared with pre-war rates'.[55] The market remained firm in 1946. In 1947 it started a downward trend, reaching a trough in 1949 when 'pessimism prevailed. Generally speaking there was ample tonnage and consequently falling rates'.[56] The year 1950 was quiet until the autumn when 'there was a considerable lack of tonnage in a great many trades resulting in a sudden rise in the market'.[57]

Cycle 16: 1952–5

In 1951 anxieties raised by the Korean War sparked a wave of panic stock building. Seaborne trade grew by 16% in the year, creating a market 'undreamed of only one year ago'. The peak only lasted a year and by spring 1952 freights had fallen by up to 70% as the reaction to the panic of 1951 set in. By 1953 laid-up tonnage was increasing as import restrictions and the overstocking of 1951 continued to make themselves felt. Second-hand prices give a clear idea of the extreme nature of this cycle. The price of a reasonably prompt Liberty ship built in 1944 increased from £110,000 in June 1950 to £500,000 in December 1951. By December 1952 it was back down to £230,000.[58] The year 1954 demonstrated once again how unpredictable the shipping industry can be: 'The freight market went from bad (1953) to worse (in the first half of 1954) and then to a considerable improvement in the last half of 1954'.[59] In the autumn of 1954 the market started to tighten and by year's end rates were up 30%. The improving trend continued through 1955 and when the Suez Canal closed in November 1956, diverting

Suez traffic to the longer journey round the Cape, there was a tremendous boom in rates and time-charter activity.

Cycle 17: 1957–69

The events which followed the Suez crisis provide a case study of the 'shipping game' at its most exciting, as the 1956 boom was suddenly followed by a severe recession (see Chapter 8). Platou comments:

> The year 1957 shows how almost impossible it is to predict the future of the shipping industry. The forecasts made at the end of 1956 by leading shipping personalities were fairly optimistic. Nobody seemed to expect the recession which subsequently occurred, a depression which must be considered the worst since middle thirties. From sky high rates at the end of 1956 they fell throughout 1957 to what can only be termed an almost rock bottom level…There were few people, if any, who imagined that, with small changes, it would turn out to be a ten year depression only relieved by a second and more lasting closure of the Suez Canal in 1967.[60]

A complex range of economic and political variables conspired to produce the lengthy recession. Tugenhadt describes the part which the oil companies played in creating a tanker investment boom which drove the market down.

> It was during the 1956 Suez crisis that owners made their biggest killings. When the canal was closed and tankers had to be rerouted round the Cape of Good Hope there were not enough available to carry the oil that was needed, and charter rates rose astronomically. The companies, believing like everybody else that the Egyptians would be incapable of running the canal after it had been cleared, thought the shortage would last well into the 1960s until new ships had been built. They therefore signed contracts in which they not only hired tankers for immediate work at the high prevailing rate but also agreed to terms for chartering ships which had not yet been built for work in the 1960s. … When the Egyptians showed they could operate the canal efficiently the bottom fell out of the tanker market, but the companies were stuck with the contracts.[61]

Several other factors contributed to the over capacity which developed in dry cargo in 1958. Platou singles out stockbuilding, overbuilding, more efficient ships and the world economy:

> The reasons for this decline were many. Stockpiles in Europe at the end of 1956 made it possible to slightly reduce the demand for tramp tonnage in the early months of 1957. The rate of completion of new tramps had increased enormously and these were rapidly replacing the Liberty vessels. These new tramps, averaging 3,000 tons higher capacity than the war-built ships, and faster by four knots, were carrying considerably

> more cargo than the Liberty ships they were designed to replace. Also contributing to the decline were the restrictions on trade imposed in a number of countries caused by shortage of foreign exchange. Other contributory causes were the accelerating tendency towards self-sufficiency in shipowning, chartering, and shipbuilding in hitherto non-maritime countries, and the fact that Japan suddenly became an important supplier of tramp tonnage to the world's merchant fleet. Last, but not least, the recession in world trade helped to force rates down to well below operating levels.[62]

