EXPERIENCE

- Founder and MD of Shipping Strategy Ltd.

- Advises clients around the world on shipping and financial market developments, assisting them with shipping investment and chartering decisions.

- During 23 years in shipping, Mark has led numerous advisory projects on the dry bulk, tanker, container, gas, offshore, Ro-Ro, multi-purpose, shipbuilding and ship recycling sectors.

- He is a course director for Lloyd’s Maritime Academy and a guest lecturer at Cass Business School (City of London University) and Plymouth University.

- Mark has held board positions since 2015 and senior management positions since 2009.
Today
We will be discussing:

1. The importance of shipping in global trade
2. The different ship categories and common vessel types
3. The size of the shipping market and the different players in the global ecosystem
4. How ships generate revenue – commercial management
5. How ships are operated and maintained – technical management
6. The importance of operational activities on financial performance
1. THE IMPORTANCE OF SHIPPING IN GLOBAL TRADE
Not every country has the supplies of all the commodities it needs to meet domestic demand.

This gives rise to trade between nations.

Where that trade cannot go overland or via pipeline, it must be provided by ships.

It is estimated that over 80% of global trade in goods is carried by sea.

Most countries in the world are members of the International Maritime Organisation, a permanent body of the UN which sets the rules for shipping safety.
2. THE DIFFERENT SHIP TYPES AND COMMON SHIP CATEGORIES
SUPRAMAX BULKER

M/V Nord Chesapeake
60,447 Dwt
4x 30.5 T cranes

link to source
HANDYSIZE
BULKER

M/V Pacific Logger
Built 2000
31,877 Dwt
Geared, 4x30.5 T cranes
42,210 cubic metre grain capacity

link to source
**VERY LARGE ORE CARRIER**

M/V Ore Tianjin
Built 2018, China
399,213 Dwt

[link to source]
CAPESIZE BULKER

M/V Hisui Horizon
Built 2015 Japan
207,451 dwt
Iron ore strengthened
Gearless

link to source
## BULK CARGO CATEGORIES

### ORES
- Iron ore
- Bauxite & alumina
- Minor ores (manganese, nickel, chrome, zinc, lead, copper)
- Ferrous products (iron pellets, steel, scrap, pig iron)

### COAL
- Thermal coal
- Coking coal
- Petcoke
- Ash

### MINOR BULK
- Potash
- Sulphur
- Salts
- Phosrock
- Cement
- Paper

### AGRI-BULKS
- Forest Products
- Wheat
- Coarse grains
- Soya and other oilseeds
- Rice & Tapioca
- Sugar
CONTAINER SHIPS

We define container ship size bands using the following criteria. They less exact than for bulk carriers and tankers,

- **Small**: Dwt below 1,000 TEU, usually the oldest ships
- **Feeder**: 1,000 to 3,500 TEU, usually geared, below 32.3m beam
- **Old Panamax**: 3,500 to 5,500 TEU, can be geared or gearless, below 32.3m beam
- **New Panamax**: 5,500 to 14,000 TEU, usually gearless, below 55m beam
- **Post Panamax**: 14,000 to 18,000 TEU
- **Super Post Panamax**: over 18,000 TEU, (the largest ships afloat carry approximately 23,000 TEU at full capacity)
THE EVOLUTION OF CONTAINER SHIPS

TEU vs FEU
M/T Harrison Bay
Built 2015, South Korea
52,000 Dwt
c. 52,000 cubic metres liquid capacity
Epoxy coated cargo tanks
IMO type II Chemical / Oil Products Tanker
LONG RANGE 2
OIL PRODUCT / CRUDE OIL TANKER

M/T Bneider
Built 2012, South Korea
110,587 Dwt
122,956 cubic metres liquid capacity
Epoxy coated cargo tanks

link to source
SUEZMAX CRUDE OIL TANKER

M/T Istanbul
Built 2015, China
158,000 Dwt
176,000 cubic metres liquid capacity
uncoated cargo tanks
Crude oil tanker

link to source
VERY LARGE CRUDE CARRIER

M/T Brightoil Gravity
Built 2012, South Korea
319,911 Dwt
336,559 cubic metres liquid capacity
Uncoated cargo tanks
Cargo heating coils
Crude oil tanker

link to source
LNG TANKER

M/T Eduard Toll
Membrane Type
Built 2017
172,000 cubic metre capacity
Ice strengthened

link to source
LPG TANKER

M/T Constellation
Built 2015, South Korea
84,000 cubic metre capacity

link to source
3. SHIPPING MARKET SIZE AND THE DIFFERENT PLAYERS IN THE GLOBAL ECOSYSTEM
Counting ships, capacities & sizes

