

Guest lecture for
2009 President's Invitation Lecture
(sponsored by ABS)

Royal Institute of Naval Architects
11th November, 2009

**“Globalization & the Long
Shipping Cycle”**

Dr Martin Stopford, Clarkson Research



1. Introduction – where are we going?

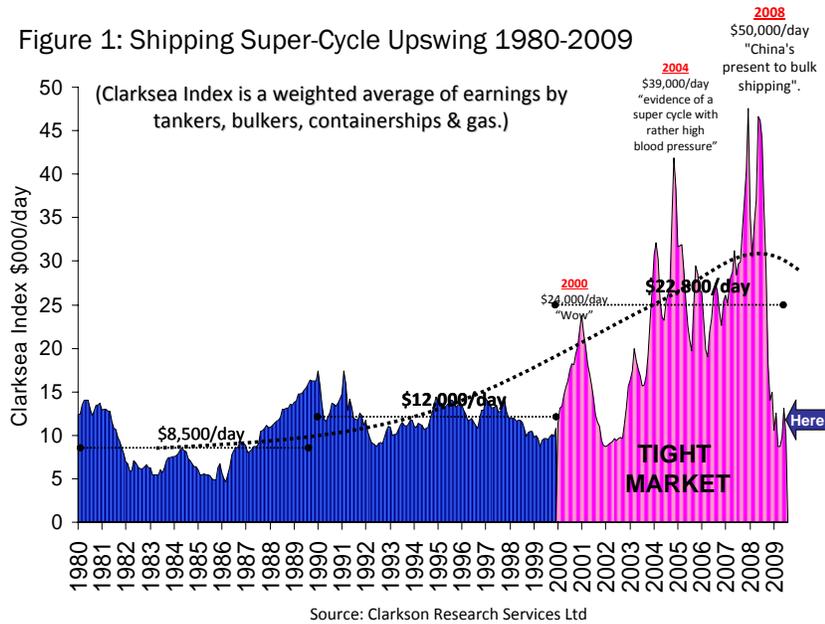
Good afternoon ladies and gentlemen. During the last thirty years the shipping industry has been through an extraordinary sequence of markets, culminating in one of the greatest booms in the shipping industry's history. It lasted seven years from 2002 to 2009 and I can find nothing comparable over the last 250 years in terms of the strength and longevity of the upswing. Such an extreme upswing naturally raises concerns about what will follow it. But to answer this question, which is on the minds of everyone in shipping today, we must start by explaining *why* this extreme market happened.

My theme and methodology

I will focus on these two related issues starting with where we stand in the cycle, of which recent events form a small part. From there I will go on to explore the historical evolution of the long cycle, showing how developments in the shipping business can be seen as part of the “secular trend” in global development. which changed direction in the 1940s; triggering the sea transport “revolution” which took place in the 1950s and 1960s.

I believe these developments produced, as a side effect, a long cycle in shipping returns that is still resonating through the business today. The model underlying the long cycle derives from the interplay between the demand side volatility triggered by successive waves of regional globalization and the extreme way in which the supply

Figure 1: Shipping Super-Cycle Upswing 1980-2009



side of the shipping market responds to the vagaries of these fluctuations in demand. I will suggest that this is the way we should view recent events and it is the model we should be using to evaluate the path of future development. Viewing the world from this perspective means we have a basis for discussing where things go next. From there I will move on to discuss the world economy today; the supply side issues; and of course the future scenarios.

2. The Evidence of a Long Shipping Cycle

The shipping cycle perspective

Let me start by putting the momentous events of the last decade into context by comparing them with the previous two decades. The average earnings index of tankers, bulk carriers, containerships and gas tankers over the last three decades is shown in Figure 1 (the 1980s covers only tankers and bulk carriers).

The three decades described in this chart cover the whole spectrum of earnings from destitution to riches. In the 1980s earnings averaged \$8,500 per day and in the four years 1982-6 earnings were fluctuating around \$5,000/day, not much more than operating expenses. In 1985 it cost \$5,000 per day to run a Panamax bulk carrier under the German flag and probably \$3,500 per day under a flag of convenience. Great losses were also made on ship sales as illustrated by the fact that in 1983 one of the major oil companies scrapped a modern VLCC, which had probably cost \$50 million or more, for \$3 million.

In the 1990s earnings edged up to \$12,500 per day which was better but left shipowners with little profit after capital and operating expenses. There were good spells in 1989-1990, 1995 for bulk carriers; and 1997 for tankers. But these were interspersed with two significant economic downturns triggered by the US Financial Crisis in the early 1990s and the Asia Crisis in 1997. By September 1999 VLCCs were earning less than \$10,000/day and even the most optimistic owners were wondering why they were in shipping. But others were busy ordering Panamax bulk

Globalization and the Long Shipping Cycle

carrier newbuildings for bargain prices of \$18-20 million and they turned out to be some of the profitable shipping investments ever.