The severe recession in the world economy certainly played a major part. OECD industrial production fell by 4% in 1958, producing the first decline in seaborne trade since 1932 (Figure 3.12). The reopening of Suez reduced tanker demand and coincided with record deliveries of newbuildings ordered during the strong market of 1955–6. However, the cause of this long recession was not primarily a lack of demand. After the setback in 1958, seaborne trade grew from 990 million tons in 1959 to 1790 million tons in 1966, an increase of 80% in seven years. The real problem was on the supply side. After the shortages of the 1950s, shipbuilding output more than doubled, and an expanding flow of large modern vessels was largely responsible for keeping charter rates down. It was not until the closure of the Suez Canal in 1967 that tanker freight rates returned to really profitable levels. However, this second Suez crisis was not really a rerun of its predecessor because supply had become more flexible:

> So many ships were ordered in the aftermath of the 1956 crisis that for several years before the canal closed again in 1967 there was a considerable surplus of tankers, and many of them had to be converted into grain carriers to find employment. As a result, the shipowners were unable to repeat their coup. Within a few weeks of the closure some 200 tankers totalling 5 million tons had been brought back into oil carrying, and Europe's supplies were assured. The companies therefore refused to charter vessels for more than two or three voyages at a time, instead of for several years ahead. Nevertheless, the crisis was highly profitable for owners…The Norwegian Sigval Bergesen showed what this meant in overall terms when he chartered the 80,000 ton *Rimfonn* to Shell for two voyages that brought in £1m.[63]

In short, the decade following the 1956 Suez boom was less prosperous for the shipping industry. Sizeable losses were made by owners trading on the spot market during the first half and, although in the second half the market improved, demand never got sufficiently far ahead of supply to push rates to acceptable profitable levels.

Cycle 18: 1970–2

The Six Day War between Israel and Egypt in 1967 and the subsequent closure of the Suez Canal marked the start of seven prosperous years for shipowners in the charter market. There were three freight market booms, and at various times owners were able to fix time charters at highly profitable rates. Since oil was the largest cargo moving through the Suez Canal at this time, the main impact of its closure was felt in the tanker market.

The dry cargo market benefited indirectly from improved rates for ore carriers owing to combined carriers switching into oil trading but, in general, the increase in rates was less noticeable than in the tanker market. The booms of 1970 and 1973 both coincided with exceptional peaks in the industrial trade cycle, reinforced by political events such as the closure in May 1970 of Tap Line, the oil pipeline running from the Arabian Gulf to the Mediterranean, which cut back the availability of oil from Sidon by 15 million tons. Later in the year the restrictions on Libyan oil production by the new regime gave a further boost to the market. A similar pattern occurred when the nationalization of Libyan oil supplies in August 1973 made oil companies cut back their take-up of Libyan oil in favour of the more distant Middle East sources.

However, the real cause of the buoyant market was an unprecedented growth of trade. Seaborne trade increased by 78% from 1807 million tons in 1966 to 3233 million tons in 1973. The increased requirement for ships during this seven-year period was greater than in the previous 16 years. Despite rapidly expanding shipbuilding capacity, the shipyards had difficulty keeping pace with demand. There was a recession in 1971, but it proved short-lived, and many owners were covered by profitable time charters contracted in 1970. It was, therefore, a period of great prosperity and expansion in the shipping industry.

Cycle 19: (bulk carriers) 1973–8

The year 1973 was one of the great years in shipping, comparable with the 1900 boom triggered by the South African war. During the summer the time-charter rate for a VLCC doubled from $2.5 per deadweight per month ($22,000 per day) to $5 per deadweight per month ($44,000 per day). The extremity of conditions sowed the seeds for a spectacular bubble in ship prices. Hill and Vielvoye describe the price spiral in the following terms:

> The upward movement in ship prices began at the end of 1972, and during 1973 the price of all types of ships rose by between 40 and 60 per cent compared with the previous year, with the most significant increase being paid for tanker tonnage. Owners were prepared to pay vastly inflated prices as a result of premiums on ships with an early delivery … In this situation a very large crude carrier which had been ordered in 1970 or 1971 at a cost of about $26.4 million could realize a price of between $61m and $73.5m.[64]

The tanker market collapsed following the Yom Kippur War in 1973, but the dry cargo market held up through 1974 and for small bulk carriers into 1975, spurred on by buoyant economic growth, a phase of stockbuilding in the world economy as a result of commodity price inflation, and the heavy congestion in the Middle East and Nigeria resulting from the boom in these areas triggered by the increased oil revenue. This is an interesting example of a dry cargo peak outlasting a downturn in the world economy.

Between 1975 and 1995 the dry cargo market followed a different pattern from tankers. For bulk carriers the cycle 19 trough only lasted 3 years from 1975 to 1978.