- **Count**: 58,806 vessels
- **GT**: 1.5 Bn Gross Tonnes
- **DWT**: 2.2 Bn Dead Weight Tonnes
<table>
<thead>
<tr>
<th>SHIP TYPE</th>
<th>AVERAGE AGE IN YEARS</th>
<th>AVERAGE PRICE AT THAT AGE (USD MN)</th>
<th>VALUE OF FLEET (USD BN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRY BULK</td>
<td>10</td>
<td>18</td>
<td>224</td>
</tr>
<tr>
<td>OIL &amp; CHEMICAL TANKERS</td>
<td>5</td>
<td>32</td>
<td>367</td>
</tr>
<tr>
<td>CONTAINER SHIPS</td>
<td>13</td>
<td>17</td>
<td>94</td>
</tr>
</tbody>
</table>
GEOGRAPHY OF SHIP BUILDERS

- Shipbuilding is a key industry for developing nations.
- It generates employment and earns foreign currency.
- Shipyards are seen as strategic national assets.
- As recently as the 1980s, most ships were built in Western Europe.
- Asian competitors used cheap labour, cheap state loans and production line techniques to take market share.
- Automation is now reducing employment in shipbuilding.
Who hires ships?

- MINING COMPANIES
- Oil & GAS COMPANIES
- AGribusiness
- COMMODITY TRADERS
- PROCESS INDUSTRIES
- MANUFACTURERS
- BUILDING INDUSTRY
4. HOW SHIPS GENERATE REVENUE

(COMMERCIAL MANAGEMENT)
How to earn money from operating ships?

1. Freight Market
2. Time Charter
3. Lease the Vessel
4. Contracts of Affreightment
5. Derivatives
6. Asset Play
Markets are often said to go up on elevators and down in escalators.

E.g. peak to trough fall in 5yo Aframax prices 1Q08 – 4Q09 was 42%. From 3Q10 to 1Q13, fall was 44%. But then prices rose to 185% of the trough in Q315 before falling 35% by Q417 and flatlining.

Switching ships is not for the faint-hearted.

Source: Braemar ACM
5. HOW SHIPS ARE OPERATED AND MAINTAINED (TECHNICAL MANAGEMENT)
The multiple roles of the technical manager

<table>
<thead>
<tr>
<th>LIFE CYCLE MANAGEMENT</th>
<th>SHIP MAINTENANCE</th>
<th>QUALITY CONTROL, HEALTH &amp; SAFETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Newbuilding supervision</td>
<td>• Engines and other power</td>
<td>• Inspection and surveys</td>
</tr>
<tr>
<td>• Dry docking and surveys</td>
<td>• Machinery</td>
<td>• Document management</td>
</tr>
<tr>
<td>• Vessel recycling</td>
<td>• Hull and superstructure</td>
<td>• accident Book</td>
</tr>
<tr>
<td>• Procurement</td>
<td>• IT hardware and software</td>
<td>• ISO management</td>
</tr>
</tbody>
</table>
Many ship managers also handle the crewing of ships via close relations with specialised crewing agencies in the primary crew supply nations.

The managers will arrange training according to the requirements of the fleet under management, ensure that the crew are competent and adequately certified so as to be able to obtain approval from the charterers with whom the fleet is employed, or competing for fixture.

Training facilities may have both deck, engine room and bridge training facilities, including navigation simulators like this full bridge simulator installed at Goodwood Ship Management’s Mumbai training facility.
Tech developments in 3rd party ship management

Due to the complexity of managing large diversified fleets trading 24/7 across the globe, large ship management companies have introduced operations hubs from where operational staff can monitor voyages, and offer support to the ship’s officers and crew when problems occur.
Industry 4.0: rise of the robots

- **IR1**: mechanization through steam power
- **IR2**: mass production and assembly lines through electrical power
- **IR3**: automation of many roles through information technology
- **IR4**: smart and autonomous systems fuelled by data and machine learning with minimal human involvement
The connected fleet

- The connected fleet: machine learning for navigation, systems operation, port operations, inventory control, machinery failure rates, engine optimisation.

