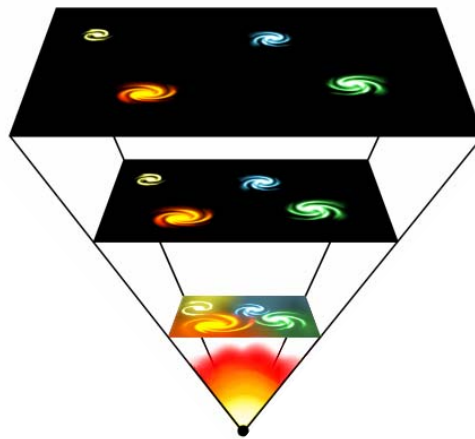


# China and the Maritime Economy – The Next Phase



*In justifying difficult demands on him he strives to do his best. He tries one solution then another until he succeeds. He earns his rewards.*

*I Ching , Hexagram 11, translation by R.G. Benson*

*Senior Maritime Forum  
“China’s Economy and the Global Maritime Industry”  
Shanghai, November 27th 2007*

*Dr Martin Stopford, Managing Director, Clarkson Research*

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# China and the Maritime Economy – The Next Phase

MARINTEC, Shanghai  
27<sup>th</sup> November 2007

Dr Martin Stopford, Managing Director, Clarkson Research

We are still enjoying a shipping market which outshines any other cyclical peak in the last two centuries in terms of its length and the number of vessels which have benefited from exceptionally high rates. China played a major part in creating this boom and its contribution has been widely discussed. However after 10 years of rapid growth, China's impact on maritime industry is entering a new phase, associated with the evolving structure of the Chinese economy and its trade. This will create new challenges for the world maritime industry as a whole and for China's shipping and shipbuilding industries in particular.

## 1. Introduction

Good morning ladies and gentlemen. It is the great honour to be here today to address you on the next phase in China's maritime development. In this paper I will review the changing role of China's maritime industries, with comments on shipping and shipbuilding. Let me start with an overview of where we are today. Figure 1 shows China's contribution to 6 key areas of world economic and maritime activity - the global economy (5%); sea trade volume (9%); contribution to trade growth 1997 to 2005 (38%); the world fleet (5%); shipbuilding deliveries (15%) and the shipbuilding orderbook (33%). Trade growth and the orderbook stand out.

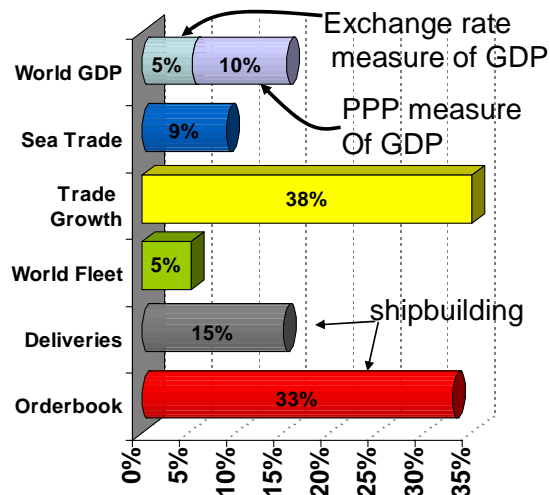


Figure 1: China in the world maritime economy

## 2. The Chinese Economy

My starting point is the one thing we know for certain – the structure of China's economy is changing and will continue to change in the coming decade. That is an inevitable part of the development process as it has been for other emerging economies and we would be foolish to ignore it and be lead entirely by short term developments in the freight market. During the last decade China has become one of the world's biggest economies. In 2006 its gross domestic product of \$2.6 trillion accounted for six per cent of world gross domestic product (GDP), putting China in 4th place in the global league

table behind Germany (6%), Japan (6%) and United States (27%). However this comparison is based on current exchange rates, which understates China's real size. If purchasing power parity (which reflects relative prices of similar commodities in the various countries) is used as the basis for the comparison with other economies, China's share of world GDP increases to 15 per cent (World Bank study), putting China in second place<sup>1</sup>. It also suggests that in real terms China's currency is significantly undervalued, and in the long term strengthening might be expected. I will pick the issue up in the shipbuilding section.