The very firm market in 1973–4 allowed owners to fix time charters that yielded profits for several years after. However, the spot market moved into recession in 1975 and the 3 years from 1975 to 1978 were very depressed for all sizes of vessels. Although there was some seasonal fluctuation, on average, freight rates were not sufficient to cover running costs. By 1977 many owners were experiencing severe liquidity problems.[65]

In the autumn of 1978 the dry cargo recovery started, leading to a very firm market in 1979–80. By the end of 1978 freight rates had risen 30%, and they continued their climb through 1979 to a higher level than the 1974 peak. There were several reasons for strength of this recovery. The stage was set by a sharp improvement in the fundamentals. Trade in the major bulk commodities grew by 7.5% in 1979, but supply increased by only 2.5% due to the low ordering during the previous recession. On top of this came the knock-on effect of the 1979 oil price increase. Power utilities around the world switched from oil to coal, giving a major boost to the thermal coal trade. This effect was reinforced by congestion. According to *Fearnleys Review*, 'the backbone of the freight market in 1980 was the heavy congestion in important port areas. In the last quarter of the year the waiting time for coal carriers in US ports soared up to 100 days which in fact trebled the need for tonnage in these trades'.[66] The congestion was widespread, particularly in the Middle East and West Africa where traditional port facilities could not cope with the flood of trade. Rates climbed further in 1980 and at the end of December were 50% over the good average reached in 1979.

In the tanker market, the Yom Kippur War ushered in a structural depression which lasted until 1988, relieved by only a brief market improvement in 1979. There were essentially three problems which contributed to the depth of this recession. The first was the oversupply of tankers resulting from the speculative investment in the early 1970s. During the peak year of 1973, the operational tanker fleet was 225 million dwt, but so many new tanker orders were placed that, despite the decline in tanker demand during the next two years, the fleet actually increased to 320 million dwt, creating surplus tanker capacity of 100 million dwt. Secondly, the world shipbuilding industry was now able to build 60 million dwt of merchant ships each year. This was far more than was required to meet the demand for new ships even if the trend of the 1960s had continued. Shipyard capacity was not easily reduced and it took a decade of over-production to cut capacity to a level more in line with demand. Thirdly, the oil price rises in 1973 and 1979 dramatically reduced the demand for oil imports. The market crashed to a trough.

The transformation from boom to bust in 1973 was one of the most spectacular ever recorded in a shipping market. Over the summer rates for VLCCs soared to more than Worldscale (WS) 300, and stayed there until October. Then in October OPEC introduced a 10% embargo on all exports to the West, and the market crashed precipitately, with VLCC rates falling to WS 80 in December. The decline continued through 1974 and by April 1975 the rate for a VLCC from the Gulf to Europe had sunk to WS 15. However, it took nearly a year for the seriousness of the position to sink in. In March 1974, five months after the crisis broke, a 270,000 dwt tanker was fixed for 3 years at a firm $28,000 per day, but eight months later in November a similar fixture was reported at only $11,000 per day.[67] There was little sale and purchase activity, but by year's end prices had already fallen by more than 50%. For example, the second-hand

price of a 1970-built 200,000 dwt VLCC fell from $52 million in 1973 to $23 million in 1974. This proved to be only the beginning. In 1975 the price fell to $10 million, in 1976 to $9 million in 1976 and in mid-1977 to $5 million.

After two years there was a modest recovery in the tanker market. A recovery in the world economy in 1979 started to push rates up, though only to a peak of Worldscale 62 in July 1979. Laid-up tonnage fell from 13.4 million dwt to 8.6 million dwt in 1979. However, this was a poor sort of recovery and VLCC rates did little more than cover voyage expenses. Second hand prices also edged up, and the price of a 200,000 dwt VLCC rose to $11 million. An intermission in a long recession, rather than a market peak.

Cycle 20: (bulk carriers) 1979–87 (the 1980s depression)

The dry cargo freight boom lasted until March 1981 when a sharp fall set in. The daily earnings of a Panamax fell from $14,000 per day in January to $8,500 per day in December. The initial trigger for the fall was a US coalminers' strike which caused a decline in the Atlantic market.[68] The more fundamental problem was the start of a severe recession in the world economy. Falling oil prices, a stagnant coal trade and elimination of congestion pushed rates down to levels that by 1983–4 some brokers were describing as the worst ever experienced.

