



# Introduction to Transportation Systems

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# **PART II: FREIGHT TRANSPORTATION**



## **Chapter 20:**

# **Ocean Shipping, International Freight, and Freight Summary**

# Ocean Shipping

- ◆ Ocean Shipping Services: Bulk
  - ◆ Wet Bulk
  - ◆ Dry Bulk

About 5% of the world's freight bill is for ocean shipping.

Ocean shipping has been called “The Enabler of the Global Economy”.

# Ocean Bulk

- ◆ The ocean bulk market has some similarities to the TL market in the trucking industry. It is a very volatile market; the freight rates and demand for service may swing widely over the course of a few days.
- ◆ It is an easy business to enter and exit in the same way that truckload trucking is; you buy a truck and you are in business, you buy a ship and you are in business.
- ◆ So you can easily get in and out, and that leads to the chronic over-capacity and volatility in that marketplace.

# Other Ocean Bulk Shipping Points

- ◆ Economies of Scale
- ◆ Environmental Issues and Risk Assessment
- ◆ Safety

# The Liner Trade

- ◆ Usually, for merchandise (as opposed to bulk), the cargo that an individual customer has is not adequate to fill a ship.
- ◆ So, in the liner trade, as in LTL operations and in merchandise trains, a customer shares the capacity with other customers, and benefits from consolidation by sharing the costs as well.
- ◆ Container trade is an important example of the liner trade.