- Next steps:
  - The connected supply chain
  - The connected freight market
6. THE IMPORTANCE OF OPERATIONAL ACTIVITIES ON FINANCIAL PERFORMANCE
COST STRUCTURE FOR A TYPICAL CARGO SHIP

- Fuel
- Crew
- Insurance
- Stores
- Lubricants
- Maintenance, surveys and dry docking
- Management & Admin
- Owners’ costs
A simplified example of a ship owner’s P&L account

- Example - buying a 5 year old Capesize in 2004 and running it until 2018
- Purchase cost - USD 50.5 Mn,
- 50% mortgage, 5% interest paid over 15 years
- Internal cost of capital is 3%
- Ship is put out on 1y TC each year.
- Ship is sold for scrap at the end of 2018.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Time Charter Income</td>
<td>61,591</td>
<td>51,635</td>
<td>44,462</td>
<td>106,019</td>
<td>114,615</td>
<td>33,481</td>
<td>32,240</td>
<td>15,719</td>
<td>11,595</td>
<td>13,962</td>
<td>21,221</td>
<td>10,734</td>
<td>7,862</td>
<td>12,192</td>
<td>18,534</td>
<td>203</td>
</tr>
<tr>
<td>Operating costs</td>
<td>9,000</td>
<td>9,180</td>
<td>9,364</td>
<td>9,551</td>
<td>9,742</td>
<td>9,937</td>
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<td>10,338</td>
<td>10,545</td>
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<td>10,971</td>
<td>11,190</td>
<td>11,414</td>
<td>11,642</td>
<td>11,875</td>
<td>57</td>
</tr>
<tr>
<td>Mortgage Costs</td>
<td>4,842</td>
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<td>4,842</td>
<td>4,842</td>
<td>4,842</td>
<td>4,842</td>
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<td>Capital Costs</td>
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<td>4,750</td>
<td>4,750</td>
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<tr>
<td>Daily Return</td>
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<td>30,256</td>
<td>91,626</td>
<td>100,031</td>
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<td>539</td>
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<td>Scrap Price Achieved</td>
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<td>93</td>
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<tr>
<td>Total Return</td>
<td>103</td>
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<td></td>
<td></td>
<td>103</td>
</tr>
</tbody>
</table>
A simplified example of a ship owner’s P&L account

- Example - buying a 5 year old Capesize in 2012 and running it until 2018
- Purchase cost - USD 30.0 Mn,
- 50% mortgage, 5% interest, repaid by instalments and
- Internal cost of capital is 3%
- Ship is put out on 1y TC each year.
- Ship is sold in 2018 for USD 23.0 Mn and debt balance repaid

<table>
<thead>
<tr>
<th>Year</th>
<th>Time Charter Income</th>
<th>Operating costs</th>
<th>Mortgage Costs</th>
<th>Capital Costs</th>
<th>Daily Return</th>
<th>Total (USD Mn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>11,595</td>
<td>10,545</td>
<td>2,877</td>
<td>2,822</td>
<td>-1,826</td>
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<tr>
<td>2005</td>
<td>13,962</td>
<td>10,756</td>
<td>2,877</td>
<td>2,822</td>
<td>329</td>
<td>29</td>
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<tr>
<td>2006</td>
<td>21,221</td>
<td>10,971</td>
<td>2,877</td>
<td>2,822</td>
<td>7,373</td>
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<tr>
<td>2007</td>
<td>10,734</td>
<td>11,190</td>
<td>2,877</td>
<td>2,822</td>
<td>-3,333</td>
<td>7</td>
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<tr>
<td>2008</td>
<td>7,862</td>
<td>11,414</td>
<td>2,877</td>
<td>2,822</td>
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<td>2009</td>
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<td>11,642</td>
<td>2,877</td>
<td>2,822</td>
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<td>2010</td>
<td>18,534</td>
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<td>2,877</td>
<td>2,822</td>
<td>3,782</td>
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</table>

Total Return: 14
A SIMPLE EXAMPLE OF A SHIP OWNER’S P&L ACCOUNT

- Example - buying a 5 year old Capesize in 2004 and running it until 2019
- Purchase cost - USD 50.5 Mn, 50% equity, 5% interest paid over 15 years
  - Internal cost of capital is 3%
  - Ship is put out on 1y TC each year.

<table>
<thead>
<tr>
<th>All in USD per day</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
<th>Year 11</th>
<th>Year 12</th>
<th>Year 13</th>
<th>Year 14</th>
<th>Year 15 (USD Mn)</th>
</tr>
</thead>
<tbody>
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<td>Time Charter Income</td>
<td>61,591</td>
<td>51,635</td>
<td>44,462</td>
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<td>Daily Return</td>
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<td>9</td>
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<tr>
<td>Total Return</td>
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