MT2002 – SHIPPING ECONOMICS – SEMESTER 1 EXAMINATION 2019-2020

Q1a. The shipping industry is highly volatile and shipping risk assessment is especially important in the cyclical shipping industry. There are many types of shipping risk borne by shipowners in the freight market, and they will be discussed below.

1. Operational Risks – shipowners are exposed to operational risks especially when the shipping industry is extremely volatile. Prices can increase and decrease dramatically over a short period of time, and this can severely affect the revenue and profit levels for shipowners. This is especially true for larger ships (i.e. Capesize vessels) as their freight rates are even more volatile as compared to smaller ships (i.e. Handysize vessels).

2. Ownership Risks – in addition to operational risks, shipowners are also exposed to ownership risks. Ships are very costly and huge amount of capital is required to purchase a vessel. This type of risk can affect the shipowners when they have invested large amount of capital to purchase vessels, but they are unable to use them to trade during periods of bad economic performance. The capital that has been invested will be locked down onto the vessels, and they may suffer from cash flow problems.

3. Exchange Rate Risks – shipowners have to keep in mind that exchange rates are volatile as well and currencies can appreciate and depreciate rapidly. Shipowners have to consider exchange rates as trades are carried out internationally and various currencies are involved. For example, freight rates are often published or negotiated in US Dollars, while other costs such as cargo handling costs and employee salaries are in their local currencies (e.g. Singapore Dollars).

4. Interest Rate Risks – interest rates are important to shipowners as well. As mentioned above, it was discussed that large amount of capital is required to purchase vessels. Therefore, shipowners may have to borrow / take up a loan from banks to finance the purchase. Interest rates do change as well, and this can affect the shipowners in terms of the loan amount to be repaid.

5. Accident and Losses – there are many maritime perils out at sea that can cause damages and losses to the vessels. Collisions, grounding, sinking, fire on board, piracy and loss of cargo are examples of accident and losses that can happen out at sea. Shipowners have to be mindful of the possibilities that such events can occur, and they may have to compensate the shippers for the loss of cargo and incur additional costs to repair the damaged vessels.

6. Counterparty, Credit Risks – shipowners are also exposed to credit risks. This is especially crucial as trades are carried out with people who the shipowners do not know. These people may default on payment or decide to cancel a shipment at the very last minute. These can be very costly to shipowners.

Above are six examples of shipping risk borne by shipowners in the freight market, and the best ways to mitigate shipping risks will be explained in the next part.

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Q1b. As mentioned in the previous part, there are many shipping risks borne by shipowners in the freight market, and thus the best ways to mitigate shipping risk in the freight market will be discussed below:

1. In order to mitigate operational risks, shipowners can choose to go into Time Charters (T/C) as it has the ability to secure or lock the freight rates at a certain level. By doing so, shipowners will not have to worry about the volatility of freight rates. One example is that, shipowners can go into a T/C during the bad times as freight rates are expected to fall, and entering into a T/C, shipowners can lock the freight rates at a certain level before it decreases. Nevertheless, shipowners should also keep some vessels to enter into the spot market as well when the freight rates are expected to increase.

2. Ownership risks can be mitigated by chartering vessels instead of purchasing them. By chartering vessels, shipowners can choose the duration of the charters during the bad times, and this is beneficial for shipowners as they can enjoy more flexibility in the allocation of their finances. In the case where the vessels are purchased, the capital is tied to the purchased vessels and shipowners may encounter cash flow problems. One real life example would be that 54.7% of the vessels in the world are chartered from Non-Operating Owners (NOOs).

3. In order to mitigate exchange rate risks and interest rate risks, shipowners can explore the use of freight derivatives and Forward Freight Agreements (FFAs). Such tools are very useful in mitigating exchange rate and interest rate risks. A real-life example of an interest rate would be the London Inter-Bank Offer Rate (LIBOR).

4. Accidents and Losses can be mitigated by purchasing insurance for the vessels and the cargoes shipped. An example would be, shipowners can choose to purchase the various types of marine insurance which includes ICC Clause A, B or C, which covers certain accidents and losses except War Risks. Skuld is one example of a marine insurance company which provides insurance services for vessels and cargoes.