The 2000s brought a completely different market. Earnings soared through three peaks, reaching \$24,000 per day in 2000; \$39,000 per day in 2004 and \$50,000 per day in 2008 (Figure 1). Over the nine years they averaged \$22,800/day. Then in Autumn 2008 it suddenly came to an end and the index came crashing down. By the end of July 2009 it was down to \$8,500/day, with some ships earning less than operating expenses.

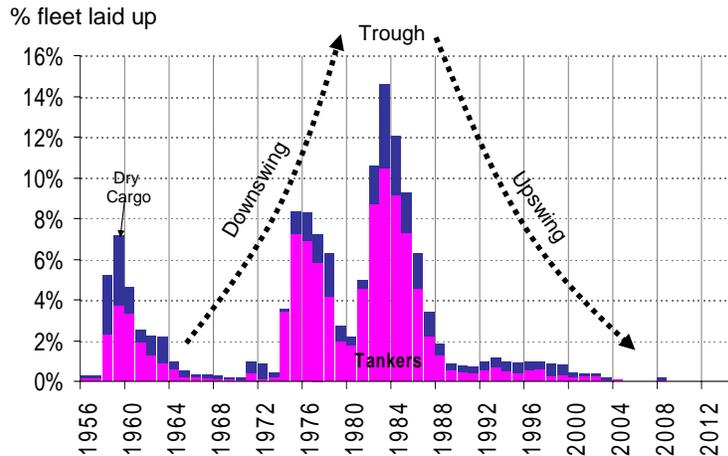


Figure 2: This shows the surplus tankers and dry cargo laid up 1956-2009

During this great boom a great deal of money had been made. An investment of \$55 million in a VLCC in August 2002, if cashed up in August 2009, would be worth \$125 million – if the ship had been sold a year earlier, before prices fell, the return would be closer to \$222 million. Similarly an investment of \$28 million in a 5 year old Capesize would be worth \$122 million. So at least some shipping companies must have accumulated substantial cash reserves, though the level of charter cover is probably pretty thin so most companies will be relying on spot earnings for future revenues.

Strung together these three decades represent an upswing in a long shipping cycle which I will call a “Super-Cycle” to distinguish it from the shorter 7 year variety of cycle. Just to confirm that it is a cycle, Figure 2, which shows laid up tonnage since 1956, demonstrates that the period reviewed from 1980 saw laid up tonnage steadily falling over the 25 year period from 15% of the fleet in 1983 to virtually nothing in 2003. This certainly seems to confirm that the long upswing in ship earnings between 1983 and 2003 shown in Figure 1 was the result of an extreme supply-demand imbalance in the shipping market and part of a 40 year cycle stretching from the mid 1960s to the mid 2000s.

What could cause such a major imbalance? This is a fascinating historical question, but it raises three practical issues that are of much more than historical interest.

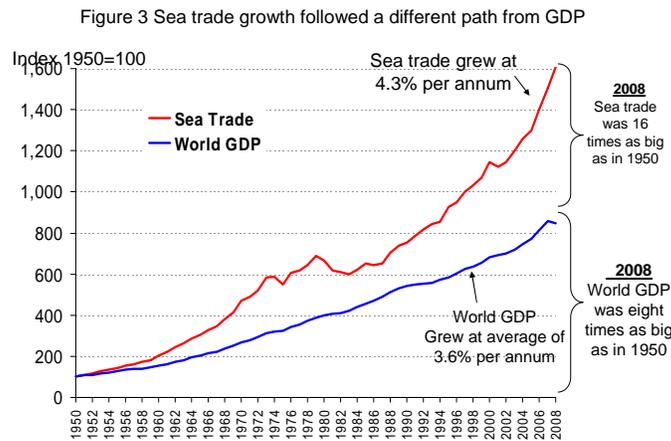
1. Why did this lengthy super-cycle happen? Is it a freak or just part of the economic scenery (Braudel’s secular trend)
2. Will it be followed by another super-cycle?
3. Does this extreme cycle demonstrate a lack of economic discipline which should be controlled, or is just an inevitable part of the industry doing its job?