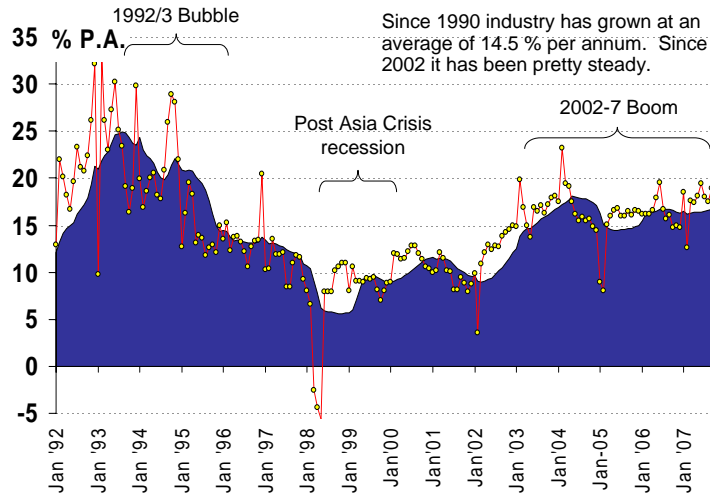


Figure 2: China Industrial production % growth per annum, showing major peaks and troughs

I have three points to make on the Chinese economy and how it might effect the next phase in China's maritime development.

The *first* concerns the business cycle. China is now in its 4th year of very rapid growth (Figure 2). Since 2002 industrial production has grown at an average of 15 per cent per annum. Forecasts remain positive, but Figure 2 also shows that industrial growth during the period 1997-2002 was much slower, averaging less than 10 per cent per annum. This was caused by two financial crises in the world economy; firstly the Asia crisis in 1997; and secondly the stock market bubble which collapsed in 2000. Given the worrying credit problems in the world banking system today, it would be imprudent not to mention the possibility that a period of lower industrial growth may lie ahead for the world economy as a whole, including China's economy. So the next phase could easily be

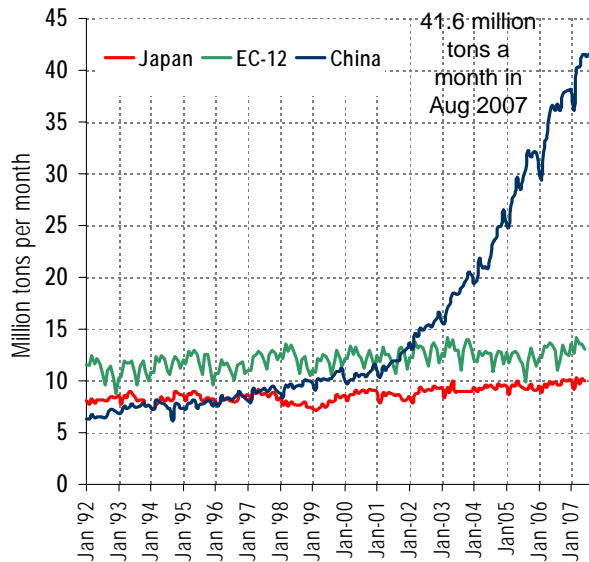


Figure 3: China steel production showing the recent surge of growth

<sup>1</sup> The GDP dollar estimate using Purchasing Power Parity (PPP) calculations is arguably more useful when comparing differences in living standards because PPP takes into account the relative cost of living and inflation rates, rather than just exchange rates. Economies self-adjust to currency changes over time and technology intensive and luxury goods, raw materials and energy prices are less affected by difference in currency (the latter more by subsidies). For example the price of gasoline per liter in China is more accurately measured by the nominal figure, but everyday food and haircuts by PPP. Pirated goods and subsidies also heavily affect PPP.

interrupted by an economic downturn. This would be a perfectly normal consequence of the growth model China has adopted, which lends itself to volatility.

My *second* point concerns the structural changes which we should expect to encounter in an economy at China's stage of development. In the last decade the focus on developing the country's infrastructure created rapidly growing demand for construction materials, especially steel and imports of iron-ore. Nothing illustrates this better than the growth of steel production (Figure 3). Until seven years ago Chinese production was moving along at much the same level as the European Union production, about 13 million tons a month. In September 2007 Chinese production was 41.5 mt, an increase of 14.8% on September 2006, almost three times the EU level. As a result Chinese steel consumption has already reached a level broadly similar to the United States and Europe – about 380 kilograms per capita<sup>2</sup>. Trends of this sort can not last for ever and there are signs that the growth is moderating. Fixed asset investment for the steel industry grew by only 2.5% in 2006, so we should start to see the effect of this shortly<sup>3</sup>. Other evidence that the momentum is slowing is the high level of steel exports over the last year, a complete reversal of the large imports in previous years when the economy was desperately short of steel. My feeling is that now that production capacity has been built up, the next phase will see consolidation, with less growth of demand for steel and construction materials<sup>4</sup>.

Another aspect of the process of economic evolution is the rapid growth of inward investment and joint venture companies allowed China to expand its manufacturing base very rapidly, and this underpinned the growth of containerised exports, a second defining feature of Chinese trade. I would expect more value-added manufacturing in the coming decade, and possibly less dramatic growth of physical volume (exporting assembled ships rather than steel products is a classic example).