The following year, 1982, brought a further halving of freight rates. By December 1982 the earnings of a Panamax bulk carrier were down to $4200 per day. In the time-charter market a great number of time charters negotiated in the previous year had to be renegotiated to allow the charterers to survive, and many charterers failed to meet their commitments altogether, which resulted in premature redeliveries and further difficulties for shipowners.[69] Freight rates improved slightly in the spring of 1983, but fell to the bottom level in the summer and stayed there. Although freight rates were very depressed, in 1983–4 large numbers of orders were placed for bulk carriers. The whole process was started by Sanko Steamship, a Japanese shipping company, which secretly placed orders for 120 ships. Their example was soon followed by a flood of orders from international shipowners, particularly Greeks and Norwegians. The explanation of this counter-cyclical ordering, which resembles a similar event in 1905–6, is complex. Shipowners had accumulated large cash reserves during the 1980 boom; banks, which had large deposits of petrodollars, were keen to lend to shipping; and ships were cheap because the shipyards still had overcapacity and no tankers were being ordered. In addition, the shipyards were offering a new generation of fuel-efficient bulk carriers which looked very attractive at the prevailing high oil price. The yen was favourable, making ships ordered in Japan look cheap. Finally, owners ordering in 1983 expected the cycle to last 6 years as its predecessor had done, so they would take delivery in the next cyclical upswing which on that calculation was due in 1985.

If so many owners had not had the same idea, this would have been a successful strategy. Expectations that trade would improve were fulfilled. In 1984 the business cycle turned up and there was a considerable increase in world trade. However, the combination of heavy deliveries of bulk carrier newbuildings, many ordered speculatively in the previous two years, and the fact that the combined carrier fleet could find

little employment in the tanker market ensured that the increase in rates was very limited. Panamax bulk carrier freight rates struggled up to $6,500 per day in 1985, then collapsed under a flood of deliveries with the result that, as *Fearnleys* commented, 'shipowners lived through another year without being able to cover their costs'.[70] Just to make matters worse, by this time the yen had strengthened and bulk carriers ordered in yen but paid for in dollars cost more than expected.[71] Many shipowners who had borrowed heavily to invest in newbuildings now faced acute financial problems. Bank foreclosures and distress sales were common and second-hand prices fell to distress levels.

In financial terms the market trough was reached in mid-1986 when a five-year-old Panamax bulk carrier could be purchased for $6 million, compared with a newbuilding price of $28 million in 1980, identifying this as a depression rather than a recession.[72] As trade started to grow and scrapping increased, the dry market moved into balance, with freight rates in both markets reaching a peak in 1989–90. Freight rates for a Panamax bulk carrier increased from $4400 per day in 1986 to $13,200 per day in 1989. This stimulated one of the most profitable asset play markets in the history of the bulk carrier market.[73]

Cycle 20: (tankers) 1979–87

For the tanker market this period was a disaster. The Iranian revolution in 1979 pushed the price of oil from $11 a barrel to almost $40 a barrel, triggering a massive response from oil consumers and an appalling tanker cycle. During the previous five years much research had been devoted to finding alternative energy sources, and many power stations had taken steps to permit the use of coal as an alternative energy source. When the oil price increased, there was an immediate reaction and the seaborne trade in oil fell steadily from 1.4 billion tonnes in 1979 to 900 million tonnes in 1983. This laid the foundation for an extreme recession in the tanker market, with a surplus approaching 50% developing as this fall in demand combined with the over-building of the 1970s.

By 1981 brokers commented:

> the tanker freight market in 1981 could very well be described by two words, bleak and depressed. The previous 5 years gave an acceptable return to owners of tonnage up to 80,000 dwt, and even occasionally some encouragement to larger tankers through periodic increases in demand. However 1981 cannot have given any tanker owner with ships on the spot market anything but net losses. The rates for VLCC and ULCC tonnage showed an overall slide. At rates hovering around WS 20 the transport of crude oil is virtually subsidised by the tanker owners by hundreds of thousands of dollars per voyage.[74]

The result was a severe depression as the market squeezed cashflow until sufficient tankers had been scrapped to restore market balance. By April 1983 the rate for a VLCC trading from the Arabian Gulf to Europe had fallen to WS 17 and prices had fallen dramatically. Because there were few old tankers for scrap, especially in the bigger

sizes where the surplus was concentrated, this took years to achieve and eventually many younger vessels were scrapped. For example in November 1983 the 8-year-old *Maasbracht*, a 318,707 dwt tanker, was sold for scrap at $4.65 million.