I will argue that the long cycle was the result of major changes in the world economy¹. The major geopolitical change from the colonial system to globalization triggered 50 years of headlong growth. This produced an enormous expansion of the world economy and shipping but the free-market global economy which emerged tended to run to excess. The first major crisis was caused by shortages of raw materials and the second by problems in the financial system. These demand shocks were multiplied by over reaction on the supply-side of the shipping market where the emergence of independent shipowners and global markets resulted in over investment which amplified the demand side instability. The result was the shipping super-cycle.

3. Origins of the Shipping Super-Cycle

The colonial era and its approach to sea transport

So to understand these changes and how they affected shipping we must look back to the 19th century. Between 1870 and 1914 the European states built-up global empires and by the end of this period most of the world, excluding the Americas; Russia; and China fell within their European imperial system². Trade grew rapidly, and the Imperial economy relied heavily on sea transport, and the shipping companies which operated the services with the colonies developed very distinctive and nationalistic character.



The colonial trade consisted of passengers; general cargo; and bulk cargoes, mainly on routes between the colonies and the imperial power, though there was also heavy transatlantic traffic at this time. Passengers and general cargo were carried by national shipping lines serving the colonies and the tramps filled the gaps, chartering to liner companies when needed or carrying bulk cargoes at other times. As a result of this structure, shipping companies were typically large high profile organizations, many with a distinctively national character.

But in the 1940s the world moved on from *Colonial System* to *Globalization* and this change had profound consequences for trade and the shipping industry. It resulted in two decades of heavy investment in new shipping capacity which, combined in a change of character of the shipping companies, laid the foundations for the long shipping cycle which stretched from the 1950s to the 2000s.

¹ Note that “shipping cycles” differ from the cycles of physics (e.g. sine wave) by being episodic. Incompatible economic variables interact until their differences are resolved, at which point the cycle ends. Episodic cycles have no fixed length.

² Wallace, Iain (1990) *The Global Economic System* p 94. Note that the United States was preoccupied with domestic affairs, including the Civil War

The new economic order set up at Bretton Woods (1944)

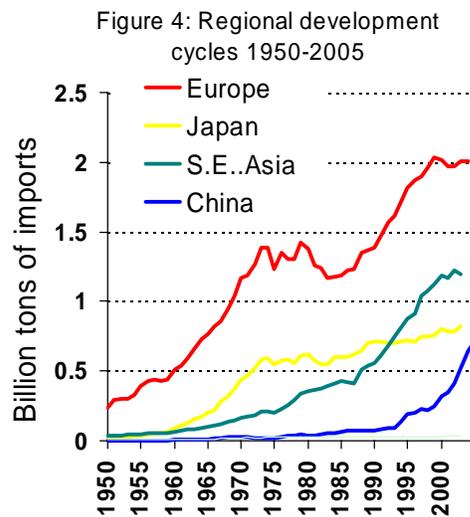
The change which brought an end to the colonial era reflected the changing attitudes and policies of governments after World War II. During the recession of the 1930s governments had experienced the problems of protectionism which had been widely used as a protection against the Great Depression of the 1930s. In addition the USA had become more globally aware and the American corporations (many of which were to become “multinationals”) were finding the colonial world restrictive in their search for overseas markets.

The result was the Bretton Woods conference in 1944 where the American Treasury Minister Henry Morgenthau tabled a plan to develop a new global economy. By the end of the meeting the International Monetary Fund (IMF); the World Bank; and the General Agreement on Trade and Tariffs (GATT) had been set up. During the 1950s the colonies were rapidly dismantled, not without a sigh of relief from the European imperialists, and the foundations were laid for a period of exceptional growth in the world economy, which grew at an average of 3.6% per annum over the next 50 years.

The new international order post 1944

Four developments assisted this growth. *Firstly* the communications revolution opened the way for global commerce. Direct dialing telephones; telex; fax; e-mail and the World Wide Web brought the world closer together and made doing business easier. *Secondly* the introduction of jet airliners complemented this development by allowing executives to travel to anywhere in the world in 24 hours, instead of 24 days (in the processes wiping out the sea passenger business). *Thirdly* major new sources of energy and raw materials were opened up through trade, in particular oil which for 20 years was available in limitless quantities at around \$1 per barrel. *Fourthly* as a the holdings of dollars outside the United States grew during the 1950s, initially funded by the Marshall plan, but subsequently by trading activity, the Eurodollar markets, provided an offshore source of funds for multinational companies.