*Thirdly* and perhaps most importantly is the energy industry. At the moment China relies predominantly on domestic coal for its energy supplies, and the growth of imports has been quite modest. During the coming decade I would expect developments in the trade in coal, oil and gas as the economy comes to terms with the conflicting demands of

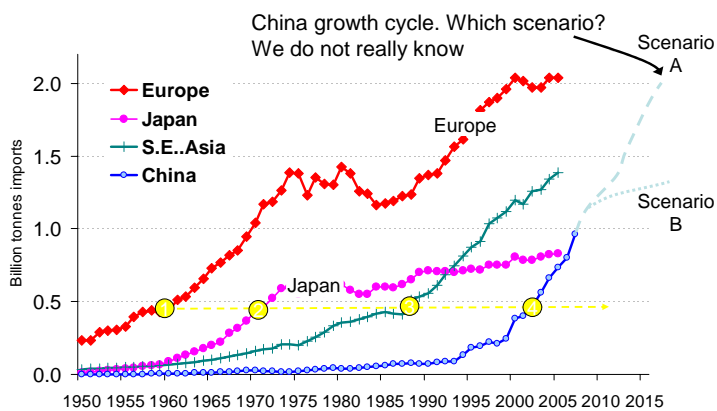


Figure 4 Seaborne imports 1950-2005, showing regional development cycles

<sup>2</sup> Admittedly this is lower than other Asian countries, for example S. Korea 975Kg per capita.

<sup>3</sup> This figure for fixed asset investment in steel was reported in a paper by Mr Tianwen Huang, President of Sinosteel Corporation, presented at the COSCO Summit, Tianjin 1 November 2007

<sup>4</sup> This does not mean the construction industry will stop growing – it just means the steel industry has reached an output level sufficient to support the ongoing level of construction.

rising income levels and the environmental constraints that are becoming ever more pressing. Today this is finding expression in reduced coal exports and increased imports, but the final trade pattern will depend on many factors.

### 3. China Trade Development

Turning to trade, in 2005 China accounted for 9 per cent of world seaborne trade (average of imports and exports in tons), but during the decade from 2000 to 2005 China's imports grew at 20% per annum and generated 38% of the growth of sea trade. Looking ahead the focus is as much on the changing commodity structure and growth rate of trade as the absolute volume. In addition there is a rapidly growing coastal trade, mainly in coal and iron ore which is soaking up increasing quantities of ships<sup>5</sup>.

Long surges of growth like this are not unique in the recent history shipping and they always have a major impact on the business. We have seen similar trade growth cycles three-times in the last 50 years, as can be seen from Figure 4 which shows the development of seaborne imports during the period 1950 to 2006, identifying the growth path of imports by Europe; Japan; south-east Asia; and China. Western Europe, Japan and the South-East Asian Tigers all experienced similar phases of very rapid growth and imports as they developed their economies. In the case of Europe and Japan the growth trend changed very rapidly in the 1970s and we must be aware that such changes can take place. In the 1970s the problem was the pressure of which the rapidly-growing economies of Europe and Japan were placing on global resources, resulting in high energy prices which affected the global economy.

The situation in China is not so different today. When we examine the commodity structure of China's trade we see that China's iron ore imports dominate the maritime sector, accounting for as much volume in 2007 as all other dry bulk commodities (Figure 5). In contrast oil imports have grown more slowly due to various structural developments, in particular the subsidised price of gasoline in China and the focus on the use of domestic coal. On the basis of these statistics, I would say that the trades associated with the metal industries, for example iron ore, has potential to grow more slowly in future, and the energy trades as a whole, including coal could grow more rapidly.

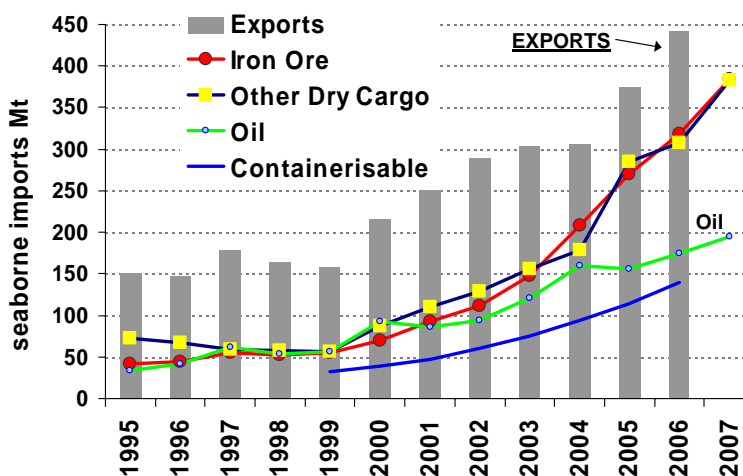


Figure 5 Chinese imports & exports with forecast for 2007

<sup>5</sup> In 2006 the coastal trade was 576 million tons, of which 407 million tons was coal. According to MOL it is expected to grow to about 800 Mt in 2010

