Trends & Possibilities in Shipping

Trends & Possibilities
For the Development of the Shipping Industry

Martin Stopford, Managing Director
Clarkson Research Ltd
Åland, Nordic Shipping Policy Seminar
5th May 2011
1. Shipping Today

- Define Marine Industry
- Top 10 Flags & shipowners
- European versus Asian shipping
- Piracy trends

HMCS Fredericton’s boarding party conducts an approach operation and boarding to investigate a suspected pirate skiff in the Gulf of Aden.
Marine related activities 2004 $ billion

This chart uses data from Table 2.1

Source: Maritime Economics 3rd Ed Martin Stopford, page 49

Fleet of the 189 Flag States

The fleet is growing very fast

Source: Lloyds Register of Shipping and CRSL World Fleet Monitor
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Flag State Fleets

Source: Lloyd's Register of Shipping and CRSL World Fleet Monitor

Top Ten Flags of Registration 2011

Source: Lloyd's Register of Shipping and CRSL World Fleet Monitor
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Top Ten Shipowning Countries

- Greece: 140.20
- Japan: 85.8
- Germany: 82.8
- China P. R.: 70.5
- Norway: 49.50
- USA: 44.70
- S Korea: 39.80
- Italy: 32.9
- Denmark: 30.5
- Taiwan: 23.7

Million Gross Tonnes in Fleet

179 states have nationals who own ships

Comparing EU & Asian Shipping

- Orders 2010 EU: 21, Asia Pacific: 34
- Deliveries 2010 EU: 38, Asia Pacific: 33
- Demolition EU: 5, Asia Pacific: 6
- Sales EU: 17, Asia Pacific: 14
- Purchases EU: 10, Asia Pacific: 10
Ship Size Trends in 2011

- Average size of merchant ships can change
- Bulk carriers and Container ships got bigger during the decade
- Tanker size still falling

Piracy Activity 2008-2011

The 27 ships currently held are worth US$354.8 million. Half the value is tankers.

27 ships held at end March 2011
17 unsuccessful attempts in March 2011
1 ship captured by pirates in March 2011
The shipping industry is in the middle of a major market cycle.

2. Shipping's Volatile Market

1. World Economy

2. Ship Demand
   - charterer

3. Ship Supply
   - owner
   - Balance Sheet
   - Driven by Cash

Orders
Scrapping

Freight rates

2. Ship Demand

Earnings Trend 1980-2011

Clarksea Index $000/day

- SERIOUS SURPLUS
- SMALL SURPLUS
- SMALL SHORTAGE
- SMALL...

Source: Clarkson Research Services Ltd.

(Claarksea index is a weighted average of earnings by tankers, bulkers, containerships & gas.)

$8,500/day
$12,000/day
$22,800/day

The Great Shipping Boom

Here
Trends & Possibilities in Shipping

Figure 8: World & China’s seaborne imports with scenarios

### Sea Trade Scenarios 1950-2010

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Figure 8: Sea Trade Scenarios 1950-2020

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Figure 8: World & China’s seaborne imports with scenarios
World Shipbuilding 35 Year Cycle

The last shipbuilding peak was in 1975 when output reached 36 million GT

Restructuring of capacity 1976-86

Looks like 2010 was the peak of the shipbuilding boom with 96 m GT deliveries

The last shipbuilding peak was in 1975 when output reached 36 million GT

Restructuring of capacity 1976-86

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World Merchant Fleet Growth

Figure 8 World & China’s seaborne imports with scenarios

Supply/Demand Balance Today

- The bars show the volume of trade (on the right axis) and the line shows the world fleet (on the left axis)
- There was a major surplus after the shipbuilding bubble in the 1970s
- Today we are moving from shortage in the 2000s to surplus in the 2010s
Shipping Supply/Demand Scenarios

- Fleet forecast assumes
  - 152 m dwt deliveries in 2010,
  - 139 m dwt in 2011 and
  - 98 m dwt in 2012 &
  - 53 m dwt scrap in 2010,
  - 31 m dwt in 2012
- Trade scenarios from earlier chart

3. Shipping & Globalization
Regional Growth Trends

- Globalization has a way to go
- Foreign resources needed
- China, S&E Asia leading growth at present

Source: United Nations / UNCTAD

Billion tonnes imports

Martin Stopford, Aland 5th May 2011
Regional Growth Trends

- Globalization has a way to go
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Sources: United Nations / UNCTAD

Tonnes of imports per person per year

- Africa: 0.20
- S America: 0.6
- China: 0.8
- N. America: 3.80
- Europe: 6.30
- Japan: 7.50
over the last two centuries shipping has focused on using cheap fossil fuels to reduce sea transport costs. It has been so successful we now have a big carbon footprint.
Seaborne Trade – After Fossil Fuels

- Year 1 AD to 2010 AD
- 8 billion tonnes of trade

Shipping – Before Fossil Fuels

- Until 1840: Ships were small, slow, and unreliable
- Cargo handling was painfully slow

Source: Bibliothèque Nationale, Paris, Photo M. Cabaud
The First Steam Ship 1803

- In 1803 after about 40 years a steam engine was fitted into a boat.
- It towed two 70 ton barges against the wind for 30 Kilometres.
- No sailing ship could do that.