As a result of these developments the world economy embarked on a fifty years surge of growth, averaging 3.6% per annum (see Figure 3). Seaborne trade grew even faster, averaging 4.3% per annum over the 58 year period. The problem for the shipping industry was that globalization was not a smooth homogeneous process. All nations in the world did not "globalize" at the same time. Rather, the process 50 years took the form of a series of waves of growth, starting with Europe's reconstruction in the 1950s; closely followed by Japan's headlong growth in the 1960s (see Figure 4). Just to put this in perspective, the growth of Japan in the shipping business during this period was every bit as spectacular in the 1960s as China has been in the 2000. In fact during the period 1967 to 1972 Japan accounted for two-thirds of the growth of the dry bulk trade, which is much the



Globalization and the Long Shipping Cycle

same as China's impact over the last decade.

The problem for the shipping industry was that the pressure it put on global resources led to the energy and commodity crisis of the early 1970s and growth was severely disrupted for the best part of a decade, as can be seen clearly in Figure 4 which plots the imports of Europe and Japan during this period. After the headlong growth of the 1963-73 period trade stagnated for almost a decade (or more accurately it went up, then down but did not generate much net growth as can be seen by the red line in Figure 3). But unfortunately the shipping industry had built its investment plans around even faster growth so the slow down in demand was badly timed (see below). That is how the demand super cycle developed in the 1960³s.

The sea transport revolution in the 1950s and 1960s

On the supply side Globalization propelled the shipping industry into two decades of headlong expansion, caused by a combination of rapidly growing trade and the need for new transport systems to supply the global trade network which was emerging.

During the 1950s the liner and tramp companies, which had served the colonial empires so well, could not cope with the volume of trade. Specialization, mechanization of systems and economies of scale were needed and shippers took the lead. Liners and tramps were replaced by the bulk shipping industry, employing much bigger ships and automated terminals; the container system which mechanized the transport and unitization of general cargo; and a series of specialized shipping operations for chemicals, forest products, motor vehicles etc (see Figure 5). In the process the national shipping companies disappeared, to be replaced by independent shipowners, run by entrepreneurs anxious to exploit the freedom of the seas and the equal freedom of capital movement.

Changes to the legal and financial framework helped this change to take place. The admission of Liberia and Panama to the Council of the IMCO Maritime Safety Committee (MSC) in 1959 gave official recognition to flags of convenience. From that point onwards independent entrepreneurs operating fleets of one ship companies registered offshore were legitimized and shipowners trading under these flags benefited from privacy, very low operating costs and cheap finance from the newly emerging shipping banks. The second was a new generation of ship finance banks raising funds from the emerging Eurodollar markets and lending to shipowners against little more than a first mortgage on the ship and a timecharter.

As the transport system was mechanized, the drive for investment in bulk carriers and tankers came from the cargo owners. They were setting up new supply sources for iron-ore, coal, oil and minor bulks in remote parts of the world and the economics depended on using much bigger ships than the 12,000 deadweight tramps which had served the Colonial shipping routes. To persuade shipowners to order the big ships they needed, they were prepared to offer long charters, and during the early 1960s the

³ As mentioned in the previous section the demand stagnation coincided with a surge of investment in new shipping capacity. The investment bubble was triggered by the demands which globalization put on the sea transport system.

Globalization and the Long Shipping Cycle

length of charters on offer increased from five years to 15 or 20 years in some cases. But what started as a highly efficient and well balanced initiative to provide cheap freight for the globalizing economy, was transformed in the late 1960s into a spectacular shipbuilding bubble, mainly concentrated in bulk shipping and particularly tankers.

The new order was the ideal way to provide cheap freight - big ships; low operating expenses; highly competitive finance and independent shipping companies willing to take risk. But by late 1960s the Independent shipowners were becoming more adventurous and started to order ships on their own account, without tying themselves down to a charter. The shipping banks supported them because the ship mortgage came to be seen as sufficient security since ship prices always went up. This broke the link between supply and demand, and resulted in a spectacular shipbuilding bubble which peaked in 1973. So the upswing of the long cycle was established.

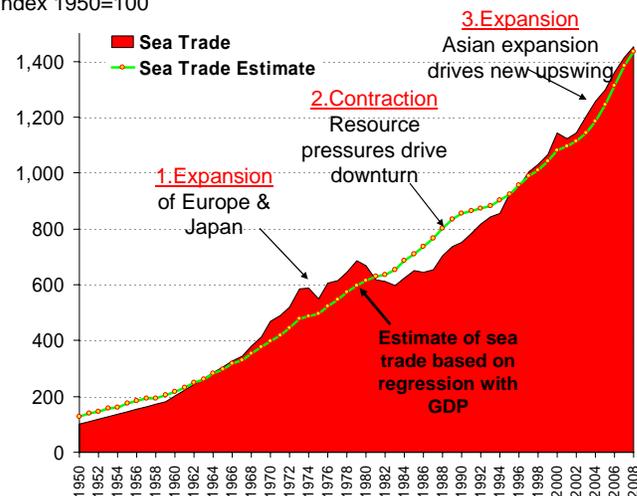
4. Anatomy of the Super-Cycle

Before we move on to market developments today, I would like to briefly review the mechanics of the long market model which, it seems to me, developed during the 1950s and 1960s, and continues to influence on markets today.