In the short term it is likely that Chinese imports will break the 1 billion tons barrier in 2008. But the maritime industry is more interested in how trade will develop beyond 2010 when the 478 million dwt order book representing 45% of the world fleet has been delivered. Because China is a large economy, it seems likely that imports will grow to 2 billion tons, but it is impossible to know how soon this will happen and there are no guarantees. Just look what happened to Europe's imports in the 1970s and 1980s – they actually declined (Figure 4). Which of the scenarios A and B in Figure 4 might apply, or perhaps something between the two? Although a slowing of steel related trades is likely, an economy the size of China is bound to have other requirements for cargo imports, including minerals, energy commodities and foodstuffs. The problem is that it is difficult to predict the pace and timing of this growth and there is no guarantee that as the Chinese economy develops and changes the double digit growth of imports in the last decade will continue. This uncertainty presents the maritime economy with a major challenge in managing the uncertainty.

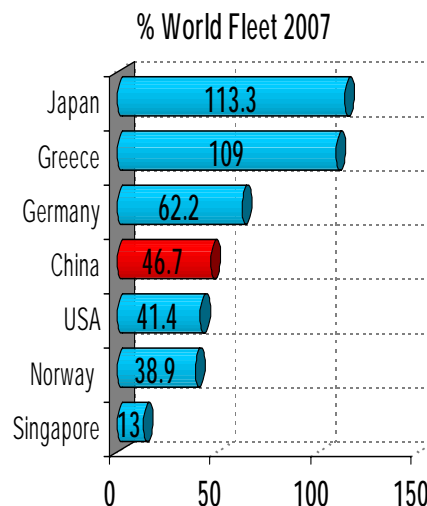


Figure 6 China's share of world fleet

#### ***4. China's fleet***

The Chinese fleet is currently 46.7 million gross tons, and accounts for six per cent of the world merchant fleet (Figure 6). For comparison, the United States fleet is 41 million gross tons; and the Japanese fleet is 113.3 million gross tons. Japan's trade volume is currently similar to China's, so this suggests that today China is outsourcing a higher proportion of its shipping requirements than Japan.

Today Chinese shipowners have an order book of 24.5 million gross tons, and our estimate is that the international Chinese fleet should reach about 60 million gross tons by 2010, though obviously that depends on many decisions relating to the sale and purchase; demolition and registration of ships. The last decade has been a learning experience for the Chinese shipowning industry and in the next I would expect to see increased sophistication and an emerging group of independent Chinese shipowning companies.

#### ***5. The Chinese Shipbuilding Industry Today***

But the outstanding issue for the maritime industry and the one on which I will focus in my remaining comments is the development of Chinese shipbuilding. After four years of a booming shipping market, world shipbuilding orders and capacity plans have developed to a level which is unprecedented in the history of the maritime industry.