Laid-up tanker tonnage increased to 40 million dwt in 1982 and 52 million dwt in 1983. By this time tanker prices were back to scrap levels and, even at these prices, ships that were 5 or 6 years old could not always attract a bidder. In the autumn VLCCs were sold for little over $3 million. The statistics do not do justice to the difficulties faced by tanker owners trading on the charter market during this period. In 1985 sentiment hit 'rock bottom':

> The last ten years of capital drain in the tanker industry have no historical precedent and we have witnessed a decimation of shipping companies which has probably no parallel in modern economic history, even taking into account the depression of the 1930s. The surviving members of the independent tanker fleets must be akin to those of the world's endangered species whose survival appeared questionable in a changing and hostile environment, but have instead shown a remarkable ability to adapt.[75]

If nothing else, this demonstrates that in a free shipping market the adjustment of supply is a long-drawn-out, uncomfortable and expensive business, however simple it may look in theory. In 1986 the market showed the first signs of starting to pick up. Over the year freight rates increased by 70% and the price of an 8-year-old 250,000 dwt VLCC doubled from $5 million to $10 million. This was the start of a spiral of asset price appreciation, and by 1989 the vessel was worth $38 million, despite being three years older. Inevitably this triggered heavy investment in new tankers and the great tanker depression of 1974–88 ended as it had begun with a phase of speculative building.

Cycle 21: 1988–2002

After the market bottomed out for tankers in 1985 and bulk carriers in 1986, rates rose steadily to a new market peak which was reached in 1989, coinciding with a peak in the world business cycle. During the next five years the tanker and bulk carrier markets developed very differently, due mainly to the different attitudes of investors in the two markets.

In the tanker market the freight peak was accompanied by three years of heavy ordering, from 1988 to 1991, during which there were orders for 55 m.dwt of new tankers. This rush of investment was based on three expected developments in the tanker market. Firstly, the fleet of ageing tankers built during the 1970s construction boom was expected to be scrapped at 20 years of age, creating heavy replacement demand in the mid-1990s. Secondly, shipbuilding capacity had shrunk so much in the 1980s that many observers thought there would be a shortage when the replacement of the 1970s-built tanker fleet built up in the 1990s. Rapidly increasing newbuilding prices seemed to support this view. For example, in 1986 a new VLCC had cost less than

$40 million, but by 1990 the price was over $90 million. Thirdly, growing oil demand was expected to be met from long-haul Middle East exports, creating rapidly increasing demand for tankers, especially VLCCs. As it turned out none of these expectations were realized. Most of the 1970s-built tankers continued to trade beyond 20 years; by the mid-1990s shipbuilding output had more than doubled from 15 m.dwt to 33 m.dwt; and Middle East exports stagnated as technical innovation allowed oil production from short-haul sources to increase faster than expected. Delivery of the tanker orderbook pushed the market into a recession which lasted from early 1992 to the middle of 1995 when a recovery finally started and freight rates moved onto a steady improving path.

Conditions in the dry bulk market took the opposite path. This was one of the rare periods when there was no clear cycle. Dry bulk freight rates peaked along with tankers in 1989, but over the three years from 1988 to 1991 when tanker investors ordered 55 m.dwt, only 24 m.dwt of bulk carriers were ordered. When the world economy moved into recession in 1992 bulk carrier deliveries had fallen to only 4 m.dwt per annum, compared with 16 m.dwt of tanker deliveries. This tonnage was easily absorbed and, after a brief dip in 1992, dry bulk freight rates recovered, reaching a new peak in 1995. By this time five years of relatively strong earnings had triggered heavy investment in bulk carriers and, in the three years from 1993 to 1995, 55 m.dwt of bulk carriers were ordered. As deliveries built up in 1996 the dry bulk market moved into recession. Things started to go wrong for the bulk shipping market in June 1997 when the 'Asia crisis' triggered a recession in the Asian economies. During the first half of 1997 industrial production boomed, growing by 9% in the Pacific region. By the spring of 1998 it had slumped to –5% growth, halting inward investment into the emerging Chinese economy. It was widely expected that recovery would take several years and freight rates in both the tanker and dry bulk markets slumped. Crude tanker earnings slumped from $37,000 a day in June 1997 to less than $10,000 a day in September 1999, and bulk carriers and containerships followed suit. Brokers commented in September 1999 that the 'last six months were memorable in shipping markets for their consistency. Just about every market segment was in recession'.[76]