The Charlotte Dundas is regarded as the world's "first practical steamboat". The first sailing was on the canal in Glasgow on January 4, 1803, with Lord Dundas and a few of his relatives and friends on board. After some improvements, in March 1803 the Charlotte Dundas towed two 70 ton barges 30 km (almost 20 miles) along the Forth and Clyde Canal to Glasgow, and despite "a strong breeze right ahead" which stopped all other canal boats it took only nine and a quarter hours, giving an average speed of about 3 km/h (2 mph). This demonstrated the practicality of steam power for towing boats.

Shipping – Soon After Fossil Fuels

AGAMEMNON (1) was built in 1865 by Scott and Co. at Greenock with a tonnage of 2280grt, a length of 309ft 6in, a beam of 38ft 10in, 945 HP engine and a service speed of 10 knots.
Shipping - Today

11,000 TEU containership with 82 MW engine capable of 25.5 knots and 170,974 GT (about 156,000 dwt)

Engine - Today

(weighs 2,300 tonnes, almost Agamemnon’s cargo capacity)

- This engine generates 109,000 HP
- It does the work of 3 about million men
- A town the size of Greater Manchester needed to house them
- They would eat 9 billion calories a day!

Amazing Power
The cost of coal & oil transport by sea

FOSSIL FUELS MADE VERY CHEAP TRANSPORT POSSIBLE

$ per tonne

Oil $/tonne
Coal $/tonne
Linear (Coal $/tonne)

Shipping’s Environmental Footprint

German Power Stations
Containers fleet
Non cargo
Bulker fleet
Tanker fleet
Other dry fleet
Other specialized
Gas fleet

Container fleet has as much power as Germany’s electricity industry
The shipping industry must respond to rising energy costs.
Today’s merchant fleet was designed to burn oil bunkers costing $160 a tonne.
In the last three years the costs has risen to $650 a tonne

Source: BP energy review

Our Oil Price Forecasting Record

Source: BP energy review
World Oil Price & 1993 Forecast

Source: BP energy review

World Oil Price & 1994 Forecast

Source: BP energy review
World Oil Price & 1995 Forecast

Source: BP energy review

World Oil Price & 1996 Forecast

Source: BP energy review
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World Oil Price & 2000 Forecast

Source: BP energy review

World Oil Price & 2004 Forecast

Source: BP energy review
World Oil Price & 2006 Forecast

What actually happened

Source: BP energy review

World Oil Price & 2007 Forecast

What actually happened

Source: BP energy review
Economic Solution - Speed

Shows the effect on the cost of fuel (green lines) & the cost of shipping capacity (yellow line) of changing ship operating speed in 1 knot increments (based on 5000 mile voyage)

- Best speed at $1500/tonne bunkers
- Best speed at $200/tonne bunkers

80% saving

Sulphur Emissions

1. Baltic Sea area – as defined in Annex I of MARPOL;
2. North Sea area – as defined in Annex V of MARPOL;
3. North American area (expected to enter into effect 1 August 2012); and
4. Puerto Rico and US Virgin Islands area (to be considered for adoption at MEPC 62)

<table>
<thead>
<tr>
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<tr>
<td>4.50% m/m prior to 1 January 2012</td>
<td>1.50% m/m prior to 1 July 2010</td>
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<tr>
<td>3.50% m/m on and after 1 January 2012</td>
<td>1.00% m/m on and after 1 July 2010</td>
</tr>
<tr>
<td>0.50% m/m on and after 1 January 2020*</td>
<td>0.10% m/m on and after 1 January 2015</td>
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*established to limit SOx and particulate matter emissions
6. Trends For the Future

- **Ownership:** Regional structure of shipping changing. Europe still dominant but for how long?

- **Volatility:** A decade of high freight rates resulted in over-expansion of shipbuilding capacity. This will take some time to unwind.

- **Climate Change:** Shipping enormously efficient but depends on large quantities of low quality fossil fuels – it has a big footprint for SOX, NOX, soot and carbon. Carbon is tough to solve unless ships slow down.

- **Globalisation:** Since 1950 the OECD countries have become wealthy and resource intensive. Soon another 3-6 billion people will “join the club”. The next 50 years of globalisation will be more difficult politically and in terms of resources.

- **Energy Costs:** The cheap oil era is over. Shipping faces the challenge of dealing with much higher energy costs but we are bad at accepting the need for change.

The Archibald Russell
Built 1905 Greenock,
scrapped 1949