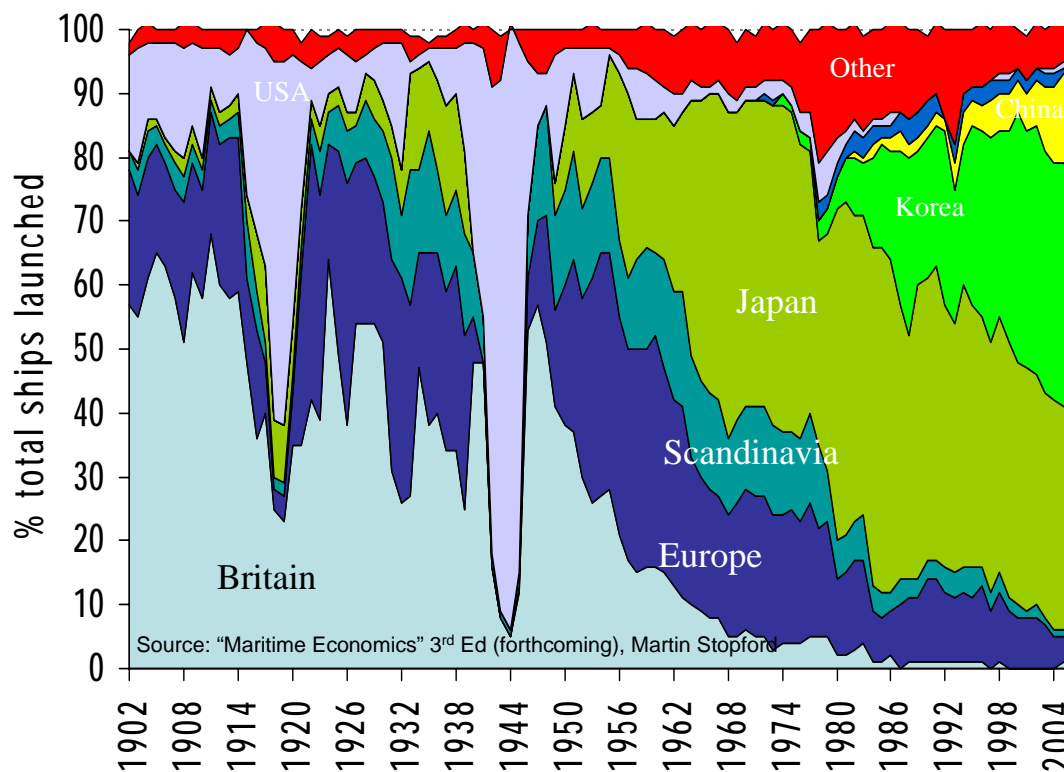


Figure 7 Shipbuilding 1902-2007: the battle for market share

Historically the growth of a nation's seaborne trade has gone hand in hand with the development of a strong domestic shipbuilding industry. The British set this pattern a hundred years ago when they had 60 per cent of the world shipbuilding market and around 50 per cent of the world fleet (see Figure 7). As I noted earlier, Japan also went through a phase of economic development where shipbuilding grew on the back of a strong cargo base - most of those time charter ships were ordered in Japanese yards.

South Korea, a much smaller economy, used its domestic trade to help kick-start its shipbuilding industry, but the Korean shipbuilding effort was always focused much more strongly towards the export market and in the last decade this strategy has worked very well. In 2006 South Korea had 36% of the world shipbuilding deliveries; and Japan 35%, whilst China had 14% (all figures based on deliveries in GT). However China has 33% of the orderbook and is now moving down the same sort of path as Korea, focussing on the export market.

### 6. The Emergence of China as a Shipbuilding Superpower

From a maritime viewpoint the outstanding feature of the next phase will be the growth of China as the leading player in the shipbuilding market. 10 years ago China was a small player whose production had been edging upwards over the last 20 years. It was regarded as a risky place to build new ships and Chinese built vessels commanded a significant discount in the second-hand market.

On August 16th 2006 the Long and Medium Term Plan for Shipbuilding Industry (2006-2015) was published by the National Development and Reform Commission. The plan set out the Government's policy for shipbuilding; its targets; and objectives for developing technology, products and foreign corporation. The targets it set were to reach 23 million deadweight of capacity (17 m dwt output) by 2010 and 28 million deadweight of capacity (22 m dwt output) by 2015, by which time 80 per cent of the equipment used in the ship should be produced locally and the efficiency of major shipyards should reach 15 per cgt per employee.

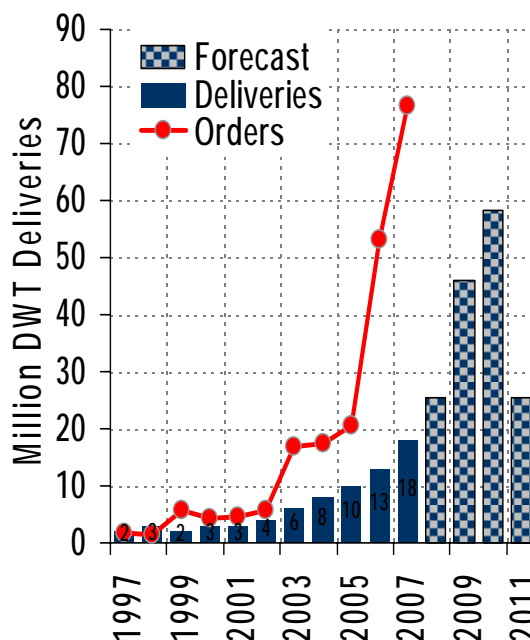


Figure 8 China shipbuilding deliveries 1997-2011

But China's shipbuilding industry is already far ahead of the plan and is committed to a Great Leap Forward. A record order book of 162 m dwt has been contracted at prices which give shipyard management great scope for manoeuvre. That compares with 168.6 million deadweight in South Korea and 106.8 million deadweight in Japan. Based on the delivery dates in its orderbook, China will deliver 18 million dwt in 2007, 25.3 m dwt in 2008; 45.9 m dwt in 2009 and 58.3 million deadweight in 2010 (see Figure 8), propelling China into the No 1 slot in world shipbuilding<sup>6</sup>.

But for that to happen the ships must be delivered on time. No previous newcomer to the shipbuilding market has ever expanded at such a rapid pace. The growth path of China's two main rivals, Japan and South Korea in Figure 9 shows that compared with China their expansion was a leisurely affair. Japanese shipbuilding started to develop in 1955 and grew slowly at first, taking nine the years to reach 2.4 million GT output in 1965. Then over the next decade, particularly during the 1967 to 73 tanker boom, its output surged to a massive 17.4 million gross tons in 1974.

