MT2002 Shipping Economic PYP DEC 2015

Before I start to writing answer about this module, I would like to say every year there are always some questions let us feel really tricky. From our batch, best performance for MT2002 is only A rather than A+ and most of us got B+. Therefore, do not be upset when you see your score even if you are first class student☺, just try your best and nail the exam. For this module, I would like to suggest you to write as much RELEVANT items as possible. Besides, take notes of real industry example and use it during the exam. Best of luck for your exam!

Hanye

Q1 (This is a tricky question)

(a) ---First half of the question answer comes from chapter 4 of textbook.
In general, fluctuation is due to the market cycle is irregular mainly because the market are affected by 5 separate models rather than single economic factor. The five models are:

- World Econ Model
- Shipping Fundamental Model
- Market Investment Model
- Risk Management Model
- Company microeconomic model

As for why four shipping cycles stimulate fluctuation, the discussion is written below:

- For new building market, which is the place for ship owner to order a ship. Buyer should be ship owner, seller is shipyard. Shipper offer money to shipyard for exchange of vessels. The reason for this market might cause shipping market fluctuation is that for ship building, it requires 2-3 years of construction and this is the main reason for market fluctuation. During the down time, ship owners are not willing to order vessel and hence the supply of vessel drop further and when world economic recovered, although ship owner will start building but they will only receive vessel two years later. As demand further increase, the freight rate will increase dramatically before the new fleet can be put into the market. As for the peak of market cycle, more and more vessel are built. When the market collapse, new ships keep coming in which cause larger supply but demand is keep decreasing. It leads to freight drop even further.
- For Freight market, the place for cargo owner use money as buyer side to transport service from seller which is ship owner. The reason for fluctuation occur in shipping market cycle is that the sometimes the ships are in long term charter contract with some companies and suddenly change of cargo demand which need to be handle by spot charter vessel. Other vessels also in different place which cannot be there on time. Therefore, the price of the place with suddenly growth of demand will be bid up. Same logic apply when the cargo demand suddenly drop, all the ships in spot market will face oversupply so that they will compete for the cargo use lower price. Besides, the capsize dry bulk carrier can only carry certain types of cargo, when the

demand for certain types of cargo changes it will affect the fright dramatically.
- For sales and purchase market where ship owners acting as both sellers and buyers using money exchange for second hand ships. The reason it stimulate fluctuation is because the sales cannot be done in a moment, it still need time for inspection and contract binding. Therefore, when the demand suddenly increase, the ship cannot be buy and sold on time and arrive to the location in need. Therefore, it beat up the price of the freight.
- For demolition market where the demolition yard as buyer buying old ships from ship owner which acting as the seller. The reason it cause market fluctuation is that during the down time, ship owners keep scrapping their ship. As a result, demand will exceed the supply and freight will going up again. Same logic apply as the peak market when new ships coming in and ships are not likely to go for scrap yard due to the higher freight. The supply of vessel exceed demand and freight drop accordingly.

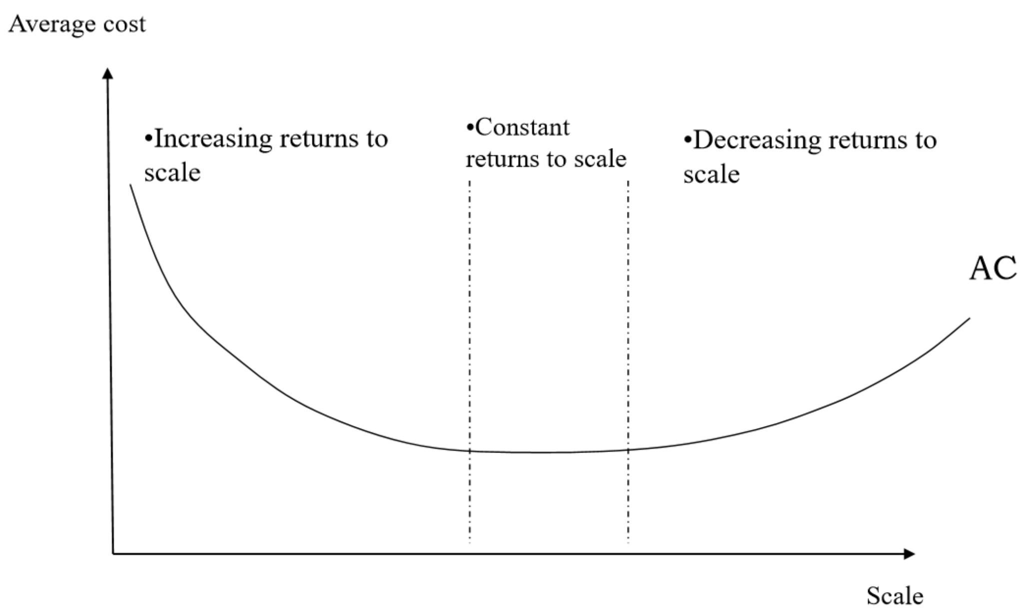
(b) Shipping market risk refers to the up and down of the freight rate. For ship operator in tanker industry, the risks are associated with oil price, world economic, random shocks, transport costs, seaborne commodity trades, average haul, merchant fleet available, fleet productivity, ship building production, scrapping and losses and the freight rate. For a tanker owner they can do the following to hedge their risk.
- Sign a long term charter contract which provide fix income. However, always remain some tankers in spots market to catch the chance when the freight rate bids up in certain area.
- Buying the bunker fuel from certain buyers with fix price for a certain period especially when you forecast the price of oil will go up.
- Pay attention to market news and do the market analysis which provides you with enough knowledge in avoiding the foreseeable risk.
- Making friends and join the social events to ensure the information are updated and obtain some insider message which helps you winning in the market.