The demand super-cycle

To illustrate the mechanics of the demand "super cycle" I constructed a simple model which predicted seaborne trade as a function of the growth of world gross domestic product. The estimate of seaborne trade in each year calculated from this model is shown by the green line in Figure 6 and I will refer to this as "the trend" in sea trade since it filters out trade fluctuations not caused by the world business cycle. Actual trade lagged behind the long term trend in the 1950s, and then picked up progressively during the 1960s to a peak well above trend in the early 1970s. From there the process is reversed, with actual trade slumping below the trend in the 1980s, before picking up and drawing ahead of the trend in 2000.

Figure 6: Long term cycles in sea trade 1950-2005
Index 1950=100

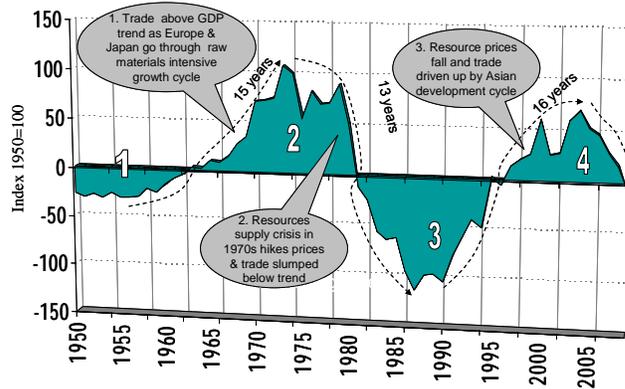


Globalization and the Long Shipping Cycle

These fluctuations do not look very spectacular in Figure 6, but when we plot the difference between sea trade and the trend in Figure 7 it is clear that there is a cycle at work, peaking in the early 1970s and then slumping in the 1980s. Today we are moving towards another downturn (number 4 on the graph). So that, in essence, is my very rough estimate of the underlying long term ship demand cycle.

Figure 7 Seaborne trade cycles as deviation from trend 1950-2009

The mechanism – **driven by regional development cycles** which put pressure on resources, leading to high prices and a sharp downward adjustment in demand



If we now turn to the supply-side, a chart of shipbuilding deliveries from 1963 through to 2009 is shown in Figure 8. This gives a clear indication of the long term cyclical activity in ship investment, showing how orders placed for in new ships surged in the 1967-73 period, with deliveries reaching a peak in 1976 and then slumped for another decade, before moving into a new cycle during the 1990s.

In this long cycle the supply-cycle in Figure 8 coincides with the demand cycle in