5. As for mitigating credit risks, shipowners can enter into contracts to compensate the rate out of the settlement rate. Other real-life examples include the use of Bill of Lading (B/L), which utilizes a third party (i.e. banks) to pay the freight rate to the shipowners on behalf of the shippers first. These can help to reduce counterparty and credit risks.

Above are some best ways to mitigate shipping risks in the freight market.

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Q2. Ship size is getting larger in various shipping sectors and there are a few major reasons:

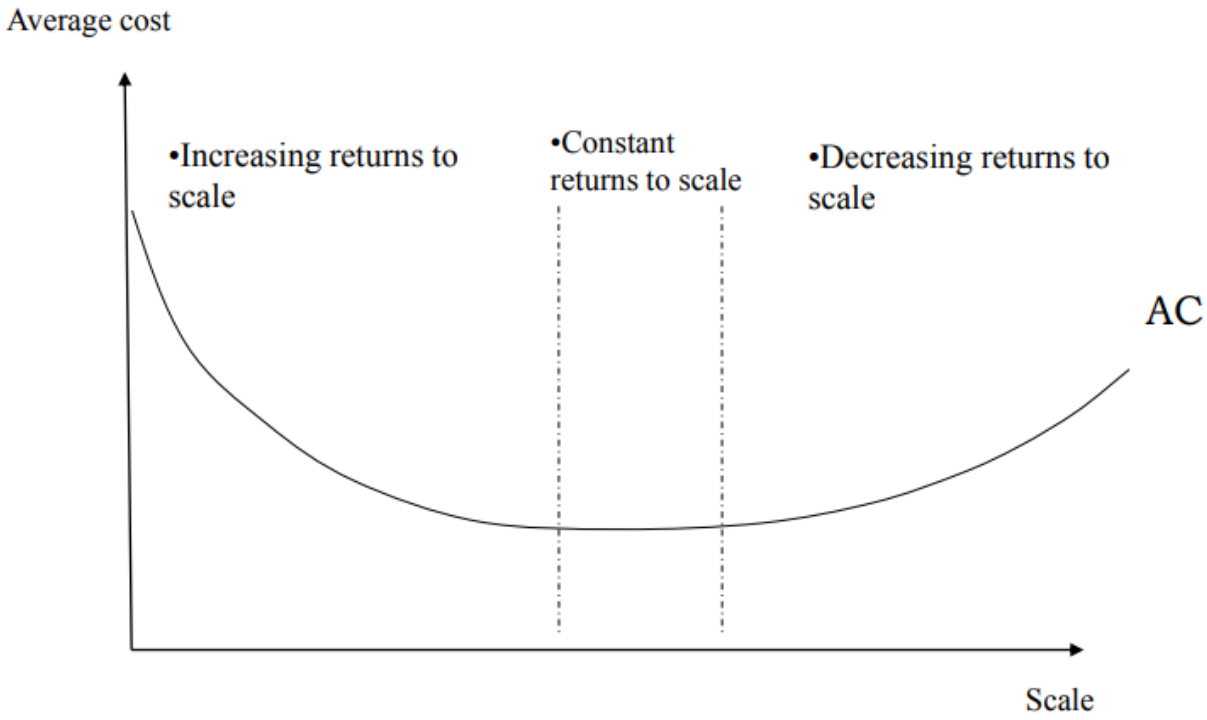
1. Achieving Economies of Scale (EOS) – to reduce average cost with the increase in size, scale and operations

2. Greater Efficiency

3. Enterprise enjoy cost advantages over competitors – achieved by having EOS

4. Creating more supply – to meet the increasing demand

In my opinion, ship size will continue to increase in the future but only to a certain extent. This is because, EOS does not always occur and it has a limit to it. After a certain level of quantity (ton-mile), constant returns to scale may occur where average costs remain unchanged, and diseconomies of scale (decreasing returns to scale) may also occur where average costs increases. This can be shown in the graph below:



In addition to that, EOS does not always occur, and it only occurs provided that:

1. These vessels can be operated with adequate capacity utilisation

2. Generate at least the same level of earnings per unit compared to smaller vessels

3. Are not hampered by terminal and port-related constraints

Not only that, it is not necessary for ships to get larger in order to enjoy EOS. Shipping companies can choose to go into liner alliances (e.g. 2M, Ocean Alliance, THE Alliance) and tramp shipping pools as well to achieve EOS.