South Korea started to develop its new capacity in 1971, but output had reached only 600,000 GT in 1980. It was a difficult time for a newcomer to get established and Figure 9 shows it followed a similar development path to the one Japan had followed 25 years earlier. In the next ten years output grew slowly, increasing to 3.3 million GT in 1990.

<sup>6</sup> In compensated gross tonnes however Korea has the edge, with an orderbook of 60.7 million cgt compared with China's 46.7. But whatever units are used, when delivered this orderbook will take China into a position alongside Korea at the top of the Shipbuilding league table.

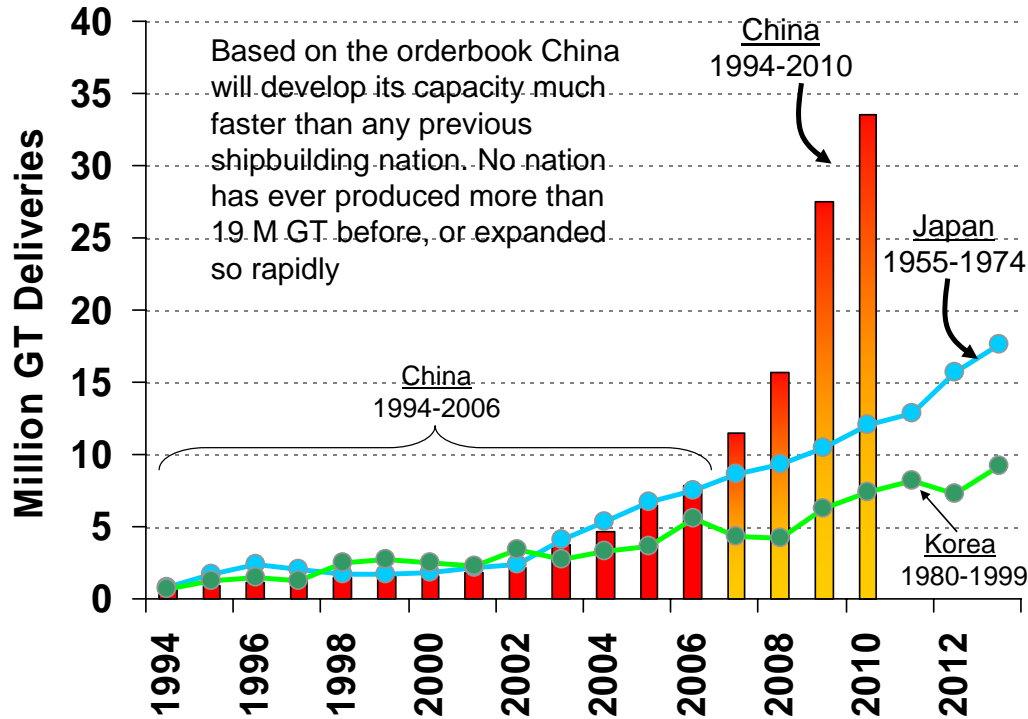


Figure 9 China's capacity expansion compared with Japan 1955-74 & Korea 1980-99

Then over the next nine years it edged up to 9.1 million gross tons in 1999, so the expansion path was slower than Japan. The explanation is that Korea was trying to get established during one of the worst recessions in the history of the shipping industry and orders were very difficult to come by.

During the nine years 1994 to 2003, China followed a very similar development path to Japan and Korea. Deliveries edged up slowly from 1 million GT in 1994 to reach 2.2 million GT in 2002 and by 2006 its production of 7.8 million GT was much the same as Japan was at the same stage in its cycle. But here the similarity ends. Over the next five years deliveries will surge, reaching 33.5 million gross tons in 2010, a 500% increase over the 2006 production level. This orderbook was made possible by the boom in freight rates; the confidence of shipping investors in China's capabilities; and the intense competition between buyers for shipbuilding berths. On the basis of the current orderbook it would make China the biggest shipbuilder by 2010 as shown in Figure 10, though the books are not yet closed and S Korea may contract more vessels for 2010 delivery, and some China's orderbook could easily slip into 2011.

The challenge for China today is to deliver this order book on time, preserving the reputation for quality and reliability which it has built up in other manufacturing sectors over the last decade. Although the required rate of expansion is no faster than the growth achieved by the Chinese steel industry between 2002 and 2007, I would argue that shipbuilding is a more complex industry to expand rapidly than steel production and the challenge is much greater.

### 8. The Challenges of Super-Growth

Let me conclude with a few comments on the nature of the challenge facing the Chinese shipbuilding industry. My first point concerns the production base. Our analysis of the development of Chinese shipbuilding capacity is shown in Table 1 which splits the orderbook between the shipyards currently building ships and the new shipyards under construction for which orders have been taken.