Figure 8: Shipyards expand in the 1970s boom & the 2000s Boom

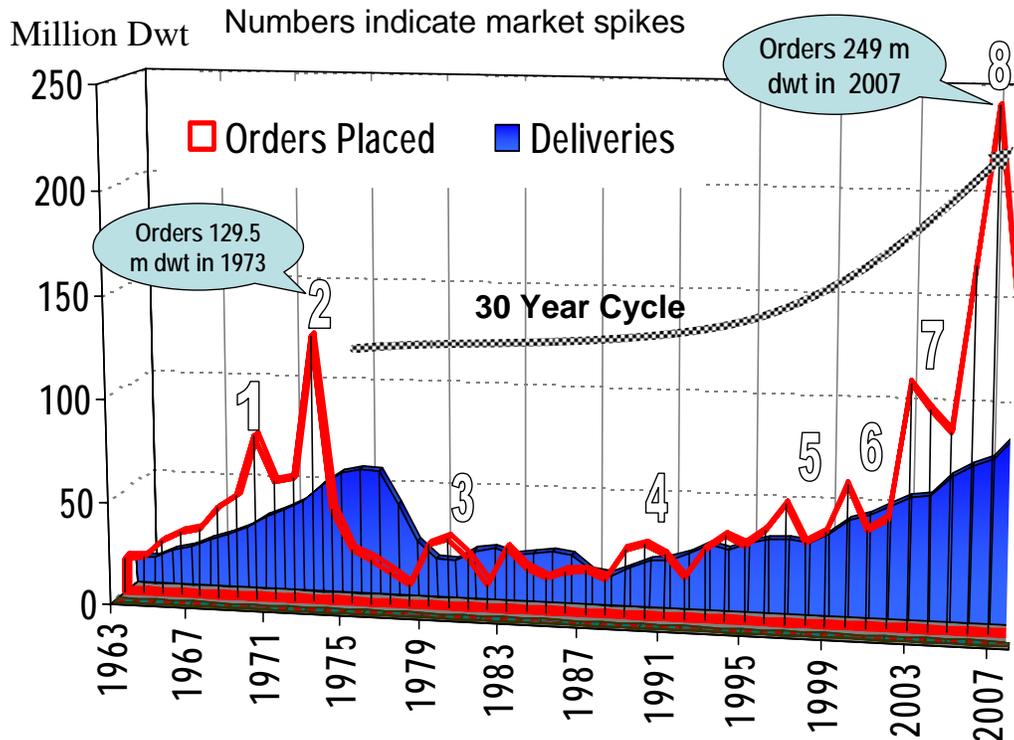


Figure 7, which tends to intensify both the upswing (because ships on not delivered

Globalization and the Long Shipping Cycle

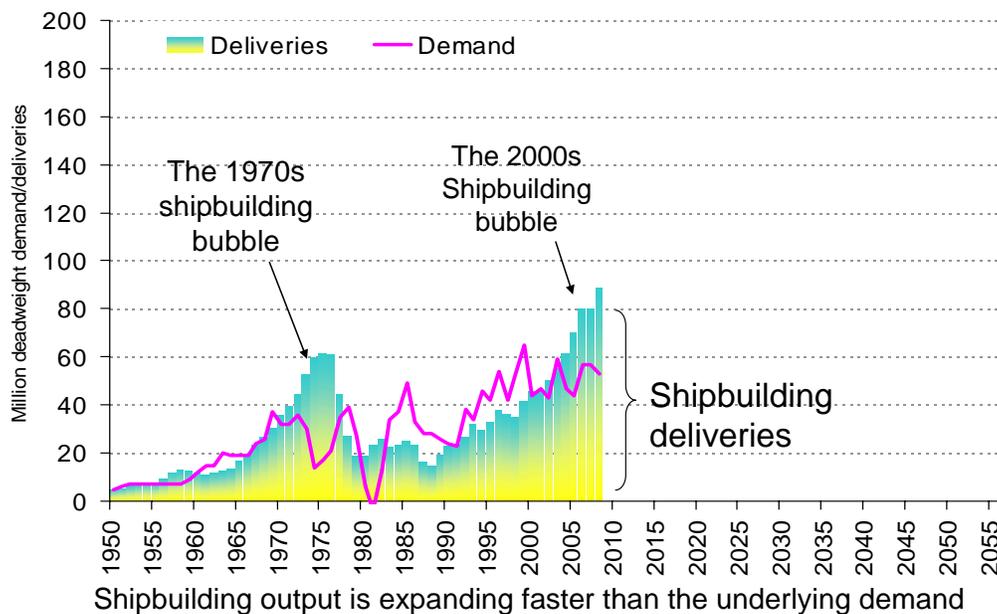
went therein short supply) and the downswing (because they continue to be delivered after a surplus has appeared).

Supply – demand balance 1963-2009

In order to bring supply and demand together it is necessary to look at the requirement of ships in two parts. *Firstly* the expansion *demand* to satisfy the need to build more ships to satisfy the trade growth shown by the red line in Figure 6 and secondly the *replacement demand* needed to replace ships which reaching the end of their useful life, which is usually 25-30 years. This analysis is shown in Figure 9 which plots the demand for ships since 1950 (expansion plus replacement demand) with the red line and the supply (i.e. deliveries of new ships) by the green bars. The cyclical effects of very apparent, as is the similarity between developments in the 1970s and in the 2000s. In both cases as demand surged deliveries picked up, eventually running ahead of demand.

Against this background it is quite easy to see why the super boom we have just

Figure 9: Shipbuilding demand and supply scenario 2009



experienced happened. The boom of the 1960s and early 1970s created a major trade boom which triggered an investment bubble. But when demand for ships stopped growing (shown by the red line in figure) the supply of ships grew faster (shown by the bars) creating the high laid up tonnage in Figure 2. The dislocation between supply and demand lasted from 1973 to 1997, a period of 24 years. That precisely matches the evolution of markets discussed in section 2 and Figure 1 -- depression in the 1980s; convalescence in the 1990s and, because the industry had got used to investing so little, super boom in the 2000s.

Then the cycle was repeated from 1997 onwards. Underinvestment reinforced by heavy scrapping in the early 2000s due to ships built in the super boom of the 1970s reaching the end of their useful life squeezed supply just as China made its great leap

forward into global trade, adding 1 billion tonnes of cargo imports between 1998 and 2009. The rest, as they say, is history.