# Liner Operation

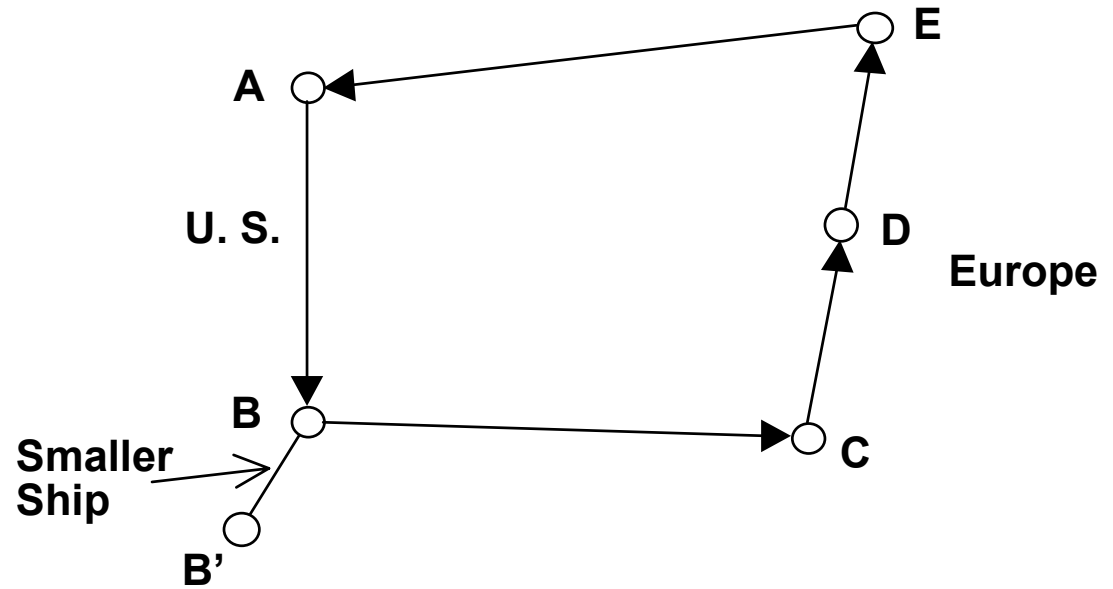


Figure 20.1



# Economies of Scale

## Economies of Scale in Shipping

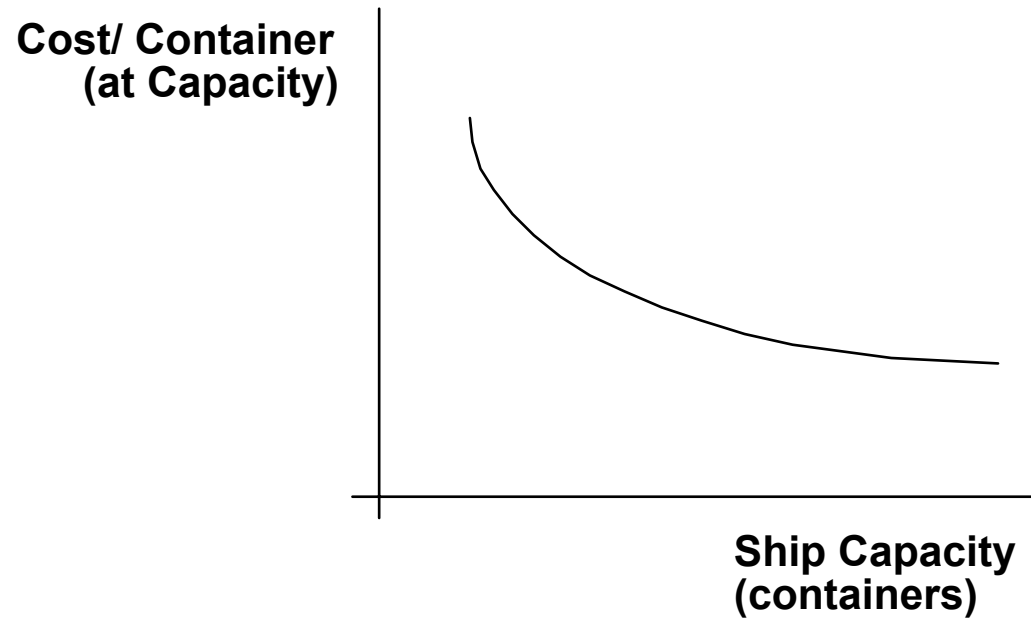


Figure 20.2

# Liner Decisions

- ◆ Operating Speed and Cost
- ◆ Service Frequency
- ◆ Empty Repositioning of Containers

# Intermodalism and International Freight Flows

## U.S./Europe Intermodal Services

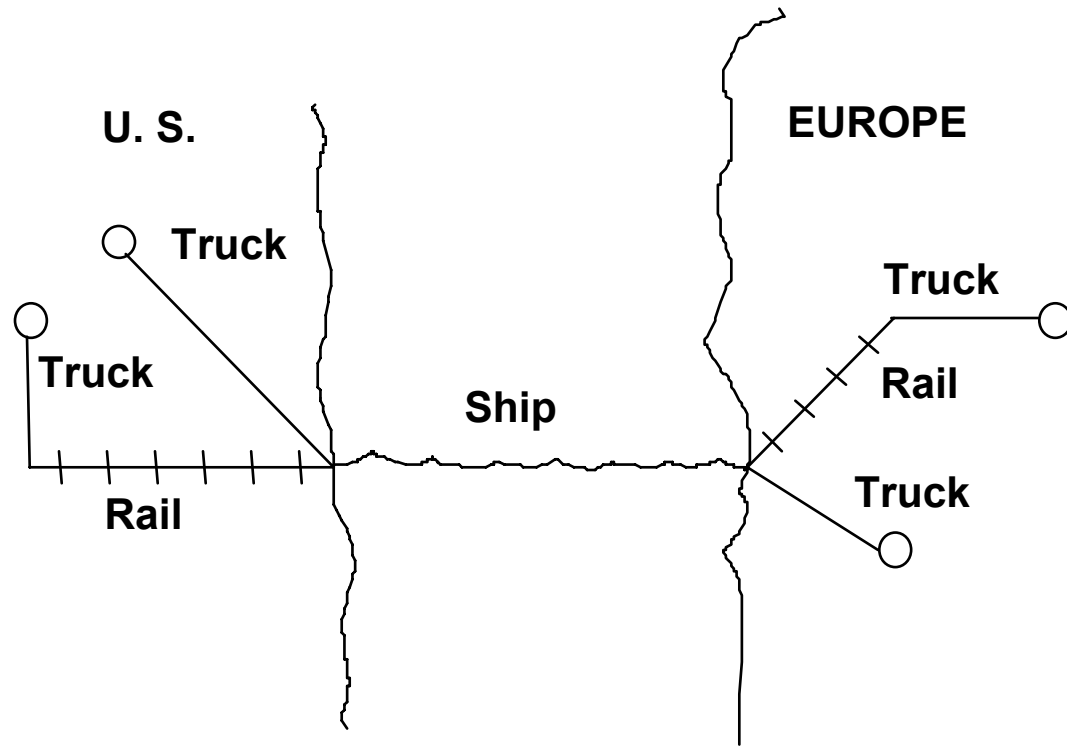
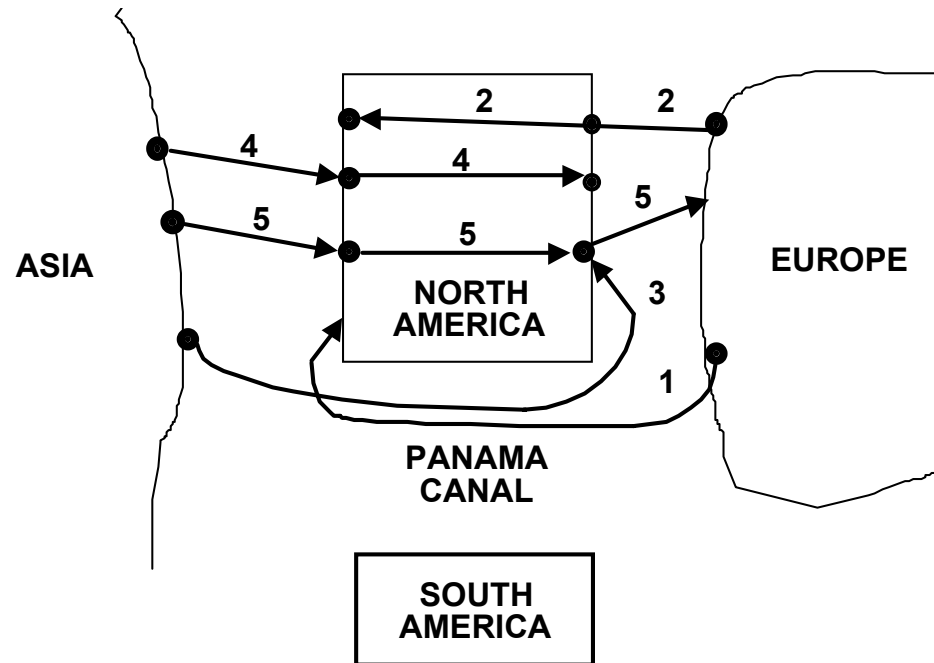