The analysis covers 208 shipyards with a current order book of 174 million deadweight (note this includes deliveries in 2007. The undelivered order book in October was 162.5 million deadweight). So compared with South Korea and Japan, China is entering this development cycle with a very large number of facilities. For example the Japanese expansion was lead by the six major shipbuilding groups, whilst South Korean expansion was concentrated in just three main companies, Hyundai; Daewoo; and Samsung. In contrast 88 per cent of China’s order book is held by 35 shipyards, which is a much larger number, even allowing for the size of the orderbook.

**Table 1: China Shipbuilding Orderbook November 2007 For Existing & New Yards**

Orderbook Size	Orderbook M Dwt *				Number Yards		
	Existing	New Yards	Total	%	Existing	New	Total
Over 3 m Dwt	96.8	32.2	129.0	74%	12	6	18
1-2.99 M dwt	14.9	9.4	24.2	14%	10	7	17
0.1-0.99 M Dwt	10.4	6.7	17.1	10%	26	26	52
Under 0.1 M Dwt	3.1	0.1	3.3	2%	70	11	81
No Orderbook	-	-	-	-	-	40	40
<b>Total</b>	<b>125.2</b>	<b>48.4</b>	<b>173.6</b>	<b>100%</b>	<b>118</b>	<b>90</b>	<b>208</b>
<b>%</b>	<b>72%</b>	<b>28%</b>	<b>100%</b>				

\* Orderbook includes 2007 deliveries

The other major challenge is that 28% of the orderbook is in new shipyards. There are 90 new yards in the analysis, but Table 1 shows that most of the orderbook is in 13 of them. Achieving expansion on this scale calls for management and skilled labour. The new shipyards will need managers capable of getting production up and running, whilst the existing yards will need to expand their workforce. After two difficult decades in shipbuilding experienced managers are a rare commodity.

Other challenges will include: -

*Material supply:* such rapid expansion needs to be supported by an equivalent growth of marine equipment supplies. Approximately 60 per cent of the total orderbook is represented by the cost of materials. Again the provision of good quality components

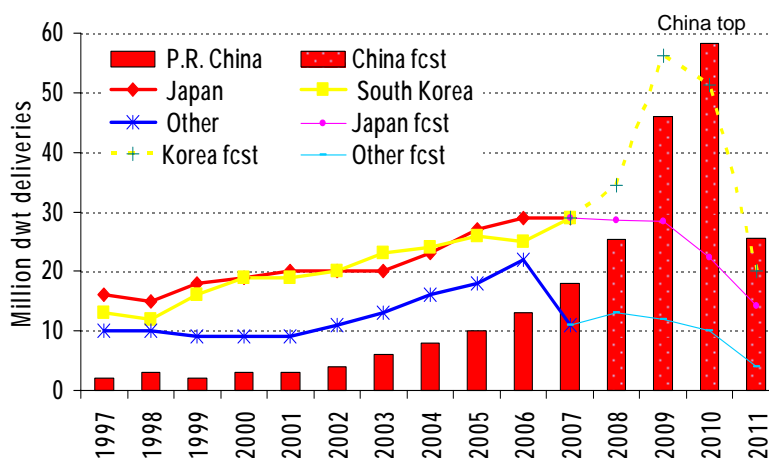


Figure 10 World shipbuilding deliveries and projection to 2010 based on the orderbook (Dwt)

delivered in a timely way and precisely to order it is a major unknown, when undertaken on such a large scale.

*Technology and systems;* Shipbuilding is a management intensive assembly business. Timely delivery requires production systems which can be constantly adjusted for the inevitable changes which take place during the contract. In addition the quality control and material management within the yard are absolutely crucial. Setting up and commissioning these systems in a short time is an enormous enterprise and more demanding than in many of the other manufacturing activities undertaken so successfully in China over the last decade. But of course China is not starting from scratch, it has established shipbuilding expertise.

*Currency:* the ships have been contracted at very profitable prices in dollars, but during the next four years there could well be an appreciation of the RMB for against the dollar. So the profits are not yet guaranteed.

*Cash flow:* as all shipbuilders know, the great problem of slippage in delivery is the effect on the company's cash flow. Ships which fall behind schedule do not receive stage payments, leaving the shipbuilder to fund working capital for longer than anticipated.