Q2: (Again, 2A are mentioned only a little during lecture time so more is rely on what you can think up during the exam, usually this types of 15 mark question at least need 5 points but more is better)

(a) Nowadays ships are become larger due to the hope of enjoy the economies of scale. The optimal ship size is affected by:
- Total average cost of the larger ship must be lesser than smaller one. This requires there are enough utilization rate of the vessel. In other words, demand must be strong enough for deploying the big ship.
- The types of cargo they trade. For example, if it’s trading of dry cargo for large constant volume such as iron ore from brazil to china, capsize is better than other size.
- The constraint of cannel passed by such as ship passing panama cannel.

- The constraint of certain ports such as the constraint of quay length, breath and air draft of the ship.
- The constraint of policy such as China ban Valemax at a period of time.
- World economic, which refers to the demand of certain cargo in certain period such as the market for sugar is bad in certain period the ship owner will try to use smaller ship in shipping them.
- The average haul of the ship, larger distance requires ship to be big enough to sustain in the sea.
- Company culture, for example, Maersk and CMA CGM targets the entire market and they would like to use big ship in deployment just wishing to have all the big cargo owners even they provide relatively bad freight. However, PIL and Wan Hai are more focus on garbing smaller customers can bring them higher freight earning which means they might use smaller ships.

(b) The graph as follow:



The explanation of the graph can be as ship becomes bigger and bigger, fix costs can be separate out better so that the economies of scale will occur. However, after reach certain points, the ship might be too big and the cost such as building and strengthen the ship can be too large and as fix cost per unit increase, the average total cost will increase which refers to the diseconomies of scale.

Q3: (3A is a tricky question)

(a) The cost involved in shipping are including:
- Operating Cost including manning, stores and consumables, repair and maintenance, insurance and administration cost. It makes up 14% of the shipping cost.
- Periodic maintenance cost including the dry docking and special survey which normally associated with older vessel and occupied 4% of the shipping cost.

- Voyage cost, including fuel cost, port charge, towage and pilotage cost and canal due which accounts for 40% of the total shipping cost.
- Cargo handling cost, including cargo loading, discharging cost and cargo claim, it's a minor component of the ship and for those ships equip with cranes this expenses can be eliminated.
- Capital costs, which is the biggest session which consist of 42% of the shipping cost.

The differences between capital costs and other costs are:

- Capital costs are sunk cost after a ship is by. No one can touch the cost component so compare to others variable costs, the fix cost can be ignore in the short term.
- The costs are associated with tax expenses but it can be avoid by selecting a flag of convenience to register.
- When making the short run decision the cost can be ignore. As such, it's not involved in discussion of whether to lay up or selling a ship. Rather, we consider it when we make decision of whether buying the ship and whether we need this ship in enjoyment of economies of scale.
- It can be void by doing ship chartering rather than buying or chartering with buying option.
- Economic wise, the cost contribute to ship yard's local consumption and income multiplier rather than other countries. For other costs, they may be consumed as multiplier of many other places.