As so often happens in shipping cycles, things did not develop as anticipated, and during the next two years the market experienced a classic boom and bust cycle. The Asian economies only remained in recession for a few months, and by the spring of 2000 industrial production was growing faster than ever, at up to 11% per year. Meanwhile the negative sentiment in the tanker market had triggered heavy scrapping of the 1970s tankers which were coming to the end of their life and as a result the tanker and bulk carrier fleets grew very slowly. In response tanker freight rates surged to a new peak, with VLCCs achieving earnings of $80,000 a day in December 2000. The dry bulk market also edged upwards, but less forcefully than the tanker market. But overall the shipping market saw its first real boom for 25 years. Unfortunately it did not last too long. In early 2001 the collapse of internet stocks triggered a deep recession in the Atlantic and Asian economies, and by the end of 2002 industrial production in both the Atlantic and the Pacific was declining. In response freight rates slumped, with VLCC earnings down to $10,000 a day and Capesize bulk carriers to $6000 a day.

Owners and analysts felt that this was perfectly normal, and were grateful to have had one fantastic year.

Cycle 22: 2003-7

Which brings us to the final cycle, which started with a peak which turned out to be one of the most extreme in the period under review. During the previous six years China had been developing its economy, employing an open-market model which attracted inward investment. In early 2003 it moved into a period of serious infrastructure development, and this required enormous quantities of raw materials. Between 2002 and 2007 China's steel production grew from 144 million tons a year to 468 million tons a year, adding capacity equivalent to that of Europe, Japan and South Korea. Combined with growth of oil imports and exports of minor bulks, in the autumn of 2003 this created an acute shortage of ships. Tanker and bulk carrier rates were propelled to new highs and, despite some volatility, stayed at these high levels for the following four years.

3.8 LESSONS FROM TWO CENTURIES OF CYCLES

Well, that's the history of shipping cycles since steamships and cables opened up the global market. What are the lessons? There seem to be two main conclusions to be drawn from this analysis. The first is that shipping cycles definitely exist and the shipping industry's 'rule of thumb' that cycles last 7 years is certainly supported by the statistics. Shipping cycles last 8 years if you take the last fifty years as the base. The second is that each cycle is different. None of the cycles actually lasted 7 years. Four cycles lasted only 5–6 years from peak to peak, two lasted 8 years, and six lasted over 9 years, all with 5-year troughs. So it would be hard to devise a more dangerous business decision tool. Try telling your bank manager cycles only last 7 years when you run out of cash in a nine-year cycle!

Fundamentals set the tone for good and bad decades

There is no mystery about why these cycles are so irregular. Our analysis demonstrates that they are driven by an undercurrent of economic fundamentals of supply and demand which determines the 'market tone' at any point in time, and in retrospect it is clear that each period has a very different character. To illustrate this point, Table 3.3 shows an assessment of these factors during the period under review, ranked by the relative prosperity of the shipping industry:

1. *Prosperity*. Two periods were prosperous, the 1950s and 1998–2007. In both cases rapidly growing demand coincided with a shortage of shipbuilding capacity.
2. *Competitiveness*. There were three periods of intensely competitive activity characterized by growing trade and shipbuilding capacity that expanded fast enough to keep up with demand.

3. *Weakness*. There was a weak market in the 1920s when growing demand was damped by overcapacity in the shipbuilding market.
4. *Depression*. There were two depressions, in the 1930s and the 1980s when falling trade coincided with shipbuilding overcapacity.

Table 3.3 Shipping market fundamentals analysis

	Demand growth	Supply tendency	Market tone
1998–2007	Very fast	Shortage	Prosperous
1945–1956	Very fast	Shortage	Prosperous
1869–1914	Fast	Expanding	Competitive
1956–1973	Very Fast	Expanding	Competitive
1988–1997	Slow	Expanding	Competitive
1920–1930	Fast	Overcapacity	Weak
1930–1939	Falling	Overcapacity	Depressed
1973–1988	Falling	Overcapacity	Depressed

Clearly, supply and shipbuilding capacity have a part to play in setting the tone for a decade, but are not the whole story. This 'supply-side management' is an area where maritime economists do have something to contribute. The challenge is to help the shipping industry remember the past and anticipate the future. To do this we must improve the clarity of our message, with better information, improved analysis, clearer presentation and greater relevance to the decisions made in the commercial shipping market and, most of all, an open mind. Three centuries of shipping cycles prove that just about anything is possible.