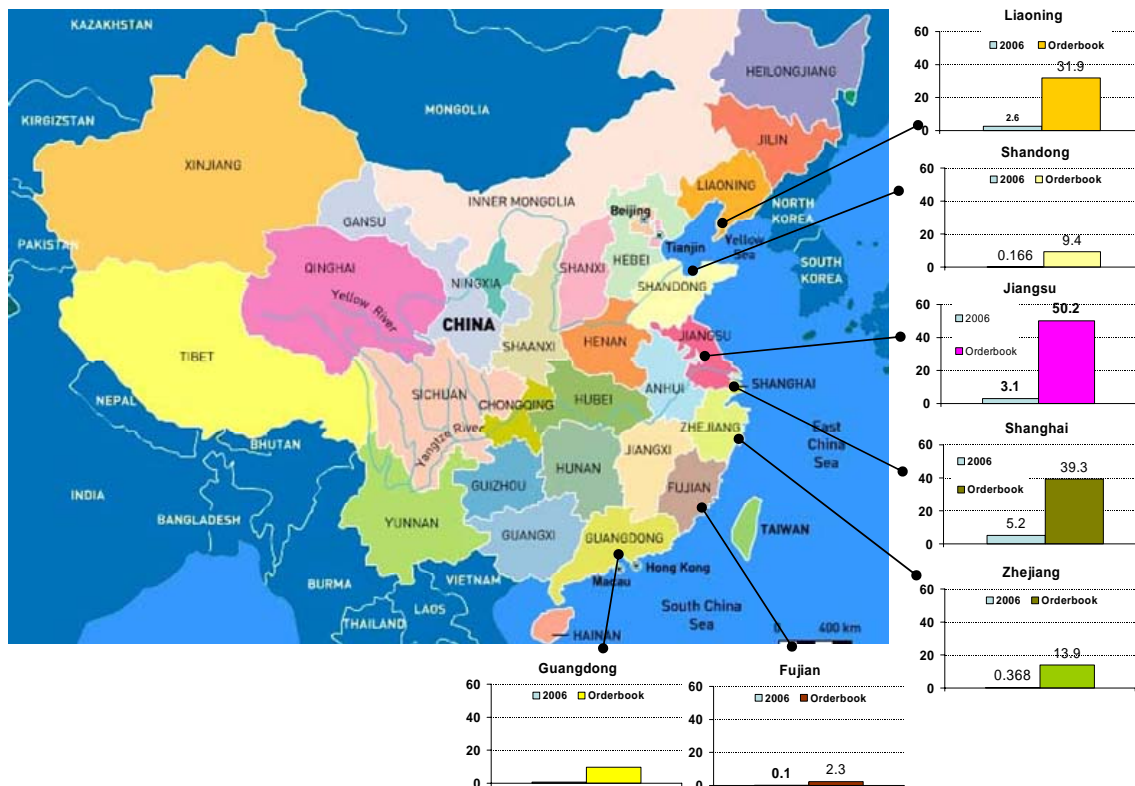
## **9. Conclusions**

So, in conclusion, three challenges stand out in the next phase of China's maritime development.

1. The challenge for the *world maritime industry* is to adapt to the changing structure of Chinese trade and to do our best to anticipate developments in the steel industry and energy industries. Based on recent history, I doubt whether anybody is really capable of making accurate predictions and the best we can do is to follow events closely and be ready to respond quickly to changes.
2. The challenge for *Chinese shipping* is to find the right commercial strategies for sharing in the growth of Chinese trade. This could well include a new generation of shipowning entrepreneurs.
3. And finally the challenge for the *shipbuilding industry* is to execute the fastest expansion ever seen in the industry. Can they do it? Well, Winston Churchill said "*The pessimist sees difficulty in every opportunity. The optimist sees the opportunity in every difficulty.*" I think he would have concluded that Chinese shipbuilders are optimists and I have no doubt they will apply themselves to the task with characteristic vigour, determination and the pragmatism to seek help when it is needed.

So Mr Chairman, Ladies and Gentlemen, could I ask you to join me in wishing the Chinese maritime industry good luck and good opportunities in the epic venture which lies ahead.

ANNEX 1: Chinese Shipbuilding by Province



Annex 1 China's shipyard deliveries in 2006 and orderbook by province

Annex T1 Chinese shipyard production and orderbook by province

Province	Facility					Output in 2006			Orderbook at end of October			
	Unit ,000	Dock No.	Dwt	Lgth m.	Slipway No.	Berth No.	No.	Dwt	Cgt	No.	Dwt	Cgt
Jiangsu		16	700	3965	34	16	104	3169	1212	945	50284	15093
Shanghai		13	446	2130	12	19	60	5224	1316	389	39356	9771
Liaoning		12	561	1304	10	27	32	2585	776	302	31913	7352
Zhejiang		19	216	1799	104	27	39	368	310	415	13950	5711
Shandong		8	131	1570	16	16	17	166	147	266	9440	3375
Guangdong		7	101	1193	28	16	34	628	367	207	9636	3249
Fujian		6	87	995	9	8	19	131	173	122	2311	1473
Hubei		3	286	400	17	4	12	132	110	83	2353	1043
Jiangxi		4	68	460	4	2	2	22	20	63	790	632
Chongqing		0	18	0	1	0	6	29	41	67	345	432
Tianjin		2	45	264	9	2	7	90	79	43	598	390
Anhui		0	41	472	8	1	11	59	55	33	836	347
Sichuan		0	10	0	0	0	2	21	17	15	120	111

Source: Clarkson Research Services Ltd