Figure 20.3

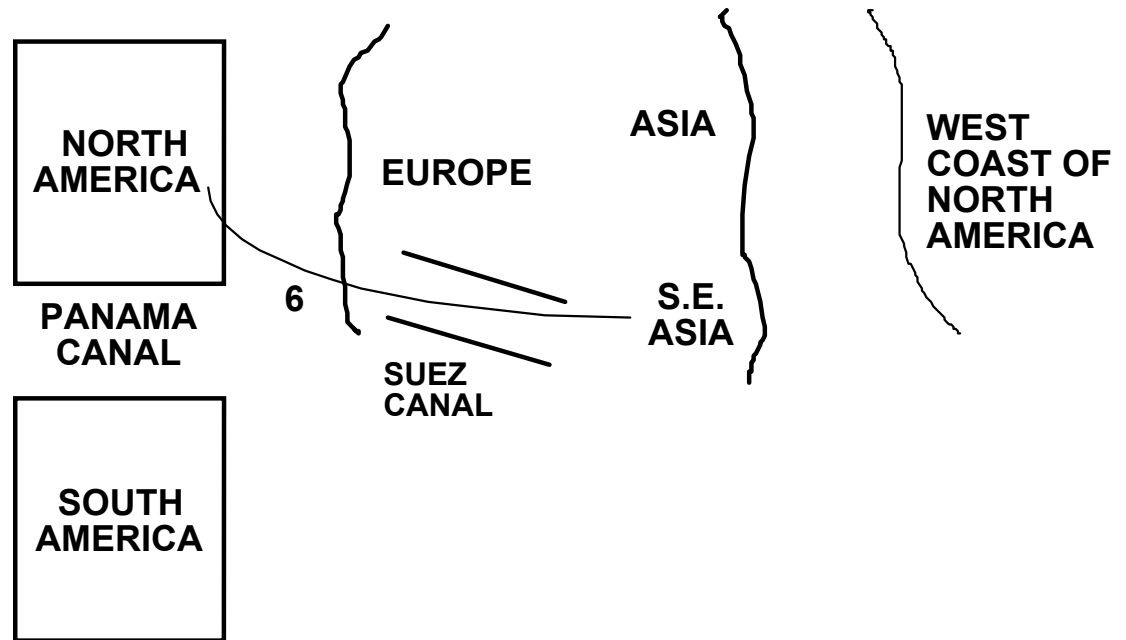
# International Trade Patterns



- 1) Europe -- U.S. (West Coast) via Panama Canal
- 2) Europe -- U.S. (West Coast) via Mini-Land Bridge
- 3) Asia -- U.S. (East Coast) via Panama Canal
- 4) Asia -- U.S. (East Coast) via Mini-Land Bridge
- 5) Asia -- Europe via Land Bridge

Figure 20.4

# More International Trade Patterns



6) All water route from Southeast Asia to East Coast of U.S.