3.9 PREDICTION OF SHIPPING CYCLES

The problem is that although everyone knows about cycles, it is very difficult to believe in them. As each cycle progresses, doubts set in. This time it will be different. The fact that the cycles are never exactly the same just complicates matters. But the harsh reality is that investors who want to make an annual return of more than 4–5% per annum must be prepared to take some 'shipping risk'. They must find a strategy for dealing with the cycles we have discussed at such length. One obvious strategy is to exploit the volatility of freight rates by taking positions based on the expected development of the cycle. The strategy described, for example, by Alderton[77] is to spot-charter on a rising market and, when the peak is reached, to sell or take a time charter long enough to carry the vessel through the trough. Ship acquisitions are made at the bottom of the market when ships are 'cheap'.[78] Few would argue with the principle of buying low and selling high. The skill lies in the execution. Most analysts have been caught out too often to believe they can forecast accurately. However, there is some middle ground.

First we must restate the truth so evident from shipping history, that cycles are not 'cyclical' if by this we mean 'regular'.[79] In the real world shipping cycles are a loose sequence of peaks and troughs. Because the timing of each stage in the cycle is irregular, simple rules like the 'seven-year cycle', although statistically correct over a very long period, are far too unreliable to be worthwhile as a decision criterion. Cufley's warning that 'it is totally impossible to predict when the market will move upwards

(or fall)'[80] deserves to be taken seriously. As he goes on to point out, 'Even reasoned and intelligent assessments, made by experts and covering only a few months, can be made to appear foolish by the turn of events'. So we must carefully weigh up what we can say about the future. There are a few positive factors. Our review in this chapter of the last 12 cycles demonstrates that the same explanations of cyclical peaks and troughs appear again and again. Economic conditions, the 'business cycle', trade growth and the ordering and scrapping of ships are the fundamental variables which can be analysed, modelled and extrapolated. Careful analysis of these variables removes some, but not all, of the uncertainty and reduces the risk. But to these must be added the 'wild cards' which often trigger the spectacular booms and slumps. The South African War in 1900, closure of the Suez Canal, stockbuilding, congestion and strikes in the shipyards have all played a part.

The difficulty of analysing these factors is daunting. The world economy is complex and we often have to wait years for the detailed statistics which tell us precisely what happened. Many of the variables and relationships in the model are highly unpredictable, so the prediction process should be seen as clarifying risk rather than creating certainty. In this respect shipowners are in much the same position as other specialist commodity market traders. Those playing the market must try to understand the cycles and take a risk. That is what they are paid for. An essential part of weighing up this risk is to form a realistic view of what is driving each stage in the cycle – reading the signs as the market progresses through the stages in the cycle, extrapolating the consequences and, when the facts support it, being prepared to act against market sentiment. It is not necessary to be completely right. What matters is being more right than other traders. There is a long history of ill-advised shipping investments which, over the years, have provided a welcome source of income for more experienced investors who buy ships cheap during recessions and sell expensively during booms.

The importance of market intelligence

The whole thrust of this argument is to direct our attention towards the process of obtaining information about what is going on in the shipping market and understanding the implications of any actions we take. Research suggests that successful business decisions are based upon careful consideration of all the relevant facts, while bad decisions often flow from inadequate consideration of the facts. For example, Kepner and Tregoe, in their study of business decisions, made the following comments:

> In the course of our work, we witnessed a number of decisions in government agencies and private industry that ranged in quality from questionable to catastrophic. Wondering how such poor decisions ever came to be made, we decided to look into their history. We found that most of these decisions were bad because certain important pieces of available information had been ignored, discounted or given insufficient attention. We concluded that the process of gathering and organising information for decision making needed improvement.[81]

These observations, which can hardly be at variance with most people's practical experience, emphasize the importance of collecting and interpreting information.