5. The Current Situation

So we come to the present and the future. It is almost exactly two years since the credit crisis which triggered the downturn in the world economy and the world shipping business. It is a thoroughly confusing position with grim fundamentals combined with a “booming” stock market and rising house prices in some areas⁴. But generally it looks like the sort of dislocation in trade which occurred after the 1973 boom.

The demand outlook

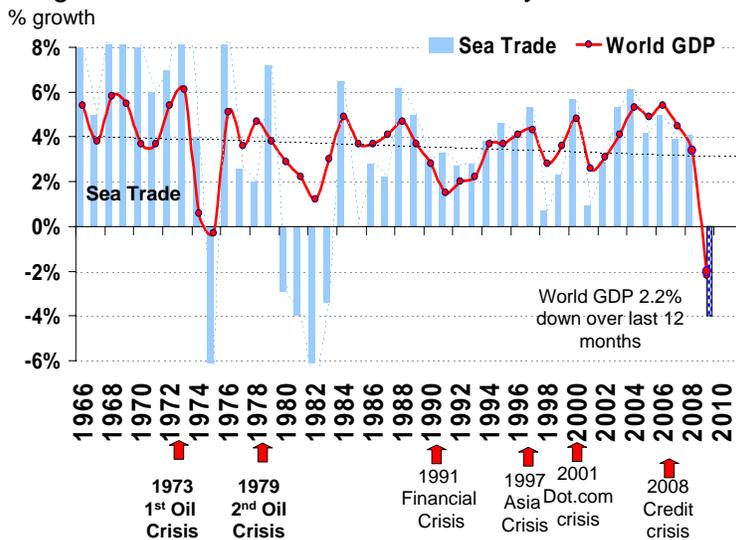
If we start with the position in the world economy today, the economy is in a transitional phase. The economic shock experienced over the last two years has been very severe, producing a reduction in world gross domestic product and industrial production on a

larger scale than anything we have seen since the early 1970s. The downturn in world gross domestic product is shown in Figure 10. After six years of the fastest global economic growth since the 1960s, latest forecasts for 2009 suggest that GDP will fall by around 2 percent. That would be the largest fall for 30 years and is likely to result in a fall in sea trade.

In the industrial sector we have a world industrial production down by around 19 per cent. Admittedly this is much less than occurred during the 1930s when US industrial production fell by 29 per cent, but it means that the average manufacturing facility across the world has received 19 per cent less revenue in the last 12 months than previously. Most companies had good financial reserves, but unemployment is increasing and governments confronted with falling tax revenues and the spiraling costs of propping up the banking system are in a very difficult state.

In the world of commodities steel production is still 11% down on where it was last year and oil demand is about 2% down in 2009, with small increase expected in 2010. We must all form our own opinion on what happens next, but I would argue that in the immediate future we are looking at sluggish trade growth.

Figure 10 World GDP & sea trade cycles:-

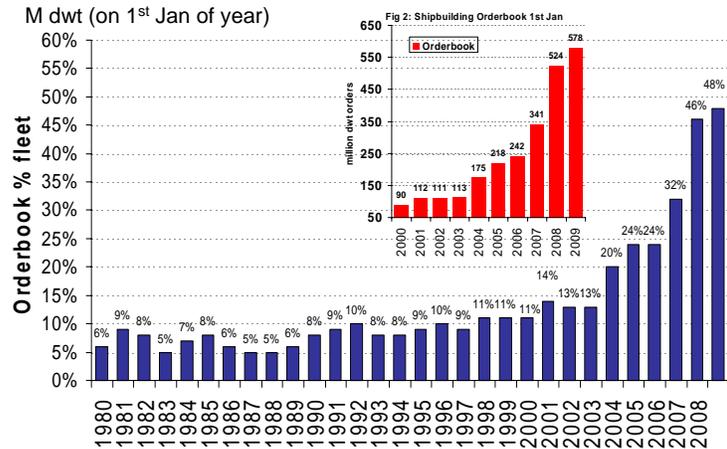


⁴ According the RICS London house prices will increase in 2009

The supply outlook

When we turn to the supply-side of the shipping market the situation is too well-known for me to need to dwell on it, so I will briefly review the facts. At the beginning of the great shipping boom in 2003 the world order book was 13 per cent of the fleet, but today it is 48 per cent of the fleet. This happened because new orders surged to 180 m dwt in 2007 and 272 million dwt in 2008 as shown in Figure 8. Deliveries were only 75 million dwt in 2007 so this was a massive surge of investment. But last year they were running at around 8% of the fleet and next year could reach 12 percent of the fleet if everything is delivered, which would be a new record, exceeding the 1975 peak of 10 percent of the fleet.