Therefore, although ship size is getting larger in the various shipping sectors, it is in my opinion that ship size will continue to increase but only to a certain extent.

Q3. Voyage Costs is one of the most critical costs in running a vessel and it accounts for about 40% of the overall shipping costs. Voyage costs includes Fuel Cost, Port Charge, Towage and Pilotage Cost, and Canal Dues.

1. Fuel Cost – it can be up to 76% of overall voyage costs, and it is the most influential cost element in overall shipping costs. Therefore, it is important to try and reduce fuel costs by slow steaming, improving energy efficiency (EEOI) and improving hull design and smoothness (EEDI).

2. Port Charge – it accounts for about 24% of overall voyage costs. It includes charges levied on vessels / cargoes for the use of facilities or services provided by the port. Port dues are for wharfage and docking with port infrastructure, and service charges are for towage, pilotage and cargo handling.

3. Towage and Pilotage Cost – it accounts for 0% of voyage costs as it is a minor cost element that is normally absorbed in port charge. Towage: service rendered by tugboat in towing or berthing of vessels. Pilotage: service rendered by licensed marine pilot in guiding vessels in and out of the port.

4. Canal Dues – it accounts for 0% of voyage costs as well and it is normally a flat rate charge per net ton mainly payable to Suez Canal and Panama Canal.

It is true that reducing the operating speed of the vessel might not necessarily be the best choice. The bunker costs and freight rates have to be considered before deciding whether to increase or decrease the operating speed as illustrated in the table below:

Ship speed knots	Fuel consumption tons per day	FUEL COST SAVING by slowing down		REVENUE LOSS by slowing down	
		$/day	$/day	$/day	$/day
14	33.9	—	—	—	—
13	27.2	2,697	674	1,440	4,320
12	21.4	5,016	1,254	2,880	8,640
11	16.5	6,979	1,745	4,320	12,960

Assumptions: 70,000 ton cargo; 300 days a year at sea; 10,000 mile round voyage

bunker assumptions		freight assumptions	
high $400/ton	low $100/ton	low $10/ton	high $30/ton

Source: 'Maritime Economics' – Martin Stopford

Q4a. Characteristics of general cargo and bulk cargo in seaborne trade can be distinguished as follows:

Characteristics of General Cargoes:

- Dry
- Goods of various sizes and weights shipped as packaged cargoes
- Goods of uniform sizes and weights shipped as loose cargoes
- Transported in Liner Shipping
- Examples include: Containers, Break-bulk, Neo-bulk

Characteristics of Bulk Cargoes:

- Dry or liquid or liquefied gas
- Neither packaged nor of uniform sizes and weights
- Transported in Tramp Shipping
- Examples include: Dry Bulk, Liquid Bulk, Liquefied Gas

The essence of how a commodity is categorized a general cargo or bulk cargo is by how the cargo is packaged and how it is transported.

Q4bi. Shippers are willing to pay a higher freight rate for high value containerized cargoes as these cargoes require special care during transit to ensure that they are not damaged. Some examples of such high value cargoes include museum exhibits, perishables and jewelry. These cargoes may also require special port facilities such as air-conditioned storage and storage areas that are highly secured to prevent theft and pilferage. More importantly, as the transport costs only comprise a small percentage of the total value of the cargoes, the shippers are willing to pay for a higher freight rate.

Q4bii. Liner companies face a big problem in capacity management. This is because:

1. Obligated to sail in fixed itineraries and schedules – no matter whether the vessel is filled with cargo or not, the vessel has to sail based on the fixed and published schedules and port of calls.

2. Commitment of using a certain fleet of vessels that cannot be changed

3. Seasonal variation – since liner companies have to operate on fixed itineraries, they cannot adjust the number of vessels operating based on the seasonal changes. For example, in the lull periods in June and July, liner companies will still have to operate as per the published schedules.

4. Cargo imbalance – there may be instances where for example, from Singapore to Rotterdam, the vessel is carrying full load of cargo (high load factor), but for the voyage back from Rotterdam to Singapore, the vessel is not carrying much cargo (low load factor).