(b) Specialised vessels are those vessels have special design to transfer for specialised cargo. They are generally transformed from general cargo or bulk cargo. The basic specialised vessel specification and cargoes they carried are:

- Chemicals: including organic chemical (derived from crude oil, natural gas, coal or oil products, raw material including plastics, artificial fibers, artificial rubber, solvent, plaints etc), inorganic chemicals which made by combining chemical elements and gasses which has high density, corrosive, hazardous and poisonous. The rest of cargo carried including vegetable oil, palm oil, alcohol molasses and lub oil.
  The common character for ships and cargo are the cargo is often moved in small parcels and ither transport in small tankers or larger parcel tanker with segregated tank. They are required to handle separately and the tanks pipe need to be made of stainless steel, rubber or acid prof paints and some heating is also required for certain chemicals. Dedicated transfer system is required for some organic chemicals and they must satisfied IMO regulation for the carriage of hazardous chemicals.
- Liquefied gas: including transferring of LPG and LNG.
  For LPG which is simply propane and butane which is by product of oil refinery with boiling temperature of -88.6oc to -0.5oc. They must be transferred in ships that is either refrigerated or pressurized(or mix with both).
  For the carriage of LNG which is 95% of methane and has temperature of -161oc. Cooler must be ready to refrigerated the cargo.

- Refrigerated cargo: carry those cargo such as meat, fruit, fish which temperature, humidity or atmosphere need to be controlled. The typical refrigerated ships are required with refrigerated tanks to store bulk goods and deck to provide transport to refrigerated container. Always, crane are equip on board and some ships are equipped with side door design so that the forklift can go in and transfer cargo.
- Unit load cargo: Include paper rolls, steel coils, bagged cements, timber vehicles and heavy unit. The characteristic of them are normally large and uneven. Storage is more complicated and demanding. Transfer them are with higher risk of pilferage and they must be handle separately.
  There are 5 categories of specialized cargo for unit load which refers to
  I. PCC and PCTC, which required passage for wheeled cars and also the stabilized system must be provided.
  II. Deep sea roro: except for the equipment mentioned in PCC and PCTC, they can also have container hold or bulk hold.
  III. Open hatch bulk carrier: requirement is the same as bulk carriers except no hatches.
  IV. Multipurpose: requires different types of stabilization system in order to carry varies types of specialized cargo.
  V. Heavy lift: required the ballast system with stabilized and anchoring system so that the object can be safely transferred.
- Passenger ship: Including passenger ferries and cruise ship. They are designed to carry human being and also some of them provided to carry vehicles. They required to have seats, comfortable environment for human being and also the certificate to carry human. For those carry vehicles along the access ramp is also required.

Q4: (capacity management part is quite tricky)

The key strategic decision for liner companies have to make is that:

- Which size of the ship they need to buy consider the constraint of the route and also the demand etc
- Which route they deploy their vessel
- Which ports to call
- What is the frequency of vessel arrival
- Whether they should join any alliances or not
- What kinds of cargo owners they plan to go for, large or big
- What is the freight they offer in the marketplace and what is the under table freight for familiar or big customer
- Whether to take long time charter contract or not
- Whether they need to join any existing alliances
- Whether they need to decrease or increase the frequency for vessel calling which enables the competition and ensure profit earning.

The nature of liner shipping is: A liner service is a fleet of ships, with a common ownership or management, which provides a fixed service, at regular intervals, between named ports, and offer transport to any goods in the catchment area served by those ports and ready for transit by their sailing dates. A fixed itinerary, inclusion in a regular service, and the obligation to accept cargo from all comers and to sail, whether filled or not, on the date fixed by a published schedule are what distinguish the liner from the tramp. The market is oligopoly structure and bill of lading is the contractual document. A ship might be filled up with different shippers.

The nature of tramp shipping is:

- Performance of market depends on the demand for and supply of tramp shipping services
- Large no. of firms own bulk vessels and provide tramp shipping services where fleet size and freight rate are determined by the market
- Although large capital investment is required to purchase vessels and cost a barrier to new entrant, assistance and support from shipping commercial banks are available for investors
- Entrants to market can easily gain access to information and customers, e.g. freight rates from the Baltic Indexes and customers from shipbrokers
- No regulatory or economic obstacles to join or withdraw from the market
- Product development and promotion activities not needed

Therefore, liner shipping is facing of capacity management challenge due to:

- Due to the oligopoly structure, everyone is now wanting to offer the lowest price for cargo owner so that the capacity of a single ship is keep increasing and the companies are now competing for cargo.
- A dry bulk are always being chartered by a single cargo owner. However, for the containership, different shippers are sharing the space. Therefore, liner companies need to find enough shippers to filled up the cargo space of their ship.