Figure 11 Shipyard Orderbook % Fleet



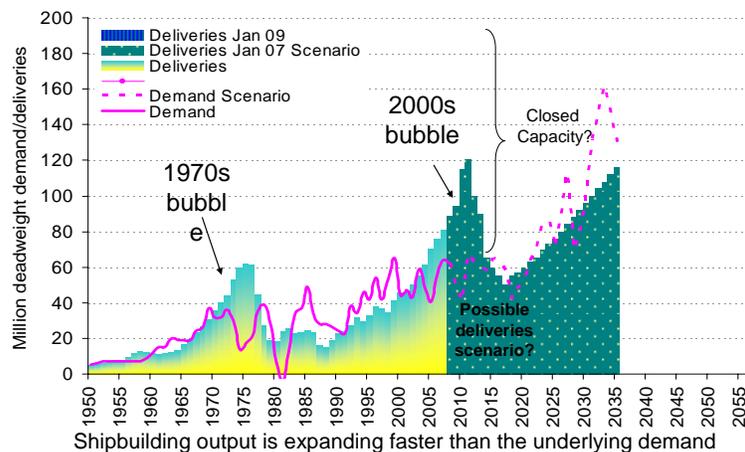
There has been endless discussion over how much of this order book will be built, and with good reason. Many of the ships were ordered at prices which today could not reasonably be taken as an indication of the collateral value of the vessel, so post delivery finance will be difficult. But having said these contracts were placed in good faith and the shipyards are relying on them.

Whatever the outcome, in a world where seaborne trade is, for the time being, stagnating, this is not a particularly promising situation, since deliveries are now approaching 10 per cent of the fleet, and that's higher than in 1973 (see Figure 11).

7. The Future

Finally we come to the outlook. I believe we have all the ingredients of another Super Cycle and we are now on the downswing. To illustrate the way things might develop I pulled together a scenario using the model of the shipping super cycle which I outlined in the Section 4. In this scenario I assumed that "replacement demand" averages out at the annual tonnage of ships

Figure 12: Shipbuilding Investment demand and deliveries scenario



delivered 27 years ago⁵ and that expansion demand is based on an average growth rate in seaborne trade of about 2.6% per annum. This compares with 3.4% over the last 39 years since the 1973 market peak. The resulting demand for new ships is shown by the dotted red line in Figure 12. Over the next decade the demand for new ships averages out at around 60 million deadweight per annum, then surges up as the ships built during the 2000-2010 boom are scrapped.

On the supply-side, I made some broad brush assumptions about the slippage of the order book and from this calculated the shipbuilding delivery scenario shown by the green dotted bars in Figure 12. Deliveries peak at 120 million deadweight in 2011 and then fall very sharply to 60 million deadweight some time around 2015.

These are, to say the least, wild assumptions but they do illustrate the consequences of extrapolating recent trends on both the demand and the supply-side of the market. The result is a large gap between supply and demand. Quite how that will be resolved is a matter for the world economy and the market to sort out, not for economists. And that is where I would like to leave the matter.

Summary and conclusions

In conclusion, I have argued that the shipping industry is being driven along by the globalization era initiated in 1944 at Bretton Woods. This exciting and positive process is far from over, with many regions of the world still a very long way from achieving economic prosperity. So far roughly one billion people have achieved high living standards, but there are another 3 billion waiting to join them. Only a great optimist could regard the next stage of globalization as one of which will be achieved smoothly and without friction, but there is a job to be done and I am certain sea transport will play a major part in future development of the global economy .

However I have also argued that globalization has followed a deeply cyclical path which has made running a shipping business both difficult and risky. The great upswing during the 1950s and 1960s reached a peak in 1973 and moved into a downswing which lasted into the 1990s. Since 1997 the industry has been on an upswing, and arguably reached a peak in 2008, though the nature of these developments is such that there could easily be another way of growth ahead of us – in such a volatile environment the future is never certain.

Whatever may happen to demand, the shipping industry now has a supply-side demographic which is likely to generate far more shipping capacity than is needed to meet any plausible surge in sea transport demand in the next few years. So I think we must expect tough times ahead with more ships than cargoes.

Finally I hope I have demonstrated that these cycles, whatever form they take, are an essential part of the globalization process. They are always with us, and we must make the best of them. Good luck on the voyage!

Martin Stopford
11th November 2009

⁵ For example replacement demand in 2010 was based on deliveries 23 years earlier in 1983 etc – simplistic but this is where scrapping should average out over a number of years