# Port Operations

- ◆ Port Capacity
- ◆ Dredging
- ◆ Intermodal Productivity

# LOS vs. Cost for Various Freight Modes

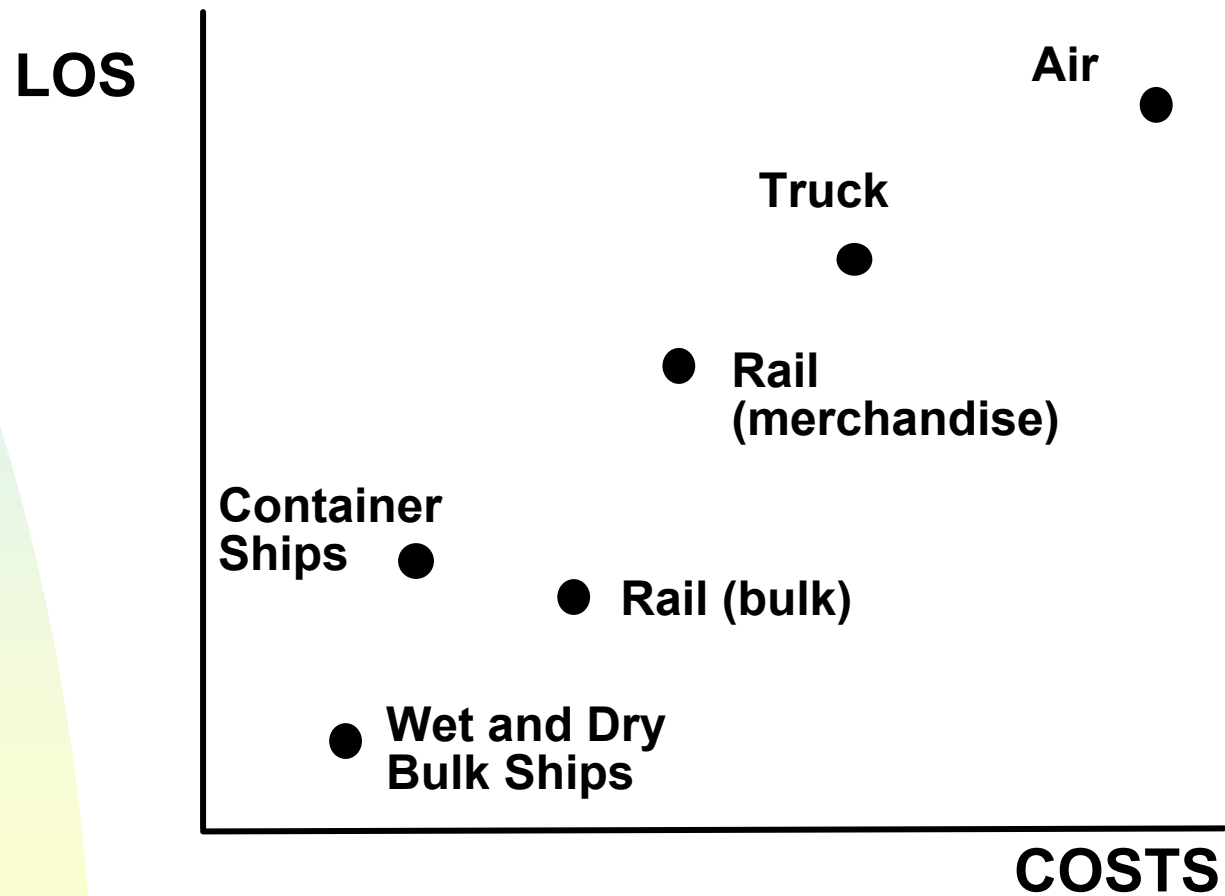


Figure 20.7

# Freight Summary

- ◆ The cost structure: relationship of fixed and variable costs;
- ◆ The nature and ownership structure of the physical assets: infrastructure, right-of-way, terminals, vehicles;
- ◆ Technology;
- ◆ The regulatory framework; and
- ◆ The structure of the market.



# Some Key Freight Factors

- ◆ Vehicle-Cycle
- ◆ Vehicles and Infrastructure
- ◆ The Market
- ◆ Operating Plans and Strategic Plans

# The 30 Key Points

- ◆ Think about the different modes and intermodal competition and how they relate to our 30 key points. A good exercise would be to study those key points and think about how they relate to different freight modes.
- ◆ Think about the triplet: technology, systems and institutions, and how we deal on all these dimensions to achieve competitive modern freight transportation services.

CLASS DISCUSSION