The challenge of successful risk management

So where does this leave us in terms of predicting freight cycles? There are three conclusions to be drawn. First, in shipping cycles, as in poker, for every winner there must be a loser. This aspect of the business is about risk management, not carrying cargo. Shipping is not quite a zero-sum game, but we will see in Chapter 8 that the financial returns average out at a fairly modest level. Second, shipping cycles are not random. The economic and political forces which drive them, although highly complex, can be analysed, and the information used to improve the odds in the players' favour. But remember that if everyone has the same idea, it will not work. Third, like poker, each player must assess his opponents, take a view on how they will play the game, and work out who will be the loser this time. In the end, no loser means no winner.

We should not be surprised that this makes shipping sound more like a gambling game than a sober transport business. It *is* a gambling game. Shippers turn to the shipping market because they do not know how much shipping capacity they will need in future. Nobody does. The job of the shipowner is to make the best estimate he can and take a gamble. If he is wrong, he loses. These decisions are complex and often require decisive action which flies in the face of market sentiment. That is why individuals are often more successful than large companies. Imagine playing poker under the direction of a board of directors. For shipowners with many years in the business, the instinct that drives their decisions probably derives from the experience of past cycles, reinforced by an understanding of the international economy and up-to-date information obtained from the international grapevine. For those without a lifetime of experience, either newcomers to the industry or outsiders, the problems of decision-making are daunting. Many bad decisions have been made because of a misunderstanding of the market mechanism. Our aim in the following three chapters is to examine the economic structure of the markets in which sea transport is traded and the fundamentals which drive them.

3.10 SUMMARY

In this chapter we have discussed the economic role of cycles in the shipping industry.

We started with the characteristics of cycles, identifying the secular trend, short cycles and seasonal cycles. Then we moved on to define shipping risk. This is the risk that the investment in the hull of a merchant ship, including the return on the capital employed, is not recovered during a period of ownership. Shipping risk can be taken by the shipper (industrial shipping) or the shipowner (shipping market risk).The market cycle dominates shipping risk. Although the existence of cycles is undisputed, their character is 'episodic' rather than regular. We identified four stages (i.e. episodes)

in a cycle: a trough, a recovery, a peak, and a collapse. Although we found that cycles averaged 8 years, there are no firm rules about the length or timing of these stages. The cyclical mechanism must be flexible to do its job of managing shipping investment.

The short-term cyclical model is an important part of the market mechanism. When ships are in short supply freight rates shoot up and stimulate ordering. When there is a surplus, rates fall and remain low until enough ships have been scrapped to bring the market into balance. Each stage is periodic, continuing until its work is completed. As a result shipping cycles, like shipowners, are unique individuals. In each 'cycle', supply lurches after demand like a drunk walking a line that he cannot see very clearly.

There is also a longer-term cycle or secular trend driven by technology. Technical developments such as the triple expansion engine or containerization stimulate investment in new ships. As the new ships are delivered they set a new standard for efficiency. The more there are, the bigger the commercial impact. The transition from one technology to another can take 20 years to complete, during which time it affects the economics of the business. Over the last century there has been a succession of these cycles – steam replacing sail, diesel replacing steam, better boilers, containerization, and the bulk shipping revolution.

Analysis of short cycles over the period 1741–2007 illustrates the 'work pattern' of the shipping cycle. There were 22 cycles, averaging 10.4 years each, though when we analysed them into three periods – sail, tramp and bulk – we found the length of cycles reduced, from 14.9 years in the sail era to 9.2 years in the tramp era and 8 years in the bulk era. Each cycle developed within a framework of supply and demand, so common features such as cycles in the economy and over-ordering of ships crop up again and again. As a rule supply has no difficulty keeping up with demand, so the big freight 'booms' are often the result of unexpected events, such as the closing of the Suez Canal, stockpiling or congestion. Recessions tend to be driven by economic shocks which cause an unexpected decline in trade (as in 1930, 1958, 1973, 1982, 1991, 1997 and 2001). Overinvestment also plays a part.

Against this background, predicting cycles and the timing of changes is difficult, especially in the heightened sentiment that accompanies the peaks and troughs of each cycle. The framework of each cycle is set by economic fundamentals. Within this framework it is left to shipowners and market sentiment to 'play the game'. In a low-return industry, one investor's fortune is another investor's loss, so the stakes are high. When outsiders look at the low average returns, they often ask: 'Why would anyone want to invest in shipping?' But the shrewdest and most adaptable owners know that they will survive to make massive profits the next time some unforeseen event turns the market on its head – a case of 'devil take the